Institut de recherche et documentation en économie de la santé

# Les assistants médicaux en France et dans les pays de l'OCDE

Bibliographie thématique

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# Sommaire



## Problématique

Dans le cadre de la stratégie de transformation de notre système de santé, le plan « Ma santé 2022 » a porté plusieurs évolutions pour renforcer l'accès aux soins des patients, notamment la création de postes d'assistants médicaux. Cette création a été entérinée par la loi n° 2019-774 du 24 juillet 2019 relative à l'organisation et à la transformation du système de santé[1] et l'arrêté du 14 août 2019[2]. Sur la base des assistants médicaux qui existent déjà auprès des dentistes et des ophtalmologues, le gouvernement a décidé d'étendre ce métier aux cabinets de médecins généralistes ou spécialistes. Le déploiement des assistants médicaux répond à un triple enjeu : favoriser un meilleur accès aux soins des patients, assurer de meilleures conditions d'exercice en déchargeant le médecin au quotidien pour lui permettre de consacrer plus de temps aux soins, rechercher davantage d'efficience, une meilleure prise en charge et un suivi amélioré. Le métier d'assistant médical est un nouveau métier, accessible à des profils soignants, comme les infirmières ou les aides-soignants, ou non soignants, comme les secrétaires médicales. Cette qualification professionnelle sera obtenue à l'issue d'une formation spécifique à suivre dans les deux ans qui suivent le recrutement en qualité d'assistant médical. La durée et le contenu de la formation ont été négociés par la branche professionnelle des syndicats de médecins libéraux (CPNEFP) qui est aussi en charge du déploiement de la formation sur le territoire grâce aux organismes de formation autorisés. L'inscription au répertoire national des certifications professionnelles comme métier émergent a permis une reconnaissance par l'État de l'aspect certifiant de la formation et ainsi la mobilisation de financement par le compte professionnel de formation. L'aide financière versée par l'Assurance Maladie pour l'aide à l'embauche d'un assistant médical est forfaitaire, pérenne et évolutive. Elle s'adresse prioritairement aux spécialités les plus en tensions sur le territoire. Une partie de cette aide, dont le montant varie selon le temps d'emploi de l'assistant médical, est versée dans les 15 jours qui suivent son recrutement. En contrepartie, le médecin doit accueillir et suivre davantage de patients, ou, si celui-ci a déjà une activité très intense, s'engager à maintenir son niveau d'activité. Au regard de ces objectifs, le champ des missions confiées aux assistants médicaux est volontairement large et chaque médecin les adapte en fonction de ses activités et besoins. L'assistant médical ou l'assistante médicale secondent le médecin en premier lieu dans les tâches administratives relatives à la gestion de la patientèle ou du cabinet (passage des cartes vitales dans le lecteur, mise à jour et classement des dossiers médicaux, report des informations dans le carnet de santé, réception des résultats d'examens, commandes de matériel pour le cabinet. Il ou elle assure aussi le suivi du parcours de soin du patient en organisant et coordonnant les rendez-vous avec d'autres acteurs de santé (spécialistes, kinésithérapeutes, sage-femmes...). Son rôle est aussi d'aider le médecin en prenant en charge quelques actes simples (accueil du patient : préparation de la consultation, prise de température ou de la tension, contrôle de mesure et de poids, délivrance d'ordonnances pour prise de sang ou antalgique, nettoyage et stérilisation du matériel ou techniques (pose de l'électrocardiogramme, bandages et pansements simples, ablation de bouchon de cérumen, polygraphie du sommeil, fond d'oeil et champ visuel). Selon ses compétences et capacités, l'assistant médical peut également assister le médecin pour la pose d'implant sous cutané, des examens biologiques, des vaccinations...L'assistant médical veille aussi à l'hygiène et la qualité du cabinet.

[1] Loi n° 2019-774 du 24 juillet 2019.

[2] Arrêté du 14 août 2023 approuvant l'avenant n° 7 à la convention des médecins libéraux. Les missions des assistants, les conditions pour bénéficier d'un financement de la part de l'assurance maladie sont précisés.

À l'occasion du lancement du volet « Santé » du Conseil national de la refondation (CNR)[3], le 3 octobre 2022, le ministre de la santé et de la prévention, François Braun a annoncé vouloir porter le nombre d'assistants médicaux à 10 000 d'ici 2025, afin de libérer du temps médical pour les médecins. Les premiers recrutements d'assistants médicaux avec l'aide financière de l'Assurance Maladie ont eu lieu en septembre 2019, à la suite de la signature de l'avenant 7 à la convention médicale. Selon les chiffres publiés par l'Assurance Maladie en octobre 2022[4], 3545 contrats ont été signés dont 1797 par des médecins exerçant en zones sous denses (soit 51 %). Pour les premiers contrats signés, une augmentation moyenne de près de 10 % de la patientèle médecin traitant et de plus de 5 % de la file active a déjà été constatée.

Dans les pays de l'OCDE, la profession d'assistants médicaux (Medical assistants aux USA, medical associates au Royaume-Uni) s'est développée à des dates très diverses. Les Etats-Unis semblent être les précurseurs avec la date de 1965[5] selon l'étude du GAO et les articles de Carter (2017)[6] et Hooker (2021)[7]. Pour les Pays-Bas, ce serait 2001 ; pour le Royaume-Uni, 2002[8] ; pour l'Allemagne, 2005[9] et la Bulgarie, 2014[10].

Cette bibliographie a été réalisée à la demande de l'Igas dans le cadre de sa mission sur la formation des assistants médicaux dont l'objectif était d'évaluer sa pertinence et sa durée au vu des missions qui leur sont confiées par les médecins[11]. Les recherches ont été menées sur une période de dix années sur les bases de données suivantes : Irdes, Pubmed, Web of science, Kings Fund Institute. Le périmètre géographique est circonscrit à l'Europe, au Canada, et aux Etats-Unis. Les aspects principalement documentés sont la formation, les attributions, le développement de carrière, les volumes d'activité, les rémunérations et le financement ainsi que les métiers connexes.

Professions interrogées

Physician assistants, medical assistants, physician associates, advance practice providers, advance practice clinicians and physicians, non physician providers, medical secretaries, receptionist, medical scribes, non medical profession(s), non medical professionals

Soins primaires

((primary health care"[MeSH Terms]) OR "primary health care"[Title]) OR "physician"[Title]) OR "physicians"[Title]) OR "general practitioners"[MeSH Terms]) OR "general practitioner"[Title]) OR "general practitioners"[Title]]) OR ("family practice"[MeSH Terms])) OR ("physicians, family"[MeSH Terms])

## Revues de littérature

[3] Site du ministère chargé de la santé : Volet santé du Conseil national de la refondation.
[4] Cnam : Assistants médicaux : un levier pour renforcer l'accès aux soins dans les territoires. 28 octobre 2022.

[5] GAO (2019). Health care workforce: Views on Expanding Medicare Graduate Medical Education Funding to Nurse Practitioners and Physician Assistants.
[6] Carter, R. D., Ballweg, R. et Konopka-Sauer, L. (2017). "Preserving 50 Years of Physician Assistant History." J Physician Assist Educ **28 Suppl 1**: S85-s89.
[7] Hooker, R. S. et Cawley, J. F. (2021). "Physician assistants/associates at 6 decades." Am J Manag Care **27**(11): 498-504.
[8] Aiello, M. et Roberts, K. A. (2017). "Development of the United Kingdom physician associate profession." Jaapa **30**(4).
[9] Heistermann, P., Lang, T., Heilmann, C., et al. (2022). "A brief introduction to PAs in Germany." Jaapa **35**(6).
Kuilman, L., Matthews, C. et Dierks, M. (2013). "Physician assistant education in Germany." J Physician Assist Educ **24**(2.
[10] Vracheva, P. et Hooker, R. S. (2021). "Physician Assistant Education in Bulgaria." J Physician Assist Educ **32**(1).
[11] Cette mission a donné lieu à la publication d'un rapport en juin 2023 : Simon-Delavelle, F. et Viossat, L. C. (2023). La formation des assistants médicaux. Paris Igas**:** 76 , ann.
https://www.igas.gouv.fr/La-formation-des-assistants-medicaux.html

Bramley, A. L. et McKenna, L. (2021). "Entrustable professional activities in entry-level health professional education: A scoping review." Medical Education in Review **55**(9): 1011-1032.
https://onlinelibrary.wiley.com/doi/10.1111/medu.14539

Entrustable professional activities (EPAs) are a recent enhancement to competency-based health professional education that describe the observable work done by a competent health professional. Through defining education outcomes in a work-based context, EPAs offer potential to identify skill gaps in individual or student cohorts and focus improvements. Entrustable professional activities have been pioneered and gained rapid acceptance in postgraduate medical education; however, less is known about their application and use in undergraduate or entry-level health professional education. The Joanna Briggs Institute scoping review methodology was used to explore how and in what context EPAs are being used in entry-level health professional education. Databases searched include CINAHL, EMBASE, MEDLINE, Web of Science and PsycINFO. A total of 748 abstracts were returned after duplicates removed, and 127 full-text articles were screened with 30 included for data extraction. Publications in this area have recently accelerated with disciplines of professions of medicine, pharmacy, dietetics and physician assistants reporting on EPA development, implementation and evaluation. EPA use has been reported in the United States, Canada, Europe Australia and Central America. Major motivation reported for EPA use is to improve patient safety by aligning performance and expectations and to improve student assessment. Several studies report on the use of EPAs to evaluate different curriculum models or identify curriculum gaps representing potential application in education research.

Halter, M., Drennan, V., Chattopadhyay, K., et al. (2013). "The contribution of physician assistants in primary care: a systematic review." BMC Health Serv Res **13**: 223.
https://bmchealthservres.biomedcentral.com/counter/pdf/10.1186/1472-6963-13-223.pdf

BACKGROUND: Primary care provision is important in the delivery of health care but many countries face primary care workforce challenges. Increasing demand, enlarged workloads, and current and anticipated physician shortages in many countries have led to the introduction of mid-level professionals, such as Physician Assistants (PAs). OBJECTIVE: This systematic review aimed to appraise the evidence of the contribution of PAs within primary care, defined for this study as general practice, relevant to the UK or similar systems. METHODS: Medline, CINAHL, PsycINFO, BNI, SSCI and SCOPUS databases were searched from 1950 to 2010. ELIGIBILITY CRITERIA: PAs with a recognised PA qualification, general practice/family medicine included and the findings relevant to it presented separately and an English language journal publication. Two reviewers independently identified relevant publications, assessed quality using Critical Appraisal Skills Programme tools and extracted findings. Findings were classified and synthesised narratively as factors related to structure, process or outcome of care. RESULTS: 2167 publications were identified, of which 49 met our inclusion criteria, with 46 from the United States of America (USA). Structure: approximately half of PAs are reported to work in primary care in the USA with good support and a willingness to employ amongst doctors. PROCESS: the majority of PAs' workload is the management of patients with acute presentations. PAs tend to see younger patients and a different caseload to doctors, and require supervision. Studies of costs provide mixed results. OUTCOMES: acceptability to patients and potential patients is consistently found to be high, and studies of appropriateness report positively. Overall the evidence was appraised as of weak to moderate quality, with little comparative data presented and little change in research questions over time. LIMITATIONS: identification of a broad range of studies examining 'contribution' made meta analysis or meta synthesis untenable. CONCLUSIONS: The research evidence of the contribution of PAs to primary care was mixed and limited. However, the continued growth in employment of PAs in American primary care suggests that this professional group is judged to be of value by increasing numbers of employers. Further specific studies are needed to fill in the gaps in our knowledge about the effectiveness of PAs' contribution to the international primary care workforce.

Hooker, R. S., Moloney-Johns, A. J. et McFarland, M. M. (2019). "Patient satisfaction with physician assistant/associate care: an international scoping review." Hum Resour Health **17**(1): 104.
https://human-resources-health.biomedcentral.com/counter/pdf/10.1186/s12960-019-0428-7.pdf

BACKGROUND: As the role of the physician assistant/associate grows globally, one question is: what is the level of patient satisfaction with PAs? Driven by legislative enactments to improve access to care, the PA has emerged as a ready and able medical professional to address workforce shortages. The aim of this study was to review the literature on patient satisfaction of PAs. OBJECTIVES: The basis for this review was to clarify working definitions, synthesize the evidence, and establish conceptual boundaries around the topic of patient satisfaction with PAs. The intent was to identify gaps in the literature and offer suggested undertakings for more clarification on the subject. METHODS: A scoping review was undertaken. Literature from 1968 to 2019 was searched and filtered for eligibility. Those that met criteria were categorized by date, method, geography, themes, and design. RESULTS: In total, there were 987 papers or reports that were identified through bibliography database searching. Additional articles found through snowball methodology-reviewing references (n = 11). Only English language articles emerged for analysis. From this effort, 25 articles surfaced from the filtering process for final inclusion. Most (72%) of the articles came from the United States of America, three from the United Kingdom, and one each from Ireland, the Netherlands, and New Zealand. Most articles were descriptive in nature. Some variations in methods emerged. CONCLUSION: PAs are operational in 15 nations; their acceptance appears successful and satisfaction with their care largely indistinguishable from physicians. Findings from this analysis highlight one theory that when patient's needs are met, satisfaction is high regardless of the medical provider. Areas for further research are identified.

Lovink, M. H., Persoon, A., van Vught, A. J., et al. (2015). "Physician substitution by mid-level providers in primary healthcare for older people and long-term care facilities: protocol for a systematic literature review." J Adv Nurs **71**(12): 2998-3005.
https://onlinelibrary.wiley.com/doi/10.1111/jan.12759

AIM: This protocol describes a systematic review that evaluates the effects of physician substitution by mid-level providers (nurse practitioners, physician assistants or nurses) in primary healthcare for older people and long-term care facilities. The secondary aim is to describe facilitators and barriers to the implementation of physician substitution in these settings. BACKGROUND: Healthcare for older people is undergoing major changes, due to population ageing and reforms that shift care to the community. Besides, relatively few medical students are pursuing careers in healthcare for older people. Innovative solutions are needed to guarantee the quality of healthcare and to contain costs. A solution might be shifting care from physicians to mid-level providers. To date, no systematic review on this topic exits to guide policymaking. DESIGN: A quantitative systematic literature review using Cochrane methods. METHODS: The following databases will be searched for original research studies that quantitatively compare care provided by a physician to the same care provided by a mid-level provider: PubMed, EMBASE, CINAHL, PsycINFO, CENTRAL and Web of Science. Study selection, data extraction and quality appraisal will be conducted independently by two reviewers. Data synthesis will consist of a qualitative analysis of the data. Funding of the review was confirmed in August 2013 by the Ministry of Health, Welfare and Sport of the Netherlands. DISCUSSION: This review will contribute to the knowledge on effects of physician substitution in healthcare for older people and factors that influence the outcomes. This knowledge will guide professionals and policy administrators in their decisions to optimize healthcare for older people.

Smith, A. A., Kepka, D. et Yabroff, K. R. (2014). "Advanced practice registered nurses, physician assistants and cancer prevention and screening: a systematic review." BMC Health Serv Res **14**: 68.
https://bmchealthservres.biomedcentral.com/counter/pdf/10.1186/1472-6963-14-68.pdf

BACKGROUND: For more than two decades, integration of team-based approaches in primary care, including physicians, advanced practice registered nurses and physician assistants (APRN/PA), have been recommended for improving healthcare delivery, yet little is known about their roles in cancer screening and prevention. This study aims to review the current literature on the participation and roles of APRN/PAs in providing cancer screening and prevention recommendations in primary care settings in the United States. METHODS: We searched MEDLINE and CINAHL to identify studies published in 1990-2011 reporting on cervical, breast, and colorectal cancer screening and smoking cessation, diet, and physical activity recommendations by APRN/PAs in the United States. A total of 15 studies met all of our eligibility criteria. Key study, provider, and patient characteristics were

abstracted as were findings about APRN/PA recommendations for screening and prevention. RESULTS: Most studies were cross-sectional, showed results from within a single city or state, had relatively small sample sizes, reported non-standardized outcome measures. Few studies reported any patient characteristics. APRN/PAs are involved in recommending cancer screening and prevention, although we found variation across screening tests and health behavior recommendations. CONCLUSIONS: Additional research on the cancer prevention and screening practices of APRN/PAs in primary care settings using standardized outcome measures in relation to evidence-based guidelines may help strengthen primary care delivery in the United States.

van Vliet, R., Ebben, R., Diets, N., et al. (2020). "Nurse practitioners and physician assistants working in ambulance care: A systematic review." F1000Res **9**: 1182.
https://f1000research.s3.amazonaws.com/manuscripts/28573/19b3a26e-835f-4318-8d90-af96369b576d_25891_-_risco_van_vliet.pdf?doi=10.12688/f1000research.25891.1&numberOfBrowsableCollections=93&numberOfBrowsableInstitutionalCollections=4&numberOfBrowsableGateways=50

Background: This review aims to describe the activities of nurse practitioners (NPs) and physician assistants (PAs) working in ambulance care, and the effect of these activities on patient outcomes, process of care, provider outcomes, and costs. Methods: PubMed, MEDLINE (EBSCO), EMBASE (OVID), Web of Science, the Cochrane Library (Cochrane Database of Systematic Review), CINAHL Plus, and the reference lists of the included articles were systematically searched in November 2019. All types of peer-reviewed designs on the three topics were included. Pairs of independent reviewers performed the selection process, the quality assessment, and the data extraction. Results: Four studies of moderate to poor quality were included. Activities in medical, communication and collaboration skills were found. The effects of these activities were found in process of care and resource use outcomes, focusing on non-conveyance rates, referral and consultation, on-scene time, or follow-up contact Conclusions: This review shows that there is limited evidence on activities of NPs and PAs in ambulance care. Results show that NPs and PAs in ambulance care perform activities that can be categorized into the Canadian Medical Education Directives for Specialists (CanMED) roles of Medical Expert, Communicator, and Collaborator. The effects of NPs and PAs are minimally reported in relation to process of care and resource use, focusing on non-conveyance rates, referral and consultation, on-scene time, or follow-up contact. No evidence on patient outcomes of the substitution of NPs and PAs in ambulance care exists. PROSPERO registration: CRD42017067505 (07/07/2017).

## France

Bergeat, M., Vergier, N., Verger, P., et al. (2022). "Un médecin généraliste sur six assure lui-même son secrétariat en 2022." Etudes Et Resultats (Drees)(1245): 4 , graph.
https://drees.solidarites-sante.gouv.fr/sites/default/files/2022-10/ER1245MAJ.pdf

Cinq médecins généralistes libéraux sur six déclarent disposer d'un secrétariat médical, selon le Panel d'observation des pratiques et des conditions d'exercice en médecine générale réalisé entre janvier et avril 2022. Le recours à un secrétariat – présence physique, plateforme téléphonique ou outil de prise de rendez-vous en ligne – dépend de l'organisation du cabinet : les médecins en groupe sont plus nombreux à en disposer. L'usage des outils de prise de rendez-vous en ligne est de plus en plus fréquent : plus d'un généraliste sur trois en utilise en 2022, contre moins d'un sur quatre en 2019. Le recours à ces solutions logicielles est plus courant parmi les médecins plus jeunes. Dans la plupart des cas, elles sont associées à un secrétariat physique ou téléphonique. Parmi les médecins assurant eux-mêmes leur secrétariat en 2019, près d'un sur trois dispose d'une autre solution en 2022. Ils privilégient alors plus souvent un outil de prise de rendez-vous en ligne.

Cnam (2022). Assistants médicaux : un levier pour renforcer l'accès aux soins dans les territoires, Paris :Cnam
https://www.ameli.fr/medecin/actualites/assistants-medicaux-un-levier-pour-renforcer-l-acces-aux-soins-dans-les-territoires

À l'occasion du lancement du volet « Santé » du Conseil national de la refondation (CNR), le 3 octobre, le ministre de la Santé et de la prévention, François Braun, a listé plusieurs leviers pour améliorer l'accès aux soins. Parmi ceux-ci, il a annoncé vouloir porter le nombre d'assistants médicaux à 10 000 d'ici 2025, afin de libérer du temps médical pour les médecins. 3 ans après le lancement de ce dispositif, plus de 3 500 contrats ont été signés. Pour rappel, les premiers recrutements d'assistants médicaux avec l'aide financière de l'Assurance Maladie ont eu lieu en septembre 2019, à la suite de la signature de l'avenant 7 à la convention médicale. Pour les premiers contrats signés, une augmentation moyenne de près de 10 % de la patientèle médecin traitant et de plus de 5 % de la file active a déjà été constatée.

Chanu, A., Caron, A., Ficheur, G., et al. (2018). "Préférences des médecins généralistes libéraux en France métropolitaine quant à la délégation des tâches médico-administratives aux secrétaires assistant (e) s médico-social (e) s : étude en analyse conjointe." Revue D'epidemiologie Et De Sante Publique **66**(3): 171-180.

[BDSP. Notice produite par ORSRA EH88oR0x. Diffusion soumise à autorisation]. Position du problème : Le cabinet d'un médecin généraliste est une entreprise où la délégation des tâches est une composante essentielle à l'amélioration de la qualité et des performances du travail. Objectif : Classer les préférences des médecins généralistes quant à la délégation des tâches médico-administratives aux secrétaires assistant (e) s médico-social (e) s. Méthode : La révélation de ces préférences a été faite par analyse conjointe auprès d'un échantillon aléatoire de 175 médecins généralistes en activité en France métropolitaine. Dix scénarios ont été construits à partir de sept attributs : formation des secrétaires médicales, aide logistique pendant la consultation, délégation de la gestion du planning, des dossiers médicaux, de la comptabilité, de l'entretien, et prise d'initiative au téléphone. Un plan factoriel a été utilisé pour réduire le nombre de scénarios. Les variables sociodémographiques des médecins ont été collectées. Résultats : Cent trois médecins ont répondu et l'analyse portait sur 90 répondants respectant l'hypothèse de transitivité des préférences. La difficulté ressentie était de 2,8 sur 5. Les taux élevés de répondants (59% ; IC 95% [51,7-66,3]) et de transitivité (87,5% ; IC 95% [81,1-93,9]) montraient l'intérêt des médecins pour cette thématique. La délégation de la gestion du planning (OR=2,91 ; IC 95% [2,40-13,52]) et des dossiers médicaux (OR=1,88 ; IC 95% [1,56-2,27]) étaient les deux attributs les plus importants pour les médecins. Seule l'aide logistique n'était pas un critère pris en compte significativement pour le choix de secrétaire. Conclusion : Il s'agit d'une première étude s'intéressant aux choix des médecins généralistes en matière de délégation de tâches. Elle permet de mieux comprendre les déterminants de leurs choix à déléguer certaines tâches ou non ; elle va dans le sens d'une volonté de diminution de tâches annexes pour les médecins au profit d'un temps "médical" et de formation plus important ainsi que vers un élargissement du champ de compétences des secrétaires pouvant passer par l'émergence d'une nouvelle fonction : "assistante médicale".

ORS (2020). "Organisation des cabinets médicaux des médecins généralistes libéraux dans les Pays de la Loire." Panel en médecine générale(22): 6.
https://www.orspaysdelaloire.com/publications/organisation-des-cabinets-medicaux-des-medecins-generalistes-liberaux-des-pays-de-la

Dans les Pays de la Loire, près de neuf médecins généralistes libéraux sur dix disposent d'un secrétariat. C'est 11 points de plus qu'au niveau national et 14 points de plus qu'en 2011. Cette augmentation est en partie liée au développement de nouveaux outils à disposition des praticiens. En effet, les médecins généralistes, et particulièrement les plus jeunes, ont plus volontiers recours à des secrétariats téléphoniques à distance ou à des outils de prise de rendez-vous en ligne. Les praticiens font appel à des comptables pour les trois quarts d'entre eux. Néanmoins, le fait de disposer d'un secrétariat et/ou d'un comptable ne modifie pas le temps hebdomadaire qu'ils consacrent aux tâches de gestion, coordination, secrétariat et comptabilité. La région se distingue enfin par une proportion élevée de médecins agréés « maîtres de stage des universités » (43 %). C'est 13 points de plus qu'au niveau national.

Simon-Delavelle, F. et Viossat, L. C. (2023). La formation des assistants médicaux. Paris Igas**:** 76 , ann.

https://www.igas.gouv.fr/La-formation-des-assistants-medicaux.html

L'Igas a été chargée d'étudier la question de la formation des assistants médicaux afin de répondre à l'objectif de 10 000 contrats d'assistants médicaux fixé par le Président de la République. Le dispositif actuel de formation, qui repose sur un certificat de qualification professionnelle, est adapté aux besoins actuels de la branche du personnel des cabinets médicaux mais il ne permet pas, en l'état, une montée en charge rapide du nombre de stagiaires. Une évolution de la formation des assistants médicaux est donc souhaitable. Elle passe notamment par la mise en œuvre de préconisations qui ont inspiré, pour partie, le plan « 10 000 assistants médicaux », rendu public par la ministre déléguée chargée de l'Organisation territoriale et des Professions de santé, pour adapter le contenu et les modalités de la formation des assistants médicaux et inciter les médecins libéraux à inscrire leurs employés plus rapidement dans cette démarche. C'est le cas notamment de la réduction de la durée de la formation, grâce à un recours plus systématique aux dispenses déjà prévues et au raccourcissement de la formation d'adaptation à l'emploi des soignants ainsi que de la durée de certains modules, même si la montée en charge du dispositif ne peut pas reposer sur ce seul levier. C'est aussi le cas du développement des formations à distance, synchrones et asynchrones, du développement de la formation avant embauche et de la mise en œuvre d'une charte d'engagements mutuels entre la branche professionnelle et les ministères du travail, de la formation professionnelle et de la santé afin de déployer les mesures et de nouveaux moyens pour la formation. L'IGAS préconise enfin une mesure reprise par le plan qui concerne la création, à moyen-terme, d'un nouveau métier d'assistant de santé.

URPS (2014). Vos pratiques en matière de secrétariat médical : enquête. Lyon URPS**:** 170 , tabl., graph., fig.
http://www.urps-med-ra.fr/upload/editor/Rapport_URPS_Secretariat_2014_06_14_Version_AVEC_COMMENTAIRES_WEB.pdf_1411484489203.pdf

Ce rapport rend compte des résultats d'une enquête conduite par l'Union régionale de professions de santé de Rhône-Alpes auprès des 11.000 médecins libéraux rhônalpins, toutes spécialités confondues. Il dresse ainsi un « profil » des médecins répondants, qui, compte tenu du taux de réponses à cette enquête (28%), permet de mieux appréhender leuts pratiques. Parmi les médecins répondants, 45% emploient des secrétaires, 24% sont utilisateurs de télé secrétariat, 7,5% ont un usage mixte : secrétariat et télé secrétariat et 23,5% sont dans une autre situation (pas de secrétariat, conjoint collaborateur…).

## Europe

(2009). The assistant practitioner role: a policy discussion paper. London :, RCN
https://www.rcn.org.uk/About-us/Our-Influencing-work/Policy-briefings/pol-0609

(2016). Physician associates in the UK. London :, BMA
https://www.bma.org.uk/collective-voice/policy-and-research/education-training-and-workforce/physician-associates-in-the-uk

This guidance aims to provide doctors with information on the role of physician associates

(2016). Staffing matters; funding counts : : pressure point : physician associates. London, Health Foundation
http://www.health.org.uk/sites/health/files/SMFCPhysicianAssociates.pdf
http://www.health.org.uk/publication/staffing-matters-funding-counts

(2017). The regulation of medical associate professions in the UK: consultation document. London :, DH
https://www.gov.uk/government/consultations/regulating-medical-associate-professions-in-the-uk

Rising demands for medical treatment and advances in clinical care requires a co-ordinated approach and greater skill mix within NHS healthcare teams. In recent years the health service has seen the

emergence and increased use of new professional roles within multi-disciplinary teams as part of a continuing drive to provide safe, accessible and high-quality care for patients. Four of these roles are: physician associate (PA); physicians' assistant (anaesthesia) (PA(A)); surgical care practitioner (SCP); and advanced critical care practitioner (ACCP). As these professionals become more widely employed, it is necessary to explore the options for professional regulation. This consultation seeks your views on the following proposals: to introduce statutory regulation for Pas; to seek further evidence on the most proportionate level of regulation for PA(A)s; and to seek views on the position that statutory regulation of the SCP and ACCP roles is not proportionate, and whether alternative options for professional assurance should be considered. The consulttion closes on 22 December 2017

Aiello, M. et Roberts, K. A. (2017). "Development of the United Kingdom physician associate profession." Jaapa **30**(4): 1-8.

The world of healthcare is changing, and patient needs are changing with it. Traditional doctor-driven models of workforce planning are no longer sustainable in the United Kingdom (UK) healthcare economy, and newer models are needed. In the multiprofessional, multiskilled clinical workforce of the future, the physician associate (PA) has a fundamental role to play as an integrated, frontline, generalist clinician. As of 2016, about 350 PAs were practicing in the UK, with 550 PAs in training and plans to expand rapidly. This report describes the development of the PA profession in the UK from 2002, with projections through 2020, and includes governance, training, and the path to regulation. With rising demands on the healthcare workforce, the PA profession is predicted to positively influence clinical workforce challenges across the UK healthcare economy.

Ballweg, R. et Kerlen, A. (2017). "Best practices in PA development: Lessons from three countries." Jaapa **30**(8): 1-3.

As the PA profession moves into its 50th year and develops globally, its flexibility and underlying principles make it adaptable to a wide range of healthcare needs and governmental priorities. A key feature of effective PA development is adapting the profession to the needs of each country rather than adopting it exactly as it has developed in the United States. The successful adaptation of new PA models must assure that the new profession meets a societal need, such as increasing healthcare access for specific populations or geographic areas.

Bareja, S. (2020). "Poland and physician assistants." Jaapa **33**(11): 47-49.

Historically, physician assistants (PAs) or their equivalent have been used to offset shortages of healthcare providers in many parts of the world. Poland, having been strongly influenced by Russia and the Soviet Union, revived the feldsher in the post-world war era. With a successful expansion of medical schools, the eventual surplus of physicians meant feldshers were no longer needed. In the early 2000s, Poland found itself in yet another medical provider crisis and turned toward the creation of the Polish PA profession.

Blázquez Ornat, I. (2016). "The professional identity of the practicante: the case of Aragon, 1857-1936." Dynamis **36**(2): 443-466.

The objective of this study was to reconstruct the professional identity of the practicante (male assistant in medicine and surgery) by analyzing three professional journals of this collective in Zaragoza (Aragón). The discourse of practicantes on their profession insists that they were the only assistants for physicians with technical qualities. This affirmation constituted a key element in shaping their identity, contributing in turn to establish the moral and social legitimization of practicantes and their professional authority. This was constructed in counterpoint to the profile, qualifications and gender identity of the other professional healthcare assistant, the nurse. Despite achieving a clear discourse on their professional identity and developing certain professional infrastructures through the work of institutions and key figures, practicantes were not able to consolidate a collective project of upward social mobility that would improve their status and enhance social recognition of the

profession. This led to the construction of a group identity that was largely characterized by apathy, frustration and disunion, elements that eventually weakened the profession.

Bortz, M., Schubel, J., Pochert, M., et al. (2021). "Delegation of Home Visits and Qualification of Health Care Assistants in Family Practices in Saxony, Germany - Results of the Cross-Sectional Study SESAM-5." Gesundheitswesen **83**(02): 95-102.
<Go to ISI>://WOS:000617320900005

Zusammenfassung Hintergrund Um dem demografischen Wandel und dem Hausarztemangel zu begegnen, wird die Delegierbarkeit von Hausbesuchen diskutiert. Bisher gibt es wenig Evidenz, in welchem Ausma ss eine Delegation von Hausbesuchen innerhalb Deutschlands erfolgt. Ziel dieses Artikels ist es, Unterschiede im soziodemografischen und organisatorischen Profil delegierender bzw. nicht-delegierender Hausarzte in Sachsen zu untersuchen sowie den Qualifikationsstand nicht-arztlicher Mitarbeiter zu beschreiben. Methodik Diese Querschnittstudie ist Teil einer Serie epidemiologischer Studien in der Allgemeinmedizin in Sachsen (SESAM). Alle in Sachsen niedergelassenen Hausarzte wurden 2014 angeschrieben (n=2677), wovon 11,2% an der Studie teilnahmen. In einem Zeitraum von 12 Monaten sollten Hausarztpraxen alle Hausbesuche dokumentieren, welche innerhalb einer zufallig zugeordneten Woche durchgefuhrt wurden. Des Weiteren wurden soziodemografische und organisatorische Merkmale der Hausarztpraxen, sowie der Qualifikationsstand der nicht-arztlichen Mitarbeiter abgefragt. Ergebnisse Insgesamt nahmen 274 Hausarztpraxen an der Studie teil. 52,9% der teilnehmenden Hausarzte erklarten ihre Bereitschaft zur Delegation von Hausbesuchen, jedoch wurden lediglich 8,5% der Hausbesuche durch nicht-arztliche Mitarbeiter erbracht. Es zeigten sich nicht-signifikante Trends zwischen Delegationsbereitschaft und Selbststandigkeit vs. angestellter Tatigkeit (92,4 vs. 84,6%; p=0,06), sowie Niederlassung in einer Gemeinschafts- vs. Einzelpraxis (35,2 vs. 31,4%; p=0,09) und hoheren Scheinzahlen pro Quartal (x+=1183,08 vs. 1092,16; p=0,07). Die Gruppe der 224 nicht-arztlichen Praxismitarbeiter, welche an der Studie teilnahmen, war mehrheitlich ausgebildet in der Gesundheits- und Krankenpflege (39,7%) oder als Medizinische Fachangestellte (50,8%). Die uberwiegende Mehrheit der Praxismitarbeiter (82,5%) wies keine Weiterbildung oder Zusatzqualifikation auf. 12,6 bzw. 7% absolvierten eine Weiterbildung zur Versorgungsassistentin oder nicht-arztlichen Praxisassistentin. Schlussfolgerung Unter den sachsischen Hausarzten herrscht eine hohe Delegationsbereitschaft, welche jedoch nicht in ausreichendem Ma ss e umgesetzt werden kann. Ein Gro ss teil der Delegation erfolgte zum Zeitpunkt der Studienerhebung eher auf personlicher Vertrauensbasis ohne formale Weiterbildung. Qualifizierte Delegation sichert eine hochwertige Patientenversorgung und dieses Potenzial scheint in der sachsischen Primarversorgung, insbesondere in landlichen Gegenden mit drohender Unterversorgung, noch nicht ausgeschopft. Eine vermehrte Aufklarungsarbeit uber Chancen und Moglichkeiten der qualifizierten Delegation erscheint notig. Abstract Background In the context of demographic changes and the shortage of family physicians in the primary care sector in Germany, the delegability of home visits to health care assistants is discussed. There is little information on the extent of home visits delegated. The aim of this article is to examine differences in the socio-demographic and organizational profile of delegating vs. non-delegating family doctors in Saxony and to describe the level of qualification of health care assistants. Methodology This cross-sectional study is part of a series of epidemiological studies in the federal state of Saxony, Germany. All family doctors in Saxony were contacted in 2014 (n=2677), of whom 11,2% participated. In a period of 12 months, family practices documented home visits within a randomly assigned week. Socio-demographic characteristics of the family practice and the level of qualification of health care assistants were surveyed. Results A total of 274 family practices participated; 52,9% of all participating family doctors declared their willingness to delegate home visits, but only 8,5% of home visits were made by health care assistants. There were non-significant trends between the willingness to delegate and self-employment vs. being employed (92,4 vs. 84,6%, p=0,06), establishment in a single vs. shared practice (35,2 vs. 31,4%, p=0,09) and higher patient numbers per 3 months (x+=1183,08 vs. 1092,16, p=0,07). The 224 health care assistants that participated in the study were mostly trained in nursing (39,7%) or as medical assistants (50,8%). The vast majority of the health care assistants (82,5%) had no further training or additional qualification; 19,6% completed further training that qualified them to have home visits formally delegated to them. Conclusion Among family doctors in Saxony there is a reported high willingness to delegate, which is not implemented sufficiently in practice. Delegation is based on personal confidence in health care assistants without formal qualification. Qualified delegation ensures high standards in patient care and this potential is not

used in Saxony, particularly in rural areas with imminent shortages of medical care. More education about the opportunities of qualified delegation seems necessary.

Brant, H. D., Atherton, H., Bikker, A., et al. (2018). "Receptionists' role in new approaches to consultations in primary care: a focused ethnographic study." Br J Gen Pract **68**(672): e478-e486. https://bjgp.org/content/bjgp/68/672/e478.full.pdf

BACKGROUND: The receptionist is pivotal to the smooth running of general practice in the UK, communicating with patients and booking appointments. AIM: The authors aimed to explore the role of the receptionist in the implementation of new approaches to consultations in primary care. DESIGN AND SETTING: The authors conducted a team-based focused ethnography. Three researchers observed eight general practices across England and Scotland between June 2015 and May 2016. METHOD: Interviews were conducted with 39 patients and 45 staff in the practices, all of which had adopted one or more methods (telephone, email, e-consultation, or internet video) for providing an alternative to face-to-face consultation. RESULTS: Receptionists have a key role in facilitating patient awareness regarding new approaches to consultations in primary care, while at the same time ensuring that patients receive a consultation appropriate to their needs. In this study, receptionists' involvement in implementation and planning for the introduction of alternative approaches to face-to-face consultations was minimal, despite the expectation that they would be involved in delivery. CONCLUSION: A shared understanding within practices of the potential difficulties and extra work that might ensue for reception staff was lacking. This might contribute to the low uptake by patients of potentially important innovations in service delivery. Involvement of the wider practice team in planning and piloting changes, supporting team members through service reconfiguration, and providing an opportunity to discuss and contribute to modifications of any new system would ensure that reception staff are suitably prepared to support the introduction of a new approach to consultations.

Brown, M., Laughey, W. et Finn, G. M. (2020). "Physician Associate students and primary care paradigmatic trajectories: perceptions, positioning and the process of pursuit." Educ Prim Care **31**(4): 231-239.

As the role of the Physician Associate (PA) establishes within the UK, there is increasing interest in the recruitment of PAs to primary care. Yet, currently 72% of all UK PAs work in secondary care. Recruitment to primary care is wanting, for reasons that remain unclear. This work sought to investigate student PA experiences in primary care and their attitudes to primary care as a career choice. A multi-site, qualitative study involving one-to-one semi-structured interviews with 19 student PAs was conducted. Data were thematically analysed, in line with an interpretivist approach and informed by communities of practice and paradigmatic trajectory theory - 'visible career paths provided by a community'. Factors were identified enabling student PA engagement with primary care paradigmatic trajectories including engaging students with a degree of responsibility in service provision. Barriers to engagement included ignorance regarding the PA role, and reverence of medical students as a 'gold standard'. A conceptual model is proposed detailing the student process of engagement with primary care trajectories, encapsulating how this process influences emerging career identity. This model could be used to optimise student PA engagement in learning about, and coming to identify with, primary care careers.

Brunton, L., Tazzyman, A., Ferguson, J., et al. (2022). The challenges of integrating signposting into general practice : : qualitative stakeholder perspectives on care navigation and social prescribing in primary care. https://doi.org/10.1186/s12875-022-01669-z

BACKGROUND: A national policy focus in England to address general practice workforce issues has led to a commitment to employ significant numbers of non-general practitioner (GP) roles to redistribute workload. This paper focuses on two such roles: the care navigation (CN) and social prescribing link worker (SPLW) roles, which both aim to introduce 'active signposting' into primary care, to direct patients to the right professional/services at the right time and free up GP time. There is a lack of research exploring staff views of how these roles are being planned and operationalised into general practice and how signposting is being integrated into primary care. METHODS: The design uses in-

depth qualitative methods to explore a wide range of stakeholder staff views. We generated a purposive sample of 34 respondents who took part in 17 semi-structured interviews and one focus group (service leads, role holders and host general practice staff). We analysed data using a Template Analysis approach. RESULTS: Three key themes highlight the challenges of operationalising signposting into general practice: 1) role perception – signposting was made challenging by the way both roles were perceived by others (e.g. among the public, patients and general practice staff) and highlighted inherent tensions in the expressed aims of the policy of active signposting; 2) role preparedness – a lack of training meant that some receptionist staff felt unprepared to take on the CN role as expected and raised patient safety issues; for SPLW staff, training affected the consistency of service offer across an area; 3) integration and co-ordination of roles – a lack of planning and co-ordination across components of the health and care system challenged the success of integrating signposting into general practice. CONCLUSIONS: This study provides new insights from staff stakeholder perspectives into the challenges of integrating signposting into general practice, and highlights key factors affecting the success of signposting in practice. Clarity of role purpose and remit (including resolving tensions inherent the dual aims of 'active signposting'), appropriate training and skill development for role holders and adequate communication and engagement between stakeholders/partnership working across services, are required to enable successful integration of signposting into general practice. [Abstract]

Burnett, K., Armer, N., McGregor, J., et al. (2019). Workforce: : the career aspirations and expectations of -student -physician associates in the UK.
https://doi.org/10.7861/futurehosp.6-1-36

The NHS five year forward view supports the development of a flexible workforce. Expanding the traditional medical workforce using physician associates (PAs) is increasing in popularity. This study explores the career aspirations and expectations of student PAs from a large PA school in England. Thematic analysis of qualitative data from an online survey examined the personal motivations and career aspirations of student PAs. Finally, we make nine recommendations to enhancing recruitment, retention and development of PAs post qualification. Lessons learnt from this data set are generalisable. [Abstract]

Burrows, M., Gale, N., Greenfield, S., et al. (2020). "A quantitative assessment of the parameters of the role of receptionists in modern primary care using the work design framework." BMCPrimary Care **21**(1): 138.
https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-020-01204-y.pdf

BACKGROUND: Amidst increased pressures on General Practice across England, the receptionist continues to fulfil key administrative and clinically related tasks. The need for more robust support for these key personnel to ensure they stay focussed and motivated is apparent, however, to be effective a more systematic understanding of the parameters of their work is required. Here we present a valuable insight into the tasks they fulfil, their relationship with colleagues and their organisation and their attitudes and behaviour at work collectively defined as their 'work design'. METHODS: Our aim was to quantitatively assess the various characteristics of receptionists in primary care in England using the validated Work Design Questionnaire (WDQ) a 21 point validated questionnaire, divided into four categories: task, knowledge and social characteristics and work context with a series of sub-categories within each, disseminated online and as a postal questionnaire to 100 practices nationally. RESULTS: Seventy participants completed the WDQ, 54 online and 16 using the postal questionnaire with the response rate for the latter being 3.1%. The WDQ suggested receptionists experience high levels of task variety, task significance and of information processing and knowledge demands, confirming the high cognitive load placed on receptionists by performing numerous yet significant tasks. Perhaps in relation to these substantial responsibilities a reliance on colleagues for support and feedback to help negotiate this workload was reported. CONCLUSION: The evidence of our survey suggests that the role of modern GP receptionists requires an array of skills to accommodate various administrative, communicative, problem solving, and decision-making duties. There are ways in which the role might be better supported for example devising ways to separate complex tasks to avoid the errors involved with high cognitive load, providing informal feedback, and perhaps most importantly developing training programmes.

Castioni, J., Hagenbuch, A., Tâche, J., et al. (2017). "[Delegation of medico-administrative tasks : what do medical interns and secretaries think?]." Rev Med Suisse **13**(584): 2048-2051.

> The hospital activity of physicians in training mainly consists in direct contacts with patients, tasks indirectly linked to patients such as administration, as well as clinical and theoretical training. In our era of digitalization, an important administrative work load without any added medical value fills their daily chores. In parallel activities of medical secretaries are getting more partitioned, with their desks situated far from physicians' and tasks often limited to finalizing discharge letters. Added to multiple overtime, this reduces physicians' and secretaries' work satisfaction. This article describes the context and development of delegating medico-administrative tasks to secretaries in our department of internal medicine.

Cottrell, E., Silverwood, V., Strivens-Joyce, A., et al. (2021). Acceptability of physician associate interns in primary care : : results from a service evaluation.
https://doi.org/10.1186/s12875-021-01372-5

> BACKGROUND: Physician associates (PA) form part of the policy-driven response to increased primary care demand and a general practitioner (GP) recruitment and retention crisis. However, they are novel to the primary care workforce and have limitations, for example, they cannot prescribe. The novel one year Staffordshire PA Internship (SPAI) scheme, introduced in 2017, was established to support the integration of PAs into primary care. PA interns concurrently worked in primary and secondary care posts, with protected weekly primary care focussed education sessions. This evaluation established the acceptability of PA interns within primary care. METHODS: All ten PAs from the first two SPAI cohorts, the nine host practices (supervising GPs and practice managers) and host practice patients were invited to participate in the evaluation. A conceptual framework for implementing interventions in primary care informed data collection and analysis. Data were gathered at three time points over the internship from practices, through discussions with the supervising GP and/or practice manager, and from the PAs via discussion groups. To enrich discussion data, PA and practices were sent brief surveys requesting information on PA/practice characteristics and PA primary care roles. Patient acceptability data were collected by the host practices. Participation at every stage was optional. RESULTS: By evaluation end, eight PAs had completed the internship. Seven PAs and six practices provided data at every time point. Five practices provided patient acceptability data. Overall PA interns were acceptable to practices and patients, however ambiguity about the PA role and how best to communicate and operationalise PA roles was revealed. An expectation-preparedness gap resulted in PAs needing high levels of supervision early within the internship. SPAI facilitated closure of the expectation-preparedness gap and its funding arrangements made the high supervision requirements more acceptable to practices. CONCLUSIONS: The test-of-concept SPAI successfully integrated new PAs into primary care. However, the identified challenges risk undermining PAs roles in primary care before they have attained their full potential. Nationally, workforce leaders should develop approaches to support new PAs into primary care, including commitments to longer-term, sustainable, cohesive and appropriately funded schemes, including structured and standardised education and supervision. [Abstract]

Dachtler, V., Clark, S. J. et Jay, N. (2021). "Physician associates: a potential solution to our workforce crisis." Arch Dis Child **106**(7): 727.
https://adc.bmj.com/content/106/7/727

De Bruijn-Geraets, D. P., Van Eijk-Hustings, Y. J. et Vrijhoef, H. J. (2014). "Evaluating newly acquired authority of nurse practitioners and physician assistants for reserved medical procedures in the Netherlands: a study protocol." J Adv Nurs **70**(11): 2673-2682.
https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/jan.12396?download=true

> AIM: The study protocol is designed to evaluate the effects of granting independent authorization for medical procedures to nurse practitioners and physician assistants on processes and outcomes of health care. BACKGROUND: Recent (temporarily) enacted legislation in Dutch health care authorizes

nurse practitioners and physician assistants to indicate and perform specified medical procedures, i.e. catheterization, cardioversion, defibrillation, endoscopy, injection, puncture, prescribing and simple surgical procedures, independently. Formerly, these procedures were exclusively reserved to physicians, dentists and midwives. DESIGN: A triangulation mixed method design is used to collect quantitative (surveys) and qualitative (interviews) data. METHODS: Outcomes are selected from evidence-based frameworks and models for assessing the impact of advanced nursing on quality of health care. Data are collected in various manners. Surveys are structured around the domains: (i) quality of care; (ii) costs; (iii) healthcare resource use; and (iv) patient centredness. Focus group and expert interviews aim to ascertain facilitators and barriers to the implementation process. Data are collected before the amendment of the law, 1 and 2·5 years thereafter. Groups of patients, nurse practitioners, physician assistants, supervising physicians and policy makers all participate in this national study. The study is supported by a grant from the Dutch Ministry of Health, Welfare and Sport in March 2011. Research Ethics Committee approval was obtained in July 2011. CONCLUSION: This study will provide information about the effects of granting independent authorization for medical procedures to nurse practitioners and physician assistants on processes and outcomes of health care. Study findings aim to support policy makers and other stakeholders in making related decisions. The study design enables a cross-national comparative analysis.

De Bruijn-Geraets, D. P., van Eijk-Hustings, Y. J. L., Bessems-Beks, M. C. M., et al. (2018). "National mixed methods evaluation of the effects of removing legal barriers to full practice authority of Dutch nurse practitioners and physician assistants." BMJ Open **8**(6): e019962.
https://bmjopen.bmj.com/content/bmjopen/8/6/e019962.full.pdf

OBJECTIVE: To evaluate the effects of granting legal full practice authority (FPA) to nurse practitioners (NP) and physician assistants (PA) regarding the performance of specified reserved medical procedures and to support governmental decision-making. DESIGN: Nationwide mixed methods design with triangulation of quantitative (Pre-post test design) and qualitative data (expert interviews and focus groups). METHODS: Surveys focused on the performance of the procedures (monthly number, authorisation mode, consultations and procedural time) and legal cross-compliance requirements (adherence with protocols, competence). Interviews focused on competence, knowledge, skills, responsibilities, routine behaviour, NP/PA role, acceptance, organisational structure, collaboration, consultation, NP/PA positioning, adherence with protocols and resources. Data collection took place between 2011 and 2015. RESULTS: Quantitative data included 1251 NPs, 798 PAs and 504 physicians. Besides, expert interviews with 33 healthcare providers and 28 key stakeholders, and 5 focus groups (31 healthcare providers) were held.After obtaining FPA, the proportion of NPs and PAs performing reserved procedures increased from 77% to 85% and from 86% to 93%, respectively; the proportion of procedures performed on own authority increased from 63% to 76% for NPs and from 67% to 71% for PAs. The mean number of monthly contacts between NPs/PAs and physicians about procedures decreased (from 81 to 49 and from 107 to 54, respectively), as did the mean duration in minutes (from 9.9 to 8.6 and from 8.8 to 7.4, respectively). Utilisation of FPA was dependent on the setting, as scepticism of physicians and medical boards hampered full implementation. Legal cross-compliance requirements were mostly fulfilled. CONCLUSIONS: Informal practice was legalised. The opportunities to independently perform catheterisations, injections, prescribing, punctures and small surgical procedures were highly used. Care processes were organised more efficiently, services were performed by the most appropriate healthcare provider and conditions were met. This led to the recommendation to continue with FPA.

de Lusignan, S., McGovern, A. P., Tahir, M. A., et al. (2016). "Physician Associate and General Practitioner Consultations: A Comparative Observational Video Study." PLoS One **11**(8): e0160902.
https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0160902&type=printable

BACKGROUND: Physician associates, known internationally as physician assistants, are a mid-level practitioner, well established in the United States of America but new to the United Kingdom. A small number work in primary care under the supervision of general practitioners, where they most commonly see patients requesting same day appointments for new problems. As an adjunct to larger study, we investigated the quality of the patient consultation of physician associates in comparison to

that of general practitioners. METHOD: We conducted a comparative observational study using video recordings of consultations by volunteer physician associates and general practitioners with consenting patients in single surgery sessions. Recordings were assessed by experienced general practitioners, blinded to the type of the consulting practitioner, using the Leicester Assessment Package. Assessors were asked to comment on the safety of the recorded consultations and to attempt to identify the type of practitioner. Ratings were compared across practitioner type, alongside the number of presenting complaints discussed in each consultation and the number of these which were acute, minor, or regarding a chronic condition. RESULTS: We assessed 62 consultations (41 general practitioner and 21 physician associates) from five general practitioners and four physician associates. All consultations were assessed as safe; but general practitioners were rated higher than PAs in all elements of consultation. The general practitioners were more likely than physician associates to see people with multiple presenting complaints ($p<0.0001$) and with chronic disease related complaints ($p = 0.008$). Assessors correctly identified general practitioner consultations but not physician associates. The Leicester Assessment Package had limited inter-rater and intra-rater reliability. CONCLUSIONS: The physician associate consultations were with a less complex patient group. They were judged as competent and safe, although general practitioner consultations, unsurprisingly, were rated as more competent. Physician associates offer a complementary addition to the medical workforce in general practice.

Dini, L., Sarganas, G., Boostrom, E., et al. (2012). "German GPs' willingness to expand roles of physician assistants: a regional survey of perceptions and informal practices influencing uptake of health reforms in primary health care." Fam Pract **29**(4): 448-454.

BACKGROUND: Many countries with shortages in health personnel are introducing task shifting in primary health care. GPs' attitudes and practices strongly affect task shifting and the expansion of the roles of physician assistants (PAs). OBJECTIVE: To assess, in a German state with shortages of health personnel, the overall willingness of GPs to delegate home visit tasks to PAs and to elicit their perceptions of barriers to and benefits of such delegation and the current practice of informal delegation. METHODS: Postal self-administered anonymous survey of all practicing GPs in the rural state of Mecklenburg-Vorpommern. Main outcomes were GPs' willingness to delegate in home visit tasks to a properly trained PA, perceived barriers to and benefits of home visit delegation and current practice of informal delegation. Using multinomial logistic regression, associations were identified among outcome variables, and characteristics of the GPs and of their practices. RESULTS: Response rate was 47%. Responders (500) were comparable to all GPs in the state (1096); 48% of practitioners are willing to delegate home visits tasks to PAs. The main barrier to delegation was the related costs of PAs' training (34%), and the main benefit that it 'saves the GP's time' (67%). The 46% of practitioners who are informally delegating home visit tasks were significantly more likely be younger [odds ratio (OR) and 95% confidence interval (CI)] [OR = 0.96 (0.93-0.99)] and female [OR = 1.70 (1.12-2.58)]. CONCLUSION: The increasing proportion of women in family medicine might favor task shifting in General Practice.

Dowsing, T., Chellamuthu, P., Powell, N., et al. (2014). "Can someone call my PA?" Acute Med **13**(2): 78-81.

The aim of this paper is to outline the background of the Physician Associate (known in the USA as physician assistant[1]) role in the USA and follow its recent journey to the UK where it is becoming a rapidly developing new healthcare role. Through the use of two case studies from UK Hospital Trusts who are currently utilising Physician Associates (PAs) in their workforce we describe the implementation and development opportunities for the role, with particular reference to their role in Acute Medicine teams of the future.

Drennan, V. M. (2015). Physician associates and GPs in primary care : : a comparison. http://bjgp.org/content/65/634/e344

BACKGROUND: Physician associates [PAs] (also known as physician assistants) are new to the NHS and there is little evidence concerning their contribution in general practice. AIM: This study aimed to compare outcomes and costs of same-day requested consultations by PAs with those of GPs. DESIGN

AND SETTING: An observational study of 2086 patient records presenting at same-day appointments in 12 general practices in England. Method PA consultations were compared with those of GPs. Primary outcome was re-consultation within 14 days for the same or linked problem. Secondary outcomes were processes of care. RESULTS: There were no significant differences in the rates of re-consultation (rate ratio 1.24, 95 per cent confidence interval [CI] = 0.86 to 1.79, P = 0.25). There were no differences in rates of diagnostic tests ordered (1.08, 95 per cent CI = 0.89 to 1.30, P = 0.44), referrals (0.95, 95 per cent CI = 0.63 to 1.43, P = 0.80), prescriptions issued (1.16, 95 per cent CI = 0.87 to 1.53, P = 0.31), or patient satisfaction (1.00, 95 per cent CI = 0.42 to 2.36, P = 0.99). Records of initial consultations of 79.2 per cent (n = 145) of PAs and 48.3 per cent (n = 99) of GPs were judged appropriate by independent GPs (P<0.001). The adjusted average PA consultation was 5.8 minutes longer than the GP consultation (95 per cent CI = 2.46 to 7.1; P<0.001); cost per consultation was GBP £6.22, (US$ 10.15) lower (95 per cent CI = −7.61 to −2.46, P<0.001). CONCLUSION: The processes and outcomes of PA and GP consultations for same-day appointment patients are similar at a lower consultation cost. PAs offer a potentially acceptable and efficient addition to the general practice workforce. [Abstract]

Drennan, V. M., Gabe, J., Halter, M., et al. (2017). "Physician associates in primary health care in England: A challenge to professional boundaries?" Soc Sci Med **181**: 9-16.

Like other health care systems, the National Health Service (NHS) in England has looked to new staffing configurations faced with medical staff shortages and rising costs. One solution has been to employ physician associates (PAs). PAs are trained in the medical model to assess, diagnose and commence treatment under the supervision of a physician. This paper explores the perceived effects on professional boundaries and relationships of introducing this completely new professional group. It draws on data from a study, completed in 2014, which examined the contribution of PAs working in general practice. Data were gathered at macro, meso and micro levels of the health care system. At the macro and meso level data were from policy documents, interviews with civil servants, senior members of national medical and nursing organisations, as well as regional level NHS managers (n = 25). At the micro level data came from interviews with General Practitioners, nurse practitioners and practice staff (n = 30) as well as observation of clinical and professional meetings. Analysis was both inductive and also framed by the existing theories of a dynamic system of professions. It is argued that professional boundaries become malleable and subject to negotiation at the micro level of service delivery. Stratification within professional groups created differing responses between those working at macro, meso and micro levels of the system; from acceptance to hostility in the face of a new and potentially competing, occupational group. Overarching this state agency was the requirement to underpin legislatively the shifts in jurisdictional boundaries, such as prescribing required for vertical substitution for some of the work of doctors.

Drennan, V. M. et Halter, M. (2020). "Building the evidence base-10 years of PA research in England." Jaapa **33**(10): 1-4.

This article describes the 10-year journey of a research group helping to build the research evidence base for physician assistants (PAs), known as physician associates in the United Kingdom, in the National Health Service in England. It draws out some key issues that may be of interest to those developing PA research programs in different specialties and different countries. PA research also can help healthcare policy makers address growing demand, issues of quality, and cost.

Drennan, V. M., Halter, M., Joly, L., et al. (2015). "Physician associates and GPs in primary care: a comparison." Br J Gen Pract **65**(634): e344-350.
https://bjgp.org/content/bjgp/65/634/e344.full.pdf

BACKGROUND: Physician associates [PAs] (also known as physician assistants) are new to the NHS and there is little evidence concerning their contribution in general practice. AIM: This study aimed to compare outcomes and costs of same-day requested consultations by PAs with those of GPs. DESIGN AND SETTING: An observational study of 2086 patient records presenting at same-day appointments in 12 general practices in England. METHOD: PA consultations were compared with those of GPs.

Primary outcome was re-consultation within 14 days for the same or linked problem. Secondary outcomes were processes of care. RESULTS: There were no significant differences in the rates of re-consultation (rate ratio 1.24, 95% confidence interval [CI] = 0.86 to 1.79, P = 0.25). There were no differences in rates of diagnostic tests ordered (1.08, 95% CI = 0.89 to 1.30, P = 0.44), referrals (0.95, 95% CI = 0.63 to 1.43, P = 0.80), prescriptions issued (1.16, 95% CI = 0.87 to 1.53, P = 0.31), or patient satisfaction (1.00, 95% CI = 0.42 to 2.36, P = 0.99). Records of initial consultations of 79.2% (n = 145) of PAs and 48.3% (n = 99) of GPs were judged appropriate by independent GPs (P<0.001). The adjusted average PA consultation was 5.8 minutes longer than the GP consultation (95% CI = 2.46 to 7.1; P<0.001); cost per consultation was GBP £6.22, (US$ 10.15) lower (95% CI = -7.61 to -2.46, P<0.001). CONCLUSION: The processes and outcomes of PA and GP consultations for same-day appointment patients are similar at a lower consultation cost. PAs offer a potentially acceptable and efficient addition to the general practice workforce.

Edwards, L. D., Till, A. et McKimm, J. (2019). "Leading the integration of physician associates into the UK health workforce." Br J Hosp Med (Lond) **80**(1): 18-21.

The introduction of physician associates into the UK health workforce is one of the most significant examples of potentially disruptive innovation in many years, and lessons can be learned from research into the introduction of advanced nurse practitioners. Positive, forward-looking health-care leadership is required at all levels to ensure the successful integration of physician associates into the UK workforce. This review found that organizational culture had an enormous impact on the introduction of advanced nurse practitioners and likewise will affect the integration of physician associates. The most effective strategies facilitated interprofessional, collaborative, collective and inclusive leadership and promoted high staff engagement, the development of proficient interprofessional practitioners, and a clear vision for collaborative practice. In terms of physician associates, such an approach will improve interprofessional and collaborative practice and create the supportive, motivated environment needed to facilitate the introduction of physician associates.

Erbe, B. (2014). "[Physician assistant studies" – a new career option]." Dtsch Med Wochenschr **139**(17): 872-873.
https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0033-1353986

Feindel, A., Rosenberg, G., Steinhäuser, J., et al. (2019). "Primary care practice assistants' attitudes towards tasking shifting and their perceptions of the challenges of task shifting - Development of a questionnaire." Health Soc Care Community **27**(4): e323-e333.
https://onlinelibrary.wiley.com/doi/10.1111/hsc.12736

Shifting tasks from medical staff to non-medical staff is a common practice for promoting the efficient use of healthcare resources. The aim of this study was to develop and pilot test a questionnaire that evaluates practice assistants' attitudes towards task shifting and their perceptions of the challenges of task shifting (acronym: ACD questionnaire) and to assess the psychometric properties of the questionnaire. The development and pilot testing of the questionnaire occurred from March 2016 to March 2017 and was based on guided and cognitive interviews with practice assistants. Then, an online survey was conducted throughout Germany from June to August 2017 to determine the questionnaire's psychometric properties. A factorial analysis was conducted via principal component analysis, and reliability was assessed using Cronbach's α. The questionnaire included four themes: "working conditions and job satisfaction", "confidence to execute delegated tasks", "excessive demands associated with executing delegated tasks" and "relevance of task shifting for patient care". A total of 274 practice assistants with an average age of 38.2 years participated in the online survey. Each theme included components that showed good to very good reliability (Cronbach's α 0.64-0.91). The ACD questionnaire provides a way, for the first time, to evaluate delegable tasks, including practice assistants' attitudes towards task shifting and their perceptions of the challenges generated by these tasks. The questionnaire also indicates which components of practice assistants' professional training should be intensified.

Freund, T., Peters-Klimm, F., Boyd, C. M., et al. (2016). "Medical Assistant-Based Care Management for High-Risk Patients in Small Primary Care Practices: A Cluster Randomized Clinical Trial." Ann Intern Med **164**(5): 323-330.

BACKGROUND: Patients with multiple chronic conditions are at high risk for potentially avoidable hospitalizations, which may be reduced by care coordination and self-management support. Medical assistants are an increasingly available resource for patient care in primary care practices. OBJECTIVE: To determine whether protocol-based care management delivered by medical assistants improves care in patients at high risk for future hospitalization in primary care. DESIGN: Two-year cluster randomized clinical trial. (Current Controlled Trials: ISRCTN56104508). SETTING: 115 primary care practices in Germany. PATIENTS: 2076 patients with type 2 diabetes, chronic obstructive pulmonary disease, or chronic heart failure and a likelihood of hospitalization in the upper quartile of the population, as predicted by an analysis of insurance data. INTERVENTION: Protocol-based care management, including structured assessment, action planning, and monitoring delivered by medical assistants, compared with usual care. MEASUREMENTS: All-cause hospitalizations at 12 months (primary outcome) and quality-of-life scores (12-Item Short Form Health Survey [SF-12] and EuroQol instrument [EQ-5D]). RESULTS: Included patients had an average of 4 co-occurring chronic conditions. All-cause hospitalizations did not differ between groups at 12 months (risk ratio [RR], 1.01 [95% CI, 0.87 to 1.18]) and 24 months (RR, 0.98 [CI, 0.85 to 1.12]). Quality of life (differences, 1.16 [CI, 0.24 to 2.08] on SF-12 physical component and 1.68 [CI, 0.60 to 2.77] on SF-12 mental component) and general health (difference on EQ-5D, 0.03 [CI, 0.00 to 0.05]) improved significantly at 24 months. Intervention costs totaled $10 per patient per month. LIMITATION: Small number of primary care practices and low intensity of intervention. CONCLUSION: This low-intensity intervention did not reduce all-cause hospitalizations but showed positive effects on quality of life at reasonable costs in high-risk multimorbid patients. PRIMARY FUNDING SOURCE: AOK Baden-Württemberg and AOK Bundesverband.

Gavartina, A., Zaroti, S., Szecsenyi, J., et al. (2013). "Practice assistants in primary care in Germany - associations with organizational attributes on job satisfaction." BMC Fam Pract **14**: 110.
https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/1471-2296-14-110.pdf

BACKGROUND: Job satisfaction and organizational attributes in primary care teams are important issues as they affect clinical outcomes and the quality of health care provided. As practice assistants are an integral part of these teams it is important to gain insight into their views on job satisfaction and organizational attributes. The aim of this study was to evaluate the job satisfaction of practice assistants and the organizational attributes within their general practices in Germany and to explore the existence of possible associations. METHODS: This observational study was based on a job satisfaction survey and measurement of organizational attributes in general practices in the German federal state of Baden-Wuerttemberg. Job satisfaction was measured with the 10-item 'Warr-Cook-Wall job satisfaction scale'. Organizational attributes were evaluated with the 21-items 'survey of organizational attributes for primary care' (SOAPC). Linear regression analyses were performed in which each of SOAPC scales and the overall score of SOAPC was treated as outcome variables. RESULTS: 586 practice assistants out of 794 respondents (73.8%) from 234 general practices completed the questionnaire. Practice assistants were mostly satisfied with their colleagues and least of all satisfied with their income and recognition for their work. The regression analysis showed that 'freedom of working method' and 'recognition of work', the employment status of practice assistants and the mode of practice were almost always significantly associated with each subscale and overall score of SOAPC. CONCLUSIONS: Job satisfaction is highly associated with different aspects of organizational attributes for primary care ('communication', 'decision-making' and 'stress'). Consequently, improved job satisfaction could lead to a better-organized primary care team. This implication should be investigated directly in further intervention studies with a special focus on improving the recognition for work and income.

Gehring, K. et Schwappach, D. (2014). "[Patient safety in general practice]." Z Evid Fortbild Qual Gesundhwes **108**(1): 25-31.
https://www.zefq-journal.com/article/S1865-9217(14)00012-9/fulltext

INTRODUCTION: So far, there has been a lack of systematic data regarding critical incidents and safety climate in Swiss primary care offices. Therefore, a survey was conducted amongst physicians and nurses ("MPA") working in Swiss German primary care offices leading to a subsequent project on the telephone triage. METHODS: Using a standardised questionnaire, healthcare professionals in primary care offices have been surveyed to determine safety risks and safety climate in their offices. The questionnaire consisted of safety-climate items as well as descriptions of 23 safety incidents. These incidents were rated in terms of frequency (appearance in the office during the past 12 months) and severity (harm associated with the last occurrence in the office). In addition, physicians and nurses answered an open-ended question referring to patient safety risks they would wish to eliminate in their offices. In the subsequent project, interviews and group discussions have been conducted with physicians and nurses in order to perform a process analysis of the telephone triage and to develop a tool that may help primary care offices to strengthen telephone triage as a secure process. RESULTS: 630 physicians and nurses (50.2% physicians, 49.8% nurses) participated in the study. 30% of the physicians and 17% of the nurses observed at least one of the 23 incidents in their offices on a daily or weekly basis. Errors in documentation were reported most frequently. As regards severity, the triage by nurses at the initial patient contact, errors in diagnosis, failure to monitor patients after therapeutic treatment in the office, and errors regarding the medication process were shown to be the most relevant. Most frequently participants wanted to eliminate the following risks to patient safety in their offices: medication (28% of all mentions), medical procedures in the office (11%) and telephone triage (7%). Participation in team meetings and quality circles proved to be relevant predictors of the safety climate dimension "team-based error prevention". Differences between occupational groups were found regarding safety incidents as well as safety climate. CONCLUSION: The results of this study show the telephone triage to be a relevant area of patient safety in primary care that has not been focused on so far. In order to enhance safety of the triage process a new project was initiated. The result of the project is a triage guide for primary care offices. This guide supports physicians and nurses in a joint and critical examination of office structures and processes related to telephone triage. The systematically observed differences between occupational groups indicate that the entire office team need to be involved when analysing safety risks and taking action to improve patient safety. Only in doing so, risks can be identified comprehensively. Moreover, measures can be taken that are relevant to and supported by all healthcare professionals working in a primary care office. This approach of involving the entire team forms the basis for the guide on telephone triage.

Gerlach, F. M. et Szecsenyi, J. (2013). "[Family doctor-centred care in Baden-Wuerttemberg: concept and results of a controlled evaluation study]." Z Evid Fortbild Qual Gesundhwes **107**(6): 365-371.
https://www.zefq-journal.com/article/S1865-9217(13)00163-3/fulltext

BACKGROUND AND RESEARCH QUESTION: Pursuant to Section 73b, volume V of the German Social Security Code (SGB V), the agreement on family doctor-centred care (HzV), which went into effect in Baden-Wuerttemberg on July 1, 2008, provides for spatially inclusive and comprehensive medical coverage. The most important elements of the agreement are: the voluntary registration of family practices and patients, the strengthening of the coordinative function of family practices, the fulfilment of certain training, quality and qualification requirements, the standardised remuneration system and the use of specified practice software for billing and the prescription of drugs. The aim of this complex intervention is to strengthen family medicine, improve health care, in particular for patients with chronic disease, and to limit primary health care costs while improving its quality wherever possible. This first controlled nationwide evaluation examines the question whether these objectives were met in the early phase (2008 to 2011) and, if so, to what extent. METHOD: Four work packages were defined: 1. differences in health care processes (utilisation, contact to specialists, hospitalisations, drug prescriptions); 2. developments in practice teams and of patient satisfaction; 3. deployment of specially trained health care assistants in family practices (VERAH); 4. implementation of the DEGAM (German Society of General Practice and Family Medicine) heart failure guideline. To the extent that it was possible to use the statutory health insurance company AOK Baden-Wuerttemberg's routine data, an adjusted comparison of the target variables was made for HzV- and non-HzV-insured patients between the first and second or between the third and fourth quarters of 2008, and between the first and second or third and fourth quarters of 2010. RESULTS: HzV

participants were older, had a higher disease burden (Charlson Index 1.45 vs. 1.19), and were attended to more intensively than patients receiving routine care (1.7 more contacts with the family doctor per half-year). The number of non-referred contacts to specialists fell by 12.5 %. An increase in the number of referrals and hospitalisations was not observed. Participation in structured treatment programmes was substantially higher, e.g. 15 % vs. 7.5 % (non-HzV) in DMP diabetes mellitus Type 2. In the HzV, the rise in medication costs due to family physician prescriptions (ignoring the effect of discount agreements) was lower by 2.5 %, and the me-too rate was significantly lower. Higher remuneration contributed to greater satisfaction among HzV physicians despite the perceived increase in the workload. In a survey of 2,535 patients HzV participants showed a high rate of patient satisfaction overall, and physical examinations and services aimed at preventing illness were regarded particularly favourably. A survey of 294 VERAH showed that they more often accepted patient-related tasks such as home visits, geriatric assessments, patient training, and vaccination and preventive management. Family physicians were prepared to delegate responsibilities and, as a result, felt disburdened. In accordance with the latest DEGAM guideline patients with heart failure enjoyed an improvement to an overall high level in their drug therapies with ACE inhibitors, AT1 antagonists and beta blockers. Further improvement resulting from medical quality circles and training was not observed. DISCUSSION AND CONCLUSIONS: The results confirm the findings of international studies: in particular, HzV benefits patients with chronic disease, and patients receive improved health care when they participate in the Baden-Wuerttemberg HzV. All four evaluation modules reveal that changes towards the intended direction are taking place. Family doctors assumed more responsibility for coordination. These findings reflect the early start-up phase and the development phase of HzV in Baden-Wuerttemberg. These effects, together with those of other prioritised topics, will be continuously monitored as part of an accompanying evaluation process.

Goetz, K., Campbell, S., Broge, B., et al. (2013). "Job satisfaction of practice assistants in general practice in Germany: an observational study." Fam Pract **30**(4): 411-417.

BACKGROUND: Job satisfaction of practice staff is important for optimal health care delivery and for minimizing the turnover of non-medical professions. OBJECTIVE: To document the job satisfaction of practice assistants in German general practice and to explore associations between job satisfaction, staff characteristics and culture in general practice organizations. METHODS: The study was based on data from the European Practice Assessment accreditation scheme for general practices and used an observational design. The study population consisted of 1158 practice assistants from 345 general practices across Germany. Job satisfaction was measured with the 10-item Warr-Cook-Wall questionnaire. Organizational culture was evaluated with four items. A linear regression analysis was performed in which each of the job satisfaction items was handled as dependent variable. RESULTS: Out of 1716 staff member questionnaires handed out to practice assistants, 1158 questionnaires were completed (response rate: 67.5%). Practice assistants were most satisfied with their colleagues and least satisfied with their income. Higher job satisfaction was associated with issues of organizational culture, particularly a good working atmosphere, opportunities to suggest and influence areas for improvement and clear responsibilities within the practice team. CONCLUSIONS: Prioritizing initiatives to maintain high levels of, or to improve the job satisfaction of practice assistants, is important for recruitment and retention. It will also help to improve working conditions for both practice assistants and GPs and create an environment to provide better quality care.

Grant, S. et Guthrie, B. (2018). "Between demarcation and discretion: The medical-administrative boundary as a locus of safety in high-volume organisational routines." Soc Sci Med **203**: 43-50.

Patient safety is an increasing concern for health systems internationally. The majority of administrative work in UK general practice takes place in the context of organisational routines such as repeat prescribing and test results handling, where high workloads and increased clinician dependency on administrative staff have been identified as an emerging safety issue. Despite this trend, most research to date has focused on the redistribution of the clinical workload between doctors, nurses and allied health professionals within individual care settings. Drawing on Strauss's negotiated order perspective, we examine ethnographically the achievement of safety across the medical-administrative boundary in key high-volume routines in UK general practice. We focus on two main

issues. First, GPs engaged in strategies of demarcation by defining receptionist work as routine, unspecialised and dependent upon GP clinical knowledge and oversight as the safety net to deal with complexity and risk. Receptionists consented to this 'social closure' when describing their role, thus reinforcing the underlying inter-occupational relationship of medical domination. Second, in everyday practice, GPs and receptionists engaged in informal boundary-blurring to safely accommodate the complexity of everyday high-volume routine work. This comprised additional informal discretionary spaces for receptionist decision-making and action that went beyond the routine safety work formally assigned to them. New restratified intra-occupational hierarchies were also being created between receptionists based on the complexity of the safety work that they were authorised to do at practice level, with specialised roles constituting a new form of administrative 'professional project'. The article advances negotiated order theory by providing an in-depth examination of the ways in which medical-administrative boundary-making and boundary-blurring constitute distinct modes of safety in high-volume routines. It also provides the basis for further research and safety improvement to maximise team-level understandings of the pivotal role of medical-administrative negotiations in achieving safety and mitigating risk.

Günther, H. J., Bader, C., Erlenberg, R. M., et al. (2019). "[From AGnES to PA - medical assistant professions in Germany: Who still keeps the track?]." MMW Fortschr Med **161**(Suppl 7): 21-30.

BACKGROUND: Demographic change will lead to a serious shortage of doctors in the inpatient and outpatient sectors in the next years. To ensure that medical care is provided in the future, various models of medical assistant professions have been created in the past, both at state and federal level. Due to the diversity of these training courses, advanced training courses and study paths, it is becoming increasingly difficult to keep track of fields of application, focal points of activities, etc. METHOD: An analysis of the currently existing models and professions of physician assistants was carried out. The models considered are VERAH, AgnES(zwei), EVA, MoNi, MoPra, OTA/ATA, CTA, ANP and PA. RESULTS: VERAH, AgnES(zwei), EVA, MoNi and MoPra carry out their activities in primary care. OTA/ATA, CTA, ANP and PA, on the other hand, are active in clinical inpatient care (PA also in outpatient care). All curricula show significant differences in entrance requirements, length of time and content. VERAH and AgnES(zwei), EVA, MoNi and MoPra have the lowest entrance requirements and the shortest advanced training. VERAH and AgnES(zwei) focus on case management, while OTA/ATA or CTA training and ANP as well as PA studies focus on practical clinical use and the transfer of medical knowledge. While CTAs and OTAs/ATAs can work in the surgery field only and ANP mainly in the nursing field, PA can work both in the clinical and outpatient field. CONCLUSIONS: Due to the already existing doctors shortage, which will increase in the future, medical care can only be guaranteed by interprofessional team building. To this end, the professional associations and the associations of Statutory Health-Insurance physicians are called to develop appropriate models and remuneration.

Halter, M., Drennan, V. M., Joly, L. M., et al. (2017). "Patients' experiences of consultations with physician associates in primary care in England: A qualitative study." Health Expect **20**(5): 1011-1019. https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/hex.12542?download=true

BACKGROUND: Physician associates are new to English general practice and set to expand in numbers. OBJECTIVE: To investigate the patients' perspective on consulting with physician associates in general practice. DESIGN: A qualitative study, using semi-structured interviews, with thematic analysis. SETTING AND PARTICIPANTS: Thirty volunteer patients of 430 who had consulted physician associates for a same-day appointment and had returned a satisfaction survey, in six general practices employing physician associates in England. FINDINGS: Some participants only consulted once with a physician associate and others more frequently. The conditions consulted for ranged from minor illnesses to those requiring immediate hospital admission. Understanding the role of the physician associate varied from 'certain and correct' to 'uncertain', to 'certain and incorrect', where the patient believed the physician associate to be a doctor. Most, but not all, reported positive experiences and outcomes of their consultation, with some choosing to consult the physician. Those with negative experiences described problems when the limits of the role were reached, requiring additional GP consultations or prescription delay. Trust and confidence in the physician associate was derived from trust in the NHS,

the general practice and the individual physician associate. Willingness to consult a physician associate was contingent on the patient's assessment of the severity or complexity of the problem and the desire for provider continuity. CONCLUSION: Patients saw physician associates as an appropriate general practitioner substitute. Patients' experience could inform delivery redesign.

Halter, M., Wheeler, C., Drennan, V. M., et al. (2017). "Physician associates in England's hospitals: a survey of medical directors exploring current usage and factors affecting recruitment." Clin Med (Lond) **17**(2): 126-131. https://www.rcpjournals.org/content/clinmedicine/17/2/126.full.pdf

In the UK secondary care setting, the case for physician associates is based on the cover and stability they might offer to medical teams. We assessed the extent of their adoption and deployment - that is, their current usage and the factors supporting or inhibiting their inclusion in medical teams - using an electronic, self-report survey of medical directors of acute and mental health NHS trusts in England. Physician associates - employed in small numbers, in a range of specialties, in 20 of the responding trusts - were reported to have been employed to fill gaps in medical staffing and support medical specialty trainees. Inhibiting factors were commonly a shortage of physician associates to recruit and lack of authority to prescribe, as well as a lack of evidence and colleague resistance. Our data suggest there is an appetite for employment of physician associates while practical and attitudinal barriers are yet to be fully overcome.

Hammond, J., Gravenhorst, K., Funnell, E., et al. (2013). "Slaying the dragon myth: an ethnographic study of receptionists in UK general practice." BMC Fam Pract **63**(608): e177-184. https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-020-01204-y.pdf

BACKGROUND: General practice receptionists fulfil an essential role in UK primary care, shaping patient access to health professionals. They are often portrayed as powerful 'gatekeepers'. Existing literature and management initiatives advocate more training to improve their performance and, consequently, the patient experience. AIM: To explore the complexity of the role of general practice receptionists by considering the wider practice context in which they work. DESIGN AND SETTING: Ethnographic observation in seven urban general practices in the north-west of England. METHOD: Seven researchers conducted 200 hours of ethnographic observation, predominantly in the reception areas of each practice. Forty-five receptionists were involved in the study and were asked about their work as they carried out their activities. Observational notes were taken. Analysis involved ascribing codes to incidents considered relevant to the role and organising these into related clusters. RESULTS: Receptionists were faced with the difficult task of prioritising patients, despite having little time, information, and training. They felt responsible for protecting those patients who were most vulnerable, however this was sometimes made difficult by protocols set by the GPs and by patients trying to 'play' the system. CONCLUSION: Framing the receptionist-patient encounter as one between the 'powerful' and the 'vulnerable' gets in the way of fully understanding the complex tasks receptionists perform and the contradictions that are inherent in their role. Calls for more training, without reflective attention to practice dynamics, risk failing to address systemic problems, portraying them instead as individual failings.

Heistermann, P., Lang, T., Heilmann, C., et al. (2022). "A brief introduction to PAs in Germany." Jaapa **35**(6): 52-55.

The first German physician assistant (PA) program began in 2005 at Steinbeis University in Berlin. Since 2005, there has been a rapid expansion of PA education, and 22 German universities have opened or are planning to develop PA programs. In fall 2021, about 1,100 PAs worked in Germany, mostly in the inpatient setting, with a scope of practice focused on delegation and the performance of medical and administrative activities. After completing a PA program, students are awarded a bachelor of science; programs also offer options for specialization. With no formal PA program-specific accreditation processes, the universities are responsible for ensuring the quality and content of PA courses. The profession is not regulated in Germany, and laws to guide PA education and scope of practice are necessary for the further development of the profession.

Henshall, C., Doherty, A., Green, H., et al. (2018). "The role of the assistant practitioner in the clinical setting: a focus group study." BMC Health Serv Res **18**(1): 695.
https://bmchealthservres.biomedcentral.com/counter/pdf/10.1186/s12913-018-3506-y.pdf

BACKGROUND: Assistant practitioners have knowledge and skills beyond the level of traditional support workers, and work in many clinical settings. However, some assistant practitioners lack a clearly defined role and may be under-used due to issues around accountability and uncertainty about their purpose. This paper explores the assistant practitioner role from the perspectives of assistant practitioners and registered nurses. METHODS: This study aimed to explore the role of the assistant practitioner from the perspectives of assistant practitioners and registered nurses in two NHS hospital trusts in Oxfordshire, United Kingdom. Six qualitative focus groups were undertaken between February-March 2017. Ethical approval was obtained (FREC 2016/05) and written consent was provided by participants. Data was analysed thematically analysed using the Framework method. RESULTS: Nineteen participants (assistant practitioners, n = 12; registered nurses, n = 7) were recruited using convenience sampling. Emerging themes related to 'fluctuating roles and responsibilities of assistant practitioners', 'role differences between registered nurses and assistant practitioners', 'working relationships', 'supervision' and 'redefining nursing pathways'. The Results and Discussion sections highlight a lack of role clarity and blurring of boundaries between the roles of assistant practitioners and registered nurses, with many tasks undertaken by both. This lack of ownership of 'nurse-specific' roles by registered nurses was evident and clear differences were only encountered with regard to accountability. The development of the Nursing Associate role provides managers with the opportunity to redefine staff banding hierarchies to ensure that clinical staff are aware of their role capabilities and limitations and are practicing safely, whilst promoting career development and progression pathways. CONCLUSION: Addressing issues around role clarity can benefit professional development, satisfaction, role identity and ownership for registered nurses and assistant practitioners, by recognising the individual and collective value they bring to the clinical team. The findings can help inform the development of the Nursing Associate role.

Hix, L. R. et Fernandes, S. M. (2020). "An Initial Exploration of the Physician Assistant Role in Germany." J Physician Assist Educ **31**(1): 42-47.

Hoffmann, J., Kersting, C. et Weltermann, B. (2020). "Practice assistants´ perceived mental workload: A cross-sectional study with 550 German participants addressing work content, stressors, resources, and organizational structure." PLoS One **15**(10): e0240052.
https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0240052&type=printable

INTRODUCTION: Practice assistants represent a highly relevant occupational group in Germany and one of the most popular training professions in Germany. Despite this, most research in the health care sector has focused on secondary care settings, but has not addressed practice assistants in primary care. Knowledge about practice assistants' workplace-related stressors and resources is particularly scarce. This cross-sectional study addresses the mental workload of practice assistants working in primary care practices. METHODS: Practice assistants from a network of 185 German primary care practices were invited to participate in this cross-sectional study. The standardized `Short Questionnaire for Workplace Analysis' (German: Kurzfragebogen zur Arbeitsanalyse) was used to assess practice assistants´ mental workload. It addresses eleven workplace factors in 26 items: versatility, completeness of task, scope of action, social support, cooperation, qualitative work demands, quantitative work demands, work disruptions, workplace environment, information and participation, and benefits. Sociodemographic and work characteristics were also obtained. A descriptive analysis was performed for sociodemographic data and "Short Questionnaire for Workplace Analysis" factors. The one-sided t-test and Cohen´s d were calculated for a comparison with data from 23 professional groups (n = 8,121). RESULTS: A total of 550 practice assistants from 130 practices participated. The majority of practice assistants was female (99.3%) and worked full-time (66.5%) in group practices (50.6%). Compared to the other professional groups, practice assistants reported higher values for the factor social support (4.0 versus 3.7 [d 0.44; p<0.001]), information and participation (3.6 versus 3.3 [d 0.38; p<0.001] as well as work disruptions (2.7 vs. 2.4 [d 0.42; p<0.001]), while practice assistants showed lower values regarding scope of action (3.4 versus 3.8 [d

0.43; p<0.001]). CONCLUSIONS: Our study identified social support and participation within primary care practices as protective factors for mental workload, while work disruptions and scope of action were perceived as stressors.

Hoffmann, K., Wojcewski, S., Aarendonk, D., et al. (2017). "No common understanding of profession terms utilized in health services research. An add-on qualitative study in the context of the QUALICOPC project in Austria." Wiener Klinische Wochenschrift **129**: 52-58.

This study represents an add-on study to the Quality and Costs in Primary Care (QUALICOPC) project in Austria aiming to explore the different understanding of the terminology used, particularly, regarding the professions of nursing and medical secretaries. Results show that no uniform meaning of the terms commonly utilized for health professions could be found even within one country by GPs. These findings implicate several action points for health services research and health policy. The Authors propose the development of a harmonized terminology in Europe for the health profession based on standards of undergraduate and postgraduate education, competencies and continuous education commitments. This would not only benefit comparative health system research but also patient safety across Europe

Howard, L. (2015). "[What assistant physicians unfortunately do not learn]." MMW Fortschr Med **157**(3): 36.

Howarth, S. D., Johnson, J., Millott, H. E., et al. (2020). "The early experiences of Physician Associate students in the UK: A regional cross-sectional study investigating factors associated with engagement." PLoS One **15**(5): e0232515.
https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0232515&type=printable

BACKGROUND: The number of physician associates (PAs) training and working in the UK has increased over the last few years following the proliferation of postgraduate courses. Understanding early experiences and what impacts on engagement is important if we are to appropriately support this relatively new professional group. METHODS: This paper reports on a cross-sectional analysis of the first year of data from a prospective 10-year longitudinal cohort study. First year PA students (n = 89) were enrolled from five universities in one UK region where the training programmes were less than 2 years old. Data collected were: demographic information, wellbeing, burnout and engagement, expectations, placement experience, performance and caring responsibilities. Pearson's correlations were used to examine relationships between variables and to select variables for a hierarchical regression analysis to understand which factors were associated with engagement. Descriptive statistics were calculated for questions relating to experience. RESULTS: The experiences of PA students during their first 3-6 months were mixed. For example, 78.7% of students felt that there were staff on placement they could go to for support, however, 44.8% reported that staff did not know about the role and 61.3% reported that staff did not know what clinical work they should undertake. Regression analysis found that their level of engagement was associated with their perceived career satisfaction, overall well-being, and caring responsibilities. CONCLUSIONS: The support systems required for PAs may need to be examined as results showed that the PA student demographic is different to that of medical students and caring responsibilities are highly associated with engagement. A lack of understanding around the PA role in clinical settings may also need to be addressed in order to better support and develop this workforce.

Howarth, S. D., Storr, E., Lenton, C., et al. (2019). "Implementing the Safe and Effective Clinical Outcomes (SECO) simulation to prepare physician associate students for practice." Educ Prim Care **30**(6): 387-391.

The number of physician associates (PAs) training in the United Kingdom is rising dramatically, yet the approaches to teaching this new professional group are yet to be examined. We set out to determine if and how the 'Safe and Effective Clinical Outcomes' (SECO) simulation training could help this new group of students to develop skills around conducting a consultation in primary care.Six clinics were designed and implemented over three academic years (2016-2018) in a clinical skills simulation centre in a university hospital. In total, 71 PA students took part and feedback was collected from students and simulated patients as part of routine evaluation processes. We found that the SECO simulation

training offered PA students the opportunity to practise consultation skills and review their scope of practice in a safe environment. It helped students build confidence in their approach and gave them the opportunity to discuss what it means to be a 'safe' practitioner. The simulated patients were positive about the experience but remained unsure of what the PA role was even after the simulation training. Based on our experience, the SECO clinics have value for those training PA students.

Howie, N. (2017). "Continuing professional development for Physician Associates in primary care." Educ Prim Care **28**(4): 197-200.

The Physician Associate role is relatively new to the United Kingdom and is currently undergoing a period of significant expansion. This includes an aim of 1000 PAs working in primary care by 2020. The profession has specific continuing professional development requirements which need to be addressed. These requirements can be met through the deployment of some well established pedagogical strategies which are already in use for junior doctors and allied health professionals.

Jackson, B., Marshall, M. et Schofield, S. (2017). "Barriers and facilitators to integration of physician associates into the general practice workforce: a grounded theory approach." Br J Gen Pract **67**(664): e785-e791. https://bjgp.org/content/bjgp/67/664/e785.full.pdf

BACKGROUND: Physician associates (PAs) are described as one solution to workforce capacity in primary care in the UK. Despite new investment in the role, how effective this will be in addressing unmet primary care needs is unclear. AIM: To investigate the barriers and facilitators to the integration of PAs into the general practice workforce. DESIGN AND SETTING: A modified grounded theory study in a region unfamiliar with the PA role. METHOD: No a priori themes were assumed. Themes generated from stakeholder interviews informed a literature review and theoretical framework, and were then tested in focus groups with GPs, advanced nurse practitioners (ANPs), and patients. Recorded data were transcribed verbatim, and organised using NVivo version 10.2.2, with iterative analysis of emergent themes. A reflexive diary and independent verification of coding and analysis were included. RESULTS: There were 51 participants (30 GPs, 11 ANPs, and 10 patients) in eight focus groups. GPs, ANPs, and patients recognised that support for general practice was needed to improve access. GPs expressed concerns regarding PAs around managing medical complexity and supervision burden, non-prescriber status, and medicolegal implications in routine practice. Patients were less concerned about specific competencies as long as there was effective supervision, and were accepting of a PA role. ANPs highlighted their own negative experiences entering advanced clinical practice, and the need for support to counteract stereotypical and prejudicial attitudes CONCLUSION: This study highlights the complex factors that may impede the introduction of PAs into UK primary care. A conceptual model is proposed to help regulators and educationalists support this integration, which has relevance to other proposed new roles in primary care.

Jackson, J., Bungay, H. et Smyth, T. (2015). The status of assistant practitioners in the NHS.

This article documents the findings of a stakeholder consultation to explore the perceptions of senior managers on the impact of the assistant practitioner role, scope for further implementation, and to determine the perceived barriers to assistant practitioner use in the workforce. Interviews with directors of nursing or their nominated alternates were undertaken in sixteen provider organisations in two counties in England. Five main themes were identified: identifying and locating the assistant practitioner; implementation of the assistant practitioner role, challenges to implementing the role, education and training, regulation and registration. Organisations whose leaders are committed to implementing the assistant practitioner role and have expertise in leading change will have most success with the implementation and impact of the assistant practitioner role on service delivery. Implications for nursing management: The introduction of the assistant practitioner role within the workforce needs to be undertaken by an organisational wide implementation strategy where the potential contribution of the assistant practitioner within the workforce is clearly identified and valued. [Abstract]

Joyce, P., Robinson, S. T. et Alexander, L. M. (2023). "PAs in the Republic of Ireland." Jaapa **36**(3): 1-5.

The physician associate/assistant (PA) profession was introduced into the Republic of Ireland following a 2-year pilot project with the Irish Department of Health between 2015 and 2017. Four PAs from North America were recruited into four designated surgical services at a large teaching hospital in Dublin. To date, the PA numbers are small in Ireland, with one university, in Dublin, running the program and 61 graduates working mostly in the hospital setting, with a small number in primary care. The cautious introduction of PAs partly is due to a delay in follow-up from the Department of Health after the pilot project and in the university's decision to increase the student intake slowly to ensure all graduates secure employment.

Kalininskaya, A. A., Bakirova, E. A., Kizeev, M. V., et al. (2022). "[The problems of rural health care and prospects of development]." Probl Sotsialnoi Gig Zdravookhranenniiai Istor Med **30**(6): 1224-1229. https://journal-nriph.ru/journal/article/download/1095/4507

Further reforming of the rural health care should be proceeded with special attention to availability of medical care in countryside.The purpose of the study is to develop on the basis of analysis of accounting data and research results recommendations for improving organizational forms of medical care to country dwellers. The exploration of peopleware and main performance indicators of medical organizations in rural areas was implemented.The statistical, analytical and sociological methods were applied. The reporting forms 47, 30, 12 of Federal statistical monitoring are analyzed.Results. The provision of population with medical personnel in rural municipalities in 2010-2018 increased from 12.5 to 14.5 per 10 thousand of rural population. The provision with paramedical personnel made up to 52.3%oo and during the same years indicator decreased from 55.4 to 52.3%oo. During the analysis period, 4241 feldsher obstetric posts were reduced and in 2018 their number made up to 33,350. The number of feldshers in rural areas decreased on 18.5%. In 2005-2018 number of central district hospitals and district hospitals decreased in 2.5 times. At that, provision of beds in municipalities of rural areas decreased from 49.6 to 38.8%oo. There significant winding up of district hospitals and their restructuring into branches of central district hospitals occurred. In 2018, remained only 47 out of them equipped with 1549 beds. Unfortunately, the reporting forms of the Ministry of Health of the Russian Federation do not account branches of central district hospitals. This information is to be included in accountability of the Ministry of Health.It is necessary to expand scope of authority of local government bodies in resolving medical and social problems in rural territories.

Kerlen, A. et Ballweg, R. (2017). "One PA's experiences in the Netherlands, South Africa, and Australia." Jaapa **30**(8): 39-43.

As the PA profession develops internationally, few mechanisms let PAs move from country to country for clinical practice opportunities. The first author of this paper has worked in the civilian health sectors in two countries, the Netherlands and South Africa, and taught PA students in South Africa and Australia. He reports on PA development in each country and reflects on and compares his professional and clinical experiences.

Kessler, I. et Nath, V. (2019). Re-evaluating the assistant practitioner role in NHS England : : survey findings.

AIM AND BACKGROUND: In the absence of data providing an overview on the state of the assistant practitioner (AP) workforce, this study surveys trusts in NHS England with the aim of establishing how the role is viewed, used and managed. METHODS: Based on an earlier survey undertaken around a decade ago, an online questionnaire was sent to members of an assistant practitioner network, generating a response from over fifty different trusts, drawn from different regions and health care settings. RESULTS: The survey results highlight the increased use of assistant practitioners by trusts and in a more diverse range of clinical settings. This increase has been driven more by the apparent value of the APs in addressing issues of service design and quality, than by attempts to reduce costs through substitution and skill mix dilution. CONCLUSIONS: The AP role has retained value to nurse managers in developing and designing services, and indeed in establishing a career pathway for health care assistants. Most striking are future intentions to continue using APs, particularly within the context of the emerging nursing associate (NA) role. This suggests that the AP and NA are likely to be

complementary rather than alternative roles. IMPLICATIONS FOR NURSING MANAGERS: Nurse managers might note the continuing use and value of the AP role, although as a means of improving design and quality as well as providing career opportunities for health care assistants, rather than as a way of saving labour costs. Clearly, the AP role has a future although there is scope to review its position in relation to the newly emerging nursing associate role. [Abstract]

Kessler, I. et Spilsbury, K. (2019). The development of the new assistant practitioner role in the English National Health Service : : a critical realist perspective.. Sociol Health Illn **41**(8): 1667-1684.

Adopting a critical realist perspective, this article examines the emergence of a relatively new non-professional healthcare role, the assistant practitioner (AP). The role is presented as a malleable construct cascading through and sensitive to structure–agency interaction at different levels of NHS England: the sector, organisation and department. At the core of the analysis is the permissiveness of structures established at the respective levels of the NHS, facilitating or restricting agency as the role progresses through the healthcare system. A permissive regulatory framework at the sector level is reflected in the different choices made by two case study NHS acute hospital trusts, in their engagement with the AP role. These different choices have consequences for how the AP impacts at the departmental level. [Abstract]

Klett-Tammen, C. J., Krause, G., von Lengerke, T., et al. (2016). "Advising vaccinations for the elderly: a cross-sectional survey on differences between general practitioners and physician assistants in Germany." BMC Fam Pract **17**: 98.
https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-016-0502-3.pdf

BACKGROUND: In Germany, the coverage of officially recommended vaccinations for the elderly is below a desirable level. It is known that advice provided by General Practitioners and Physician Assistants influences the uptake in patients ≥60 years. Therefore, the predictors of advice-giving behavior by these professions should be investigated to develop recommendations for possible actions for improvement. METHODS: We conducted a postal cross-sectional survey on knowledge, attitudes and advice - giving behavior regarding vaccinations in the elderly among General Practitioners and Physician Assistants in 4995 practices in Germany. To find specific predictors, we performed logistic regressions with non-advising on any officially recommended vaccination or on three specific vaccinations as four separate outcomes, first using all participants, then only General Practitioners and lastly only Physician Assistants as our study population. RESULTS: Participants consisted of 774 General Practitioners and 563 Physician Assistants, of whom overall 21 % stated to have not advised an officially recommended vaccination in elderly patients. The most frequent explanation was having forgotten about it. The habit of not counselling on vaccinations at regular intervals was associated with not advising any vaccination (OR: 2.8), influenza vaccination (OR: 2.3), and pneumococcal vaccination (OR: 3.1). While more General Practitioners than Physician Assistants felt sufficiently informed (90 % vs. 79 %, $p < 0.001$), General Practitioners displayed higher odds to not advise specific vaccinations (ORs: 1.8-2.8). CONCLUSIONS: To reduce the high risk of forgetting to advice on vaccinations, we recommend improving and promoting standing recall-systems, encouraging General Practitioners and Physician Assistants to counsel routinely at regular intervals regarding vaccinations, and providing Physician Assistants with better, tailor-made information on official recommendations and their changes.

Krause, A., Schuch, F., Braun, J., et al. (2020). "[Delegation of medical tasks in rheumatology]." Z Rheumatol **79**(2): 123-131.
https://link.springer.com/article/10.1007/s00393-020-00760-z

Modern rheumatology enables better and earlier diagnosis and therapy of inflammatory rheumatic system diseases. At the same time, the requirements for the care of rheumatologic patients have risen considerably for non-medical assistant professions and specialists for nursing professions. Since 2006 there has been established an education curriculum "Rheumatological Specialist Assistant DGRh-BDRh" (RFA) with the training to become a "Rheumatological Specialist Assistant (DGRh-BDRh)". In Europe and in parallel in Germany, assistant professions are increasingly involved in the early

detection and care of patients with rheumatic diseases and entrusted with tasks.In this work, the overarching principles for delegation of medical tasks to RFA and recommendations for the delegation are published by the Commission for Delegation of the German Society for Rheumatology (DGRh). These recommendations are based on the requirements of the German Medical Association and have been legally evaluated. With the extension of the training of the RFA board certification is aimed for "MFA for Rheumatology". These recommendations enable more transparency and security for delegating doctors and the delegated RFA's.

Kuhn, B., Kleij, K. S., Liersch, S., et al. (2017). "Which strategies might improve local primary healthcare in Germany? An explorative study from a local government point of view." BMC Fam Pract **18**(1): 105. https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-017-0696-z.pdf

BACKGROUND: Facing rising inequities and poorer accessibility of physicians in rural areas, new healthcare delivery structures are being considered to support local healthcare in German communities. To better understand perspectives on and attitudes towards different supplementary models, we examined attitudes among local politicians in the German federal state of Lower Saxony towards the suitability of supplementary care models. METHODS: As part of a cross-sectional study, we surveyed local politicians in Lower Saxony at the local authority and district levels (n = 449) by mail questionnaire. We asked for an assessment of four potential supplementary healthcare models at the local level: the use of trained medical assistants, patients' buses, mobile physicians' offices, and telemedicine. RESULTS: The response rate was 71.0% for mayors (n = 292) and 81.6% (n = 31) for county administrators. In summary, 72.4% of respondents supported the use of trained medical assistants, 48.9% voted for patients' buses, 22.0% for mobile physicians' offices, and 13.9% for telemedicine. Except for telemedicine, the politicians' approval of the supplementary models in rural areas was higher than in urban areas. The assessment regarding the suitability of each model was not significantly connected with indicators of a positively or negatively assessed local healthcare situation. The analyses showed that the use of trained medical assistants was associated with the positive effects of division of labor and potential to relieve physicians. In contrast, there was skepticism about technical support via telemedicine, mostly due to concerns about its unsuitability for elderly people and the potential lower quality of healthcare delivery. CONCLUSION: Local politicians widely accept the use of trained medical assistants, whereas the applicability of technical solutions such as telemedicine is perceived with skepticism. Therefore, the knowledge gap between evidence for and prejudices against telemedicine needs to be addressed more effectively. Reasons for the assessments of the presented models are more likely traceable to personal views than to assessments of the actual estimated local primary care situation.

Kuilman, L., Matthews, C. et Dierks, M. (2013). "Physician assistant education in Germany." J Physician Assist Educ **24**(2): 38-41.

The first physician assistant (PA) program in Germany began in 2005. As of 2013 there are three PA programs operational, with a fourth to be inaugurated in the fall of 2013. The programs have produced approximately 100 graduates, all with a nursing background. The PA model of shifting tasks from medical doctors to PAs appears to be growing among senior physicians and hospital administrators. While the development of a German PA movement is in its nascent stage, the training, deployment, and evolution of PA training programs appears underway.

Leach, C. et Wilton, E. (2008). Evaluation of assistant/associate practitioner roles across NHS South Central. Colchester :, NHS Education South Central
http://www.workforce.southcentral.nhs.uk/pdf/NESC_Evaluation_Report_Final_20090212.pdf

Lewis, D. M., Naidoo, C., Perry, J., et al. (2016). "The Roundhouse: an alternative model for primary care." Br J Gen Pract **66**(646): e362-364.
https://bjgp.org/content/bjgp/66/646/e362.full.pdf

Limb, M. (2016). "Physician assistants can lighten doctors' workload but are a challenge to professional boundaries." Bmj **354**: i4664.

https://www.bmj.com/content/354/bmj.i4664

Litchfield, I., Burrows, M., Gale, N., et al. (2022). Understanding the invisible workforce : : lessons for general practice from a survey of receptionists.
https://doi.org/10.1186/s12875-022-01842-4

INTRODUCTION: The significance of the role of receptionists during the recent shift to remote triage has been widely recognised and they will have a significant role to play in UK general practice as it continues to cope with a huge increase in demand exacerbated by the Covid-19 pandemic. To maximise their contribution, it is important the social and occupational characteristics of the modern receptionist are understood, alongside their attitudes towards the role and their perceptions of the support and training they receive. METHODS: We used convenience and cross-sectional sampling to survey the demographic characteristics of receptionists and various aspects of their role and responsibilities. This included the training received, specific tasks performed, job satisfaction, the importance of the role, and their interaction with clinical and non-clinical colleagues. We also captured data on the characteristics of their practice including the number of GPs and location. RESULTS: A total of 70 participants completed the survey (16 postal and 54 online responses) of whom the majority were white (97.2 per cent), female (98.6 per cent), and aged 40 and over (56.7 per cent). The majority of the training focussed on customer service (72.9 per cent), telephone (64.3 per cent), and medical administration skills (58.6 per cent). Just over a quarter had received training in basic triage (25.7 per cent). A standard multiple regression model revealed that the strongest predictor of satisfaction was support from practice GPs ($\beta = .65$, $p < .001$) there were also significant positive correlations between satisfaction and appreciation from GPs, $r(68) = .609$, $p < .001$. CONCLUSION: This study has provided a much-needed update on the demographics, duties, and job satisfaction of GP receptionists. The need for diversification of the workforce to reflect the range of primary care patients warrants consideration in light of continuing variation in access along lines of gender and ethnicity. Training continues to focus on administrative duties not on the clinically relevant aspects of their role such as triage

Litchfield, I., Gale, N., Burrows, M., et al. (2016). "Protocol for using mixed methods and process improvement methodologies to explore primary care receptionist work." BMJ Open **6**(11): e013240.
https://bmjopen.bmj.com/content/bmjopen/6/11/e013240.full.pdf

INTRODUCTION: The need to cope with an increasingly ageing and multimorbid population has seen a shift towards preventive health and effective management of chronic disease. This places general practice at the forefront of health service provision with an increased demand that impacts on all members of the practice team. As these pressures grow, systems become more complex and tasks delegated across a broader range of staff groups. These include receptionists who play an essential role in the successful functioning of the surgery and are a major influence on patient satisfaction. However, they do so without formal recognition of the clinical implications of their work or with any requirements for training and qualifications. METHODS AND ANALYSIS: Our work consists of three phases. The first will survey receptionists using the validated Work Design Questionnaire to help us understand more precisely the parameters of their role; the second involves the use of iterative focus groups to help define the systems and processes within which they work. The third and final phase will produce recommendations to increase the efficiency and safety of the key practice processes involving receptionists and identify the areas and where receptionists require targeted support. In doing so, we aim to increase job satisfaction of receptionists, improve practice efficiency and produce better outcomes for patients. ETHICS AND DISSEMINATION: Our work will be disseminated using conferences, workshops, trade journals, electronic media and through a series of publications in the peer reviewed literature. At the very least, our work will serve to prompt discussion on the clinical role of receptionists and assess the advantages of using value streams in conjunction with related tools for process improvement.

Litchfield, I., Gale, N., Burrows, M., et al. (2017). "The future role of receptionists in primary care." Br J Gen Pract **67**(664): 523-524.
https://bjgp.org/content/bjgp/67/664/523.full.pdf

Lovink, M. H., Persoon, A., van Vught, A., et al. (2017). "Substituting physicians with nurse practitioners, physician assistants or nurses in nursing homes: protocol for a realist evaluation case study." BMJ Open **7**(6): e015134.
https://bmjopen.bmj.com/content/bmjopen/7/6/e015134.full.pdf

> INTRODUCTION: In developed countries, substituting physicians with nurse practitioners, physician assistants and nurses (physician substitution) occurs in nursing homes as an answer to the challenges related to the ageing population and the shortage of staff, as well as to guarantee the quality of nursing home care. However, there is great diversity in how physician substitution in nursing homes is modelled and it is unknown how it can best contribute to the quality of healthcare. This study aims to gain insight into how physician substitution is modelled and whether it contributes to perceived quality of healthcare. Second, this study aims to provide insight into the elements of physician substitution that contribute to quality of healthcare. METHODS AND ANALYSIS: This study will use a multiple-case study design that draws upon realist evaluation principles. The realist evaluation is based on four concepts for explaining and understanding interventions: context, mechanism, outcome and context-mechanism-outcome configuration. The following steps will be taken: (1) developing a theory, (2) conducting seven case studies, (3) analysing outcome patterns after each case and a cross-case analysis at the end and (4) revising the initial theory. ETHICS AND DISSEMINATION: The research ethics committee of the region Arnhem Nijmegen in the Netherlands concluded that this study does not fall within the scope of the Dutch Medical Research Involving Human Subjects Act (WMO) (registration number 2015/1914). Before the start of the study, the Board of Directors of the nursing home organisations will be informed verbally and by letter and will also be asked for informed consent. In addition, all participants will be informed verbally and by letter and will be asked for informed consent. Findings will be disseminated by publication in a peer-reviewed journal, international and national conferences, national professional associations and policy partners in national government.

Lovink, M. H., van Vught, A., Persoon, A., et al. (2019). "Skill mix change between physicians, nurse practitioners, physician assistants, and nurses in nursing homes: A qualitative study." Nurs Health Sci **21**(3): 282-290.
https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/nhs.12601?download=true

> Nursing home physicians face heavy workloads, because of the aging population and rising number of older adults with one or more chronic diseases. Skill mix change, in which professionals perform tasks previously reserved for physicians independently or under supervision, could be an answer to this challenge. The aim of this study was to describe how skill mix change in nursing homes is organized from four monodisciplinary perspectives and the interdisciplinary perspective, what influences it, and what its effects are. The study focused particularly on skill mix change through the substitution of nurse practitioners, physician assistants, or registered nurses for nursing home physicians. Five focus group interviews were conducted in the Netherlands. Variation in tasks and responsibilities was found. Despite this variation, stakeholders reported increased quality of health care, patient centeredness, and support for care teams. A clear vision on skill mix change, acceptance of nurse practitioners, physician assistants, and registered nurses, and a reduction of legal insecurity are needed that might maximize the added value of nurse practitioners, physician assistants, and registered nurses.

Lovink, M. H., van Vught, A., Persoon, A., et al. (2018). "Skill mix change between general practitioners, nurse practitioners, physician assistants and nurses in primary healthcare for older people: a qualitative study." BMC Fam Pract **19**(1): 51.
https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-018-0746-1.pdf

> BACKGROUND: More and more older adults desire to and are enabled to grow old in their own home, regardless of their physical and mental capabilities. This change, together with the growing number of older adults, increases the demand for general practitioners (GPs). However, care for older people lacks prestige among medical students and few medical students are interested in a career in care for older people. Innovative solutions are needed to reduce the demand for GPs, to guarantee quality of

healthcare and to contain costs. A solution might be found in skill mix change by introducing nurse practitioners (NPs), physician assistants (PAs) or registered nurses (RNs). The aim of this study was to describe how skill mix change is organised in daily practice, what influences it and what the effects are of introducing NPs, PAs or RNs into primary healthcare for older people. METHODS: In total, 34 care providers working in primary healthcare in the Netherlands were interviewed: GPs (n = 9), NPs (n = 10), PAs (n = 5) and RNs (n = 10). Five focus groups and 14 individual interviews were conducted. Analysis consisted of open coding, creating categories and abstraction. RESULTS: In most cases, healthcare for older people was only a small part of the tasks of NPs, PAs and RNs; they did not solely focus on older people. The tasks they performed and their responsibilities in healthcare for older people differed between, as well as within, professions. Although the interviewees debated the usefulness of proactive structural screening on frailty in the older population, when implemented, it was also unclear who should perform the geriatric assessment. Interviewees considered NPs, PAs and RNs an added value, and it was stated that the role of the GP changed with the introduction of NPs, PAs or RNs. CONCLUSIONS: The roles and responsibilities of NPs, PAs and RNs for the care of older people living at home are still not established. Nonetheless, these examples show the potential of these professionals. The establishment of a clear vision on primary healthcare for older people, including the organisation of proactive healthcare, is necessary to optimise the impact of skill mix change.

Maier, C. B., Batenburg, R., Birch, S., et al. (2018). "Health workforce planning: which countries include nurse practitioners and physician assistants and to what effect?" Health Policy **122**(10): 1085-1092.

BACKGROUND: An increasing number of countries are introducing new health professions, such as Nurse Practitioners (NPs) and Physician Assistants (PAs). There is however limited evidence, on whether these new professions are included in countries' workforce planning. METHODS: A cross-country comparison of workforce planning methods. Countries with NPs and/or PAs were identified, workforce planning projections reviewed and differences in outcomes were analysed, based on a review of workforce planning models and a scoping review. Data on multi-professional (physicians/NPs/PAs) vs. physician-only models were extracted and compared descriptively. Analysis of policy implications was based on policy documents and grey literature. RESULTS: Of eight countries with NPs/PAs, three (Canada, the Netherlands, United States) included these professions in their workforce planning. In Canada, NPs were partially included in Ontario's needs-based projection, yet only as one parameter to enhance efficiency. In the United States and the Netherlands, NPs/PAs were covered as one of several scenarios. Compared with physician-only models, multi-professional models resulted in lower physician manpower projections, primarily in primary care. A weakness of the multi-professional models was the accuracy of data on substitution. Impacts on policy were limited, except for the Netherlands. CONCLUSIONS: Few countries have integrated NPs/PAs into workforce planning. Yet, those with multi-professional models reveal considerable differences in projected workforce outcomes. Countries should develop several scenarios with and without NPs/PAs to inform policy.

Malik, B. H. (2019). "Medical associate professionals are the way forward." Bmj **365**: l4246. https://www.bmj.com/content/365/bmj.l4246

Marschall, T. et Hoffmann, M. (2019). "[First Insights into Scope of Practice and Salary of Physician Assistants, A New Healthcare Profession, in Germany]." Gesundheitswesen **81**(1): 9-16. https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0043-102182

BACKGROUND: In 2010, the first government-approved physician assistant (PA) program was introduced at the Baden-Wuerttemberg Cooperative State University Karlsruhe (DHBW). There are not sufficient data regarding the scope of practice and salary of our graduates. Therefore, the aim of the present study was to obtain information regarding these. METHODS: The survey included all graduates (2 classes, n=27). A specific questionnaire was developed, including 37 questions e. g. on the current employment status, scope of practice, salary and job satisfaction regarding the PA program and career. A descriptive analysis of the data was carried out using SPSS. RESULTS: 25 graduates participated in the survey (96.1%); the average age of participants was 32.2 years (25-53 years). 88% (n=22) were employed as a PA, most of them worked in internal medicine (n=11) or surgery (n=9).

Responsibilities that are often or very often assigned to the PAs are preparing final documents, taking over a coordinating role in the therapeutic team, as well as participation in taking patient medical history and conducting physical examinations. In two-thirds of respondents, the gross monthly base salary (full-time position) was about 3000 euros. 77.3% (n=17) of graduates were generally satisfied or very satisfied with their current situation. CONCLUSIONS: It appears that graduates of the DHBW are well integrated into the staff structure of hospitals, as far as the scope of practice and average salary are concerned. Further studies on the integration of this new profession in Germany and on their extended scope of practice in comparison to established healthcare professions will be conducted.

McCartney, M. (2017). "Margaret McCartney: Are physician associates just "doctors on the cheap"?" Bmj **359**: j5022.
https://www.bmj.com/content/bmj/359/bmj.j5022.full.pdf

McKimm, J., Harris, W. et Till, A. (2019). "The role of the physician associate in the modern NHS workforce." Br J Hosp Med (Lond) **80**(1): 6-7.

Meehan, D., Balhareth, A., Gnanamoorthy, M., et al. (2019). "Efficacy of physician associate delivered virtual outpatient clinic." Int J Health Care Qual Assur **32**(7): 1072-1080.

PURPOSE: The capacity available to deliver outpatient surgical services is outweighed by the demand. Although additional investment is sometimes needed, better aligning resources, increasing operational efficiency and considering new processes all have a role in improving delivering these services. The purpose of this paper is to evaluate the safety of a physician associate (PA) delivered virtual outpatient department (VOPD) consultation service that was established in a General and Colorectal Surgery Department at an Irish teaching hospital. DESIGN/METHODOLOGY/APPROACH: A series of low-risk surgical patients were referred by senior surgeons to a PA delivered virtual clinic (VOPD). Medical records belonging to half the included patients were randomly selected for review by two doctors three months following discharge back to primary care to confirm appropriate standards of care and documentation and to audit any recorded adverse incidents or outcomes. FINDINGS: In total, 191 patients had been reviewed by the PA in the VOPD with 159 discharged directly back to primary care. Among the 95 medical records that were reviewed by the NCHDs, there were no recorded adverse incidents after discharge. Medical record keeping was deficient in 1 out of 95 reviewed cases. PRACTICAL IMPLICATIONS: Using a PA delivered VOPD consultation appears to have a role in following up patients who have undergone low-risk procedures irrespective of age or co-morbidity when selected appropriately. This may assist in reducing the demand on outpatient services by reducing unnecessary return visits, thereby increasing the capacity for new referrals. ORIGINALITY/VALUE: While there are reported examples to date of virtual clinics, these relate to services delivered by registered medical practitioners. Here, the authors demonstrate the acceptability of this model of care in an Irish population as delivered by a PA.

Meijer, K. et Kuilman, L. (2017). "Patient satisfaction with PAs in the Netherlands." Jaapa **30**(5): 1-6.

Physician assistants (PAs) were introduced in the Netherlands in 2002 and are now widely deployed. However, little is known about patient satisfaction with Dutch PAs. A comparative study of patient satisfaction was undertaken in the primary care setting. Patients seen by general practitioners (GPs) and PAs were surveyed using the Consumer Quality Index, a European quality survey instrument. Quality of performance indicators included patient satisfaction, effectiveness of treatment, and safety of treatment. The results found that few differences emerged, and Dutch patients appear to be as satisfied with the care received by PAs as with GPs.

Mergenthal, K. et Güthlin, C. (2021). "[Predictors of job satisfaction among health care assistants]." Z Evid Fortbild Qual Gesundhwes **167**: 78-85.
https://www.zefq-journal.com/article/S1865-9217(21)00172-0/fulltext

INTRODUCTION: Against a background of falling staff levels, rising care needs and the expectation that health care assistants (HCAs) are to be more actively involved in the provision of health care in the

future, job satisfaction plays an important role in motivating HCAs to pursue the profession over the long term. QUESTION: How satisfied are HCAs with various aspects of their work and what socio-demographic factors have an influence on job satisfaction? METHODS: The data analysed was obtained from six different research projects (2011-2017). In all the projects, the job satisfaction of HCAs was surveyed using a standardised seven-step Warr-Cook-Wall questionnaire. The analysis of the 10 items was carried out both descriptively and using ordinal regression analysis to identify predictors. RESULTS: Total of 2,371 HCAs were satisfied with their job situation (mean 5.2± 1.6), whereby satisfaction was lowest with regard to salary (mean 3.73± 1.9) and employee recognition (mean 4.76± 1.8). HCAs that had completed additional training to become specially qualified Health Care Assistants in the Family Practice (VERAH) or Non-physician Practice Assistants (NPA) (n=452) were more satisfied in their jobs in almost all respects, compared to health care assistants that had no additional qualification (n=1,676) (mean 5.67± 1.4 vs. 5.16± 1.5, $p < 0.00$). Overall satisfaction was positively influenced by higher age, qualification as a VERAH/NPA, higher workload, and urban location of the practice. CONCLUSION: Measures to raise the attractiveness of the profession of HCA might include an increase in possibilities to undergo additional training, appropriate remuneration and adequate employee recognition. In this way, the largest occupational group in outpatient care could be provided with a satisfactory professional future.

Meyer-Treschan, T., Busch, D., Farhan, N., et al. (2021). "What is the contribution of physician assistants to health care in Germany? A differentiation between physician assistants and physicians in training." Zeitschrift Fur Evidenz Fortbildung Und Qualitaet Im Gesundheitswesen **164**: 15-22.
<Go to ISI>://WOS:000688465800003

Background: Physicians in training are major contributors to the German health care system. After graduation from medical school, physicians in training qualify for a certain specialty. The workload of physicians in training in Germany is so high that they have expressed their need for support. One opportunity to support physicians in training is by delegating tasks to physician assistants (medical assistants qualified by a specific course of study, graduated from universities of applied sciences). However, there is a lack of knowledge about the qualification of physician assistants and the conditions which allow support of physicians in training by physician assistants in Germany. Methods: Based on a focused internet search, this paper describes the development of the profession physician assistance in Germany and the currently offered graduation courses including their duration and qualification requirements. Furthermore, we present available recommendations for the content of physician assistants' education and characterize conditions for the support of physicians in training by physician assistants. Results: In Germany, physician assistance has been an academic discipline since 2005, the profession is, however, still quite seldom. Qualification requirements and the duration of education are determined by the universities. The aim is to qualify students for several competencies, which enable physician assistants to perform tasks of physicians under delegation. The conditions for delegation to physicians in training and to physician assistants are quite similar, resulting in partly comparable practice. Major differences relate to the so called "physician reservation" or physicians' core area, both of which define tasks that may only be carried out by physicians. Discussion: Integrating physician assistants into a medical team means supporting the specialists by delegating tasks, thus reducing the workload of all physicians in the team, including physicians in training. Currently, there are no data on and no outcomes of the performance of physician assistants in Germany. Conclusion: In everyday practice, health care delivered by physician assistants and by physicians in training is similar, at least as regards activities and tasks that do not need physician supervision.

Meyer-Treschan, T., Busch, D., Farhan, N., et al. (2021). "[What is the contribution of physician assistants to health care in Germany? A differentiation between physician assistants and physicians in training]." Z Evid Fortbild Qual Gesundhwes **164**: 15-22.
https://www.zefq-journal.com/article/S1865-9217(21)00089-1/pdf

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Meyer-Treschan, T., Stegemann, A. K., Sebastian, J., et al. (2022). "[Healthcare in Germany: Including Physician Assistants into the Team of Physicians]." Gesundheitswesen.
https://www.thieme-connect.de/products/ejournals/abstract/10.1055/a-1718-3132

BACKGROUND: Physicians in Germany are overburdened. Delegation of tasks to Physician Assistants (PA) is one way of providing relief. Although PA work in Germany since 2012, few data are available. We studied advantages and disadvantages from those physicians point of view, who cooperate with PA since years, as well as working conditions, satisfaction and duration of work processes of PA. METHOD: Semi-quantitative cross-sectional survey on a course of PA graduates and the physicians they work with since three years. Retrospective analysis of patients´ waiting time and duration of stay in an emergency department. RESULTS: Physicians were very satisfied with PA and reported a high degree of relief from workload. PA were highly satisfied with their job. Processing time in the emergency department was not longer when a PA was involved in patient care. CONCLUSION: Physicians are satisfied with PA as they are relieved from a heavy workload. More data on effectiveness and efficiency of PA in Germany are needed.

Miller, L. (2013). Assistant practitioners in the NHS : : drivers, deployment, development. Bristol, Skills for Health
http://www.employment-studies.co.uk/system/files/resources/files/sfh0313.pdf
http://www.skillsforhealth.org.uk/resources/reports/research-and-intelligence-library/research-themes

Miller, L., Williams, J. et Marvell, R. (2015). Assistant practitioners in the NHS in England. Bristol, Skills for Health
http://www.skillsforhealth.org.uk/resources/reports/research-and-intelligence-library/research-themes/175-assistant-practitioners-in-england-report
http://www.skillsforhealth.org.uk/resources/reports/research-and-intelligence-library/research-themes

Nelson, P. A., Bradley, F., Martindale, A. M., et al. (2019). "Skill-mix change in general practice: a qualitative comparison of three 'new' non-medical roles in English primary care." Br J Gen Pract **69**(684): e489-e498.
https://bjgp.org/content/bjgp/69/684/e489.full.pdf

BACKGROUND: General practice is currently facing a significant workforce challenge. Changing the general practice skill mix by introducing new non-medical roles is recommended as one solution; the literature highlights that organisational and/or operational difficulties are associated with skill-mix

changes. AIM: To compare how three non-medical roles were being established in general practice, understand common implementation barriers, and identify measurable impacts or unintended consequences. DESIGN AND SETTING: In-depth qualitative comparison of three role initiatives in general practices in one area of Greater Manchester, England; that is, advanced practitioner and physician associate training schemes, and a locally commissioned practice pharmacist service. METHOD: Semi-structured interviews and focus groups with a purposive sample of stakeholders involved in the implementation of each role initiative were conducted. Template analysis enabled the production of pre-determined and researcher-generated codes, categories, and themes. RESULTS: The final sample contained 38 stakeholders comprising training/service leads, role holders, and host practice staff. Three key themes captured participants' perspectives: purpose and place of new roles in general practice, involving unclear role definition and tension at professional boundaries; transition of new roles into general practice, involving risk management, closing training-practice gaps and managing expectations; and future of new roles in general practice, involving demonstrating impact and questions about sustainability. CONCLUSION: This in-depth, in-context comparative study highlights that introducing new roles to general practice is not a simple process. Recognition of factors affecting the assimilation of roles may help to better align them with the goals of general practice and harness the commitment of individual practices to enable role sustainability.

Parle, J. (2015). "Physician associates in the United Kingdom." Jaapa **28**(2): 14-15.

Parle, J. et Ennis, J. (2015). Physician associates : : the challenge facing general practice. Br J Gen Pract **65**(634): 224-225.
http://bjgp.org/content/65/634/224.long

UK medicine is facing a 'perfect storm' of rising expectations, an ageing population with more complex and chronic needs, and a growing number of interventions that we can offer. Delivery of comprehensive high-quality care in general practice is also threatened by the increasing shift in workload from secondary care to primary care and the age profile of the GP workforce, as many GPs contemplate retirement (or indeed have already retired), go part-time or leave the profession entirely. Recruitment is also stuttering with only one in ten newly-qualified doctors choosing a career in general practice and GP registrar posts going unfilled. Family medicine is groaning under the strain: are physician associates (PAs) part of the solution? [Introduction]

Peate, I. (2016). "The physician's associate." Br J Nurs **25**(10): 533.

Ramer, S. C. (2018). "The Russian feldsher: A PA prototype in transition." Jaapa **31**(11): 1-6.

The feldsher is a physician assistant (PA) prototype. Developed in Russia during the 19th century to serve as healthcare personnel at a time of physician scarcity, feldshers provided medical services throughout the Russian Empire and later Soviet Union. Their medical role from the mid-19th century until the Bolshevik revolution in 1917 was crucial, particularly in rural and underserved regions. During wartime, many served in the military as medics. During the late 20th century, feldshers' numbers waned compared with physicians and nurses. In the 21st century, they remain a presence in the Russian medical system but their future is in transition as their numbers decline. However, earlier this year, Russian President Vladimir Putin urged the Russian State Duma to create more feldsher-midwife stations in rural areas. This indicates that the Russian government, at the highest levels, see the need for more feldshers to serve, essentially, as PAs in remote areas.

Rimmer, A. (2014). Will physician associates be replacing doctors? Bmj.
http://careers.bmj.com/careers/advice/view-article.html?id=20019162??
https://www.jstor.org/stable/26517142

The number of physician associates working in the NHS is set to increase by more than 100 in the next few years. Abi Rimmer examines what physician associates do and how their roles are expanding. [Introduction]

Rimmer, A. (2016). Physician associates : : what do they do? Bmj
DOI: 10.1136/bmj.i4661

Abi Rimmer looks at the roles carried out by this new breed of healthcare worker. [Introduction]

Rimmer, A. (2018). How has the evolution of medical associate professions affected doctors?

Physician associate roles have been proposed as a way of filling workforce gaps and freeing doctors' time. But doctors themselves have raised concerns about the scope of physician associates' practice, their length of training, and the possibility that their training will encroach on that of junior doctors. [Abstract]

Ripley, K. et Hoad, B. (2016). "Supporting assistant practitioners during their training." Nurs Stand **30**(48). http://journals.rcni.com/nursing-standard/supporting-assistant-practitioners-during-their-training-ns.2016.e10114

Assistant practitioners, also known as associate practitioners, provide support to the registered healthcare workforce, practising with advanced knowledge and skills. Assistant practitioners require substantial training to obtain the skills and knowledge required for the role. This article identifies the challenges trainee assistant practitioners may encounter, and makes recommendations for how they can be best supported. The core areas where trainee assistant practitioners require support from their colleagues and mentors are workload, role clarity, mentoring, academic challenge and recognition as learners. [Abstract]

Ritsema, T. S. et Roberts, K. A. (2016). "Job satisfaction among British physician associates." Clin Med (Lond) **16**(6): 511-513.
https://www.rcpjournals.org/content/clinmedicine/16/6/511.full.pdf

All British physician associates (PAs) were invited to participate in the annual census of the UK Association of Physician Associates (UKAPA) in May 2014. Each participant completed the Cooper 10-item Job Satisfaction Scale and a PA-specific job satisfaction survey. In general, PAs were found to be satisfied with their work. No factor assessed by the survey had lower than a 66.6% satisfaction rate. Of the factors assessed, PAs were most satisfied with their relationships with the doctors on their teams. They were least satisfied with their ability to use their training and abilities, with only 66.6% of participants reporting satisfaction with this aspect of their work. Like their American colleagues, British PAs are generally satisfied with their work. They are least satisfied with their ability to fully use their training, which is likely due to the youth of the profession, lack of prescriptive rights and lack of understanding of the PA role.

Ritsema, T. S., Roberts, K. A. et Watkins, J. S. (2019). "Explosive Growth in British Physician Associate Education Since 2008." J Physician Assist Educ **30**(1): 57-60.

Physician associate (PA) education in the United Kingdom has grown substantially since the establishment of 4 PA education programs in the late 2000s. From those 4 programs in 2008, the number of universities educating PAs fell to a nadir of 2 programs in 2012 and then rose to 29 by the end of 2017. Due to program closures, the number of students enrolled in the early years fluctuated substantially. In 2008, 43 students entered PA education; in 2010, only 17 students started PA training, but in 2017, the number of students enrolled in PA programs soared to 853. Early in the course of PA education, programs were only offered in the greater London and West Midlands areas of England. As of 2017, PAs were being educated in all 4 countries of the United Kingdom, although the explosive growth in the number of programs is expected to slow as 2020 nears.

Rizzolo, D., Leonard, D. R. et Massey, S. L. (2017). "Factors that Influence a Physician Assistant/Associate Student Career Choice: An Exploratory Study of Students from the United States and United Kingdom." J Physician Assist Educ **28**(3): 149-152.

Roberts, S., Howarth, S., Millott, H., et al. (2019). "WORKFORCE: 'What can you do then?' Integrating new roles into healthcare teams: Regional experience with physician associates." Future Healthc J **6**(1): 61-66.

In the context of NHS workforce shortages, providers are increasingly looking to new models of care, diversifying the workforce and introducing new roles such as physician associates (PAs) into clinical teams. The current study used qualitative methods to investigate how PAs are integrated into a workforce in a region largely unfamiliar with the profession. We conducted an observational study examining factors that facilitated and challenged PA integration. Findings suggest that the factors influencing PA integration relate to attributes of the individual, interpersonal relationships and organisational elements. From these, five key considerations have been derived which may aid organisations when planning to integrate new roles into the clinical workforce: prior to introducing PAs organisations should consider how to fully inform current staff about the PA profession; how to define the role of the PA within teams including clinical supervision arrangements; investment in educational and career development support for PAs; communication of remuneration to existing staff and conveying an organisational vision of PAs within the future workforce. Through consideration of these areas, organisations can facilitate role integration, maximising the potential of the workforce to contribute to sustainable healthcare provision.

Rodrigo, O., Caïs, J. et Monforte-Royo, C. (2017). "Professional responsibility and decision-making in the context of a disease-focused model of nursing care: The difficulties experienced by Spanish nurses." Nurs Inq **24**(4).
https://onlinelibrary.wiley.com/doi/10.1111/nin.12202

When, in 1977, nurse education in Spain was transferred to universities a more patient-centred, the Anglo-American philosophy of care was introduced into a context in which nurses had traditionally prioritised their technical skills. This paper examines the characteristics of the nurse's professional role in Spain, where the model of nursing practice has historically placed them in a position akin to that of physician assistants. The study design was qualitative and used the method of analytic induction. Participants were selected by means of theoretical sampling and then underwent in-depth interviews. The resulting material was analysed using an approach based on the principles of grounded theory. Strategies were applied to ensure the credibility, transferability, dependability and confirmability of the findings. The main conclusion is that nurses in Spain continue to work within a disease-focused model of care, making it difficult for them to take responsibility for decision-making.

Rodrigo, O., Caïs, J. et Monforte-Royo, C. (2017). "Transfer of nurse education to universities under a model of person-centred care: A consequence of changes in Spanish society during the democratic transition." Nurse Educ Today **54**: 21-27.

BACKGROUND: In Spain the transfer of nurse education to universities was accompanied by a shift towards a model of person-centred care. AIM: To explore whether the change in nurses' professional profile (from physician assistant to providers of person-centred care) was a response to changing needs in Spanish society. DESIGN: Qualitative study. METHODS: Theoretical sampling and in-depth interviews using an inductive analytical approach. RESULTS: Four categories described the nursing profession in Spain prior to the introduction of university training: the era of medical assistants; technologisation of hospitals; personal care of the patient based on Christian values; professional socialisation differentiated by gender. Further analysis showed that these categories could be subsumed under a broader core category: the transfer of nurse education to universities as part of Spain's transition to democracy. CONCLUSION: The transfer of nurse education to universities was one of several changes occurring in Spanish society during the country's transition to democratic government. The redefined public health system required a highly skilled workforce, with improved employment rights being given to female health professionals, notably nurses.

Schmiedhofer, M. H., Brandner, S. et Kuhlmey, A. (2017). "[Delegation of Medical Treatment to Non-physician Health Care Professionals: The Medical Care Structure agneszwei in Brandenburg - A Qualitative Acceptance Analysis]." Gesundheitswesen **79**(6): 453-460.
https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0035-1555943

Backround: To address the increasing shortage of primary care physicians in rural regions, pilot model projects were tested, where general practitioners delegate certain physician tasks including house calls to qualified physician assistants. Evaluations show a high level of acceptance among participating physicians, medical assistants and patients. This study aims to measure the quality of cooperation among professionals participating in an outpatient health care delegation structure agnes(zwei) with a focus on case management in Brandenburg. Methods: We conducted 10 qualitative semi-structured expert interviews among 6 physicians and 4 physician's assistants. Results: Physicians and physicians' assistants reported the cooperative action to be successful and as an advantage for patients. The precondition for successful cooperation is that non-physician health care professionals strictly respect the governance of the General Practitioners. Physicians report that the delegation of certain medical tasks reduces their everyday workload. Physician assistants derive professional satisfaction from the confidential relationship they have with the patients. All physician assistants are in favor of medical tasks being delegated to them in regular medical outpatient care, while most physicians are skeptical or reluctant despite their reported positive experience. Conclusion: Despite the high level of acceptance of delegating some medical tasks to physician assistants, the negotiation process of introducing cooperative working structures in the outpatient health care system is still at the beginning.

Schoierer, J., Lob-Corzilius, T., Wermuth, I., et al. (2017). "[Does the Prevention Act Improve Prevention in Pediatric Outpatient Settings!?]." Gesundheitswesen **79**(3): 174-178.
https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0042-102340

Aim of the study: The Prevention Act was adopted by the German Federal Parliament on 18.06.2015. The paediatric practice is an important place from which to reach out to children and teenagers and to positively influence them through targeted prevention services in their health-related behaviour. It is therefore an important setting for the implementation of the Prevention Act. Could the delegation of prevention services to qualified medical assistants promote the successful implementation of the Prevention Act? Since 2003, medical assistants have qualified as "Prevention Assistants" after completing training courses and offered support in preventive services to children and teenagers in the paediatrician's office. The aim of this study was to improve the effectiveness of the training to increase the competence of the participants, expansion of preventive services for children and teenagers in the paediatrician's office and reduction of physician workload. Methodology: Training was accompanied by ongoing evaluation; there were two extensive studies in 2009 and 2011, respectively. Between 2003 and 2006 (n=126, after 75% response rate) and in 2011 (n=119 after 24% response rate), participants were assessed with standardized questionnaires, and in the survey of 2011, their employers also were interviewed, (n=76, after 22% response rate). Results: The prevention assistants assess their learning successes as good and are able to take over delegated tasks in the paediatrician's office. The involvement of a trained prevention assistant contributed to the transformation and re-establishment of prevention offers in paediatrician's offices and reduced physician workload. 44% of physicians felt that the time saved by prevention assistant was very good or good, 80% of physicians surveyed also indicated that prevention assistants carried out preventive consultations in the doctor's office. Conclusion: In light of the paediatricians' workload and their own wishes and demands, and for a targeted implementation of the Prevention Act, it is necessary to delegate preventive services to trained personnel. It is also possible to accomplish this task. It is necessary to introduce billing numbers in the fee schedule for doctors similar to the billing numbers for dental health prophylaxis.

Schüler, G. (2013). "[New job profiles for medical assistants (MFA) in care provision for elderly people - project in the framework of the funding initiative of the German Medical Association (Bundesärztekammer) for research on care provision]." Gesundheitswesen **75**(8-9): 503-509.
https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0032-1321770

AIM OF THE STUDY: Against the background of the discussion on the delegation of medical tasks to medical/physician assistants (Medizinische Fachangestellte/MFA) in order to avoid imminent shortages in the care provision by general practitioners (GPs), the aim of the study was to evaluate

such a delegation. The delegation of tasks was based on the additional professional qualification/speciality training of medical/physician assistants (MFA) following the curriculum "ambulatory care of elderly people" of the German Medical Association (Bundesärztekammer/BÄK). 2 such projects of additional professional qualification of MFA and tasks delegation were evaluated. The projects were supported by the German Medical Association (BÄK) and implemented by the Scientific Institute of the German Medical Doctors (Wissenschaftliches Institut der Ärzte Deutschlands/WIAD) and the Chamber of Physicians of Schleswig-Holstein (Ärztekammer Schleswig-Holstein/ÄK S-H) from October 2008 until December 2010. METHODOLOGY: The common evaluation of both projects applied a multi-perspective approach and was mainly based on the data collected by questioning MFA, GPs and patients. These data were complemented with the results collected during experts' interviews and internal evaluations of the additional professional qualification. In total, 61 medical practices, 65 MFA and 669 patients were included. RESULTS: The curriculum mentioned has proven its worth; the additional qualification broadened the field of competence of the trained MFA. The implementation of the delegation concept in the medical practices is unproblematic, enhances the team spirit, relieves the GPs of some of their workload and strengthens the binding to patients. In the ambulatory care of elderly people, the following diagnoses/diagnosis groups are the most relevant for the delegation of tasks: dementia, nutrition-related diseases, apoplexy, coronary heart diseases, hypertension and peripheral vascular diseases. Tasks were delegated in the following fields: diagnostics, therapy, control/monitoring, medicines control, prevention measures, assessment of living environment, health status, mobility, etc. BENEFITS FOR THE PATIENTS: Improvement of compliance, stabilisation of the care status, improved monitoring through home visits for immobile patients (quick-parameter checks, awareness of living conditions), etc. CONCLUSION: The implementation of the model in the care provision by general practitioners to elderly people is recommended without reservations. Legal and economic barriers (above all: insufficient compensation of home visits) should be resolved rapidly.

Sharma, N. (2017). "Physician Assistants and Specialist Nurses: Two Heads Are Better than One." J Physician Assist Educ **28**(4): 174.

Sørensen, M., Groven, K. S., Gjelsvik, B., et al. (2020). "Experiences of self-management support in patients with diabetes and multimorbidity: a qualitative study in Norwegian general practice." Prim Health Care Res Dev **21**: e44.
https://www.cambridge.org/core/services/aop-cambridge-core/content/view/4C42590AFA58AD14FEC14EA95123E266/S1463423620000432a.pdf/div-class-title-experiences-of-self-management-support-in-patients-with-diabetes-and-multimorbidity-a-qualitative-study-in-norwegian-general-practice-div.pdf

AIM: The purpose of this study was to explore how patients with diabetes and multimorbidity experience self-management support by general practitioners (GPs), nurses and medical secretaries in Norwegian general practice. BACKGROUND: Self-management support is recognised as an important strategy to improve the autonomy and well-being of patients with long-term conditions. Collaborating healthcare professionals (cHCPs), such as nurses and medical secretaries, may have an important role in the provision of self-management support. No previous study has explored how patients with diabetes and multimorbidity experience self-management support provided by cHCPs in general practice in Norway. METHODS: Semi-structured interviews with 11 patients with type 1 diabetes mellitus (T1DM) or type 2 diabetes mellitus (T2DM) with one or more additional long-term condition were performed during February-May 2017. FINDINGS: Patients experienced cHCPs as particularly attentive towards the psychological and emotional aspects of living with diabetes. Compared to GPs, whose appointments were experienced as stressful, patients found cHCPs more approachable and more likely to address patients' questions and worries. In this sense, cHCPs complemented GP-led diabetes care. However, neither cHCPs nor GPs were perceived to involve patients' in clinical decisions or goal setting during consultations.

Sørensen, M., Groven, K. S., Gjelsvik, B., et al. (2020). "The roles of healthcare professionals in diabetes care: a qualitative study in Norwegian general practice." Scand J Prim Health Care **38**(1): 12-23.

Objective: To explore the experiences of general practitioners (GPs), nurses and medical secretaries in providing multi-professional diabetes care and their perceptions of professional roles.Design, setting and subjects: Semi-structured interviews were conducted with six GPs, three nurses and two medical secretaries from five purposively sampled diabetes teams. Interviews were analysed thematically.Main outcome measures: Healthcare professionals' (HCPs') experiences of multi-professional diabetes care in general practice.Results: The involvement of nurses and medical secretaries (collaborating health care professionals) was mainly motivated by GPs' time pressure and their perception of diabetes care as easy to standardize. GPs reported that diabetes care had become more structured and continuous after the involvement of collaborating health care professionals (cHCPs). cHCPs defined their role differently from GPs, emphasizing that their approach included acknowledging patients' need for diabetes education, listening to their stories and meeting their need for emotional support. GPs appeared less involved in patients' emotional concerns and more focused on the biomedical aspects of illness. There was little emphasis on teamwork among GPs and cHCPs, and none of the practices used care plans to involve patients in decisions or unify treatment among professionals. Participants stated that institutional structures including a discriminatory remuneration system, lack of role descriptions and missing procedures for collaborative approaches were an obstacle to MPC.Conclusions: cHCPs worked independently under delegated leadership of the GPs. Although cHCPs had a complementary role, HCPs in general practice may not take full advantage of the potential of sharing patient responsibility and learning with, from and about each other. Contextual barriers for team-based care approaches should be addressed in future research.KEY POINTSIt has been suggested that multi-professional approaches improve quality of care in people with long-term conditions.In this study, nurses and medical secretaries perceived to have a complementary role to general practitioners (GPs) in diabetes care, focusing on patient education, building trusting relationships and providing patients with emotional support.As multi-professional collaboration was minimal, GPs, nurses and medical secretaries in the included practices may not take full advantage of the potential of sharing care responsibility and learning with, from and about each other.

Spence, D. (2013). "Doctors no longer need medical secretaries." Bmj-British Medical Journal **346**: 1. <Go to ISI>://WOS:000313555500007

Starck, C., Beckmann, A., Böning, A., et al. (2022). "[Physician Assistants - Eine effektive und sinnvolle Erweiterung des herzchirurgischen Behandlungsteams]." Thorac Cardiovasc Surg **70**(2): 136-142. https://www.thieme-connect.de/products/ejournals/pdf/10.1055/s-0041-1740534.pdf

High-quality care of cardiac surgical patients requires the employment and recruiting of qualified medical professionals with minimal fluctuation of staff members. This aspect becomes increasingly difficult due to the current shortage of skilled professionals as well as the present framework conditions of the German Healthcare System. The implementation of physician assistants (PA) in cardiac surgery departments may augment existing human resource concepts in an innovative and sustainable manner, tailored to meet department specific requirements. Long-term experiences from Anglo-American countries prove that the implementation of a PA system may stabilize or potentially even improve medical treatment quality. At the same time, cardiac surgical residents may be relieved from routine tasks, releasing additional time resources for a solid and diverse specialist training. Furthermore, positive effects on economic aspects of an institution may be possible. The required delegation of medical tasks to allied health professionals already has a legal basis in Germany, while a specific legal framework tailored to physician assistants does not exist yet. In this context, it is an important aspect that medical associations define a reliable catalog of tasks that may be delegated to physician assistants. Under evaluation of medical, legal and economic aspects and in a structured manner, this position paper defines medical tasks of physician assistants in cardiac surgery.

Stephenson, J. (2015). "Physician associates in primary care." Br J Gen Pract **65**(635): 287. https://bjgp.org/content/bjgp/65/635/287.1.full.pdf

Straughton, K., Roberts, K. A., Watkins, J., et al. (2022). "Physician associates in the UK: Development, status, and future." Jaapa **35**(3): 56-60.

Physician associates (PAs) have been part of the UK health workforce for almost 20 years. The profession is growing rapidly with statutory regulation, protection of the title, and career progression supported by a national-level framework all in the pipeline for the near future. This article provides a brief history of the profession in the United Kingdom and prospects for its future.

Stumm, J., Thierbach, C., Peter, L., et al. (2019). "Coordination of care for multimorbid patients from the perspective of general practitioners - a qualitative study." BMC Fam Pract **20**(1): 160. https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-019-1048-y.pdf

BACKGROUND: In Germany, a decreasing number of general practitioners (GPs) face a growing number of patients with multimorbidity. Whilst care for patients with multimorbidity involves various healthcare providers, the coordination of this care is one of the many responsibilities of GPs. The aims of this study are to identify the barriers to the successful coordination of multimorbid patient care and these patients' complex needs, and to explore the support needed by GPs in the care of multimorbid patients. Interviewees were asked for their opinion on concepts which involve the support by additional employees within the practice or, alternatively, external health care professionals, providing patient navigation. METHODS: Thirty-two semi-structured, qualitative interviews were conducted with 16 GPs and 16 medical practice assistants (MPAs) from 16 different practices in Berlin. A MPA is a qualified non-physician practice employee. He or she undergoes a three years vocational training which qualifies him or her to provide administrative and clinical support. The interviews were digitally recorded, transcribed and analysed using the framework analysis methodology. RESULTS: The results of this paper predominantly focus on GPs' perspectives of coordination within and external to general practice. Coordination in the context of care for multimorbid patients consists of a wide range of different tasks. Organisational and administrative obstacles under the regulatory framework of the German healthcare system, and insufficient communication with other healthcare providers constitute barriers described by the interviewed GPs and MPAs. In order to ensure optimal care for patients with multimorbidity, GPs may have to delegate responsibilities associated with coordinating tasks. GPs consider the deployment of an additional specifically qualified employee inside the general practice to take on coordinative and social and legal duties to be a viable option. CONCLUSIONS: The cross-sectoral cooperation between all involved key players working within the healthcare system, as well as the coordination of the whole care process, is seemingly challenging for GPs within the complex care system of multimorbid patients. GPs are generally open to the assignment of a person to support them in coordination tasks, preferably situated within the practice team.

Svedahl, E. R., Pape, K., Toch-Marquardt, M., et al. (2019). "Increasing workload in Norwegian general practice - a qualitative study." BMC Fam Pract **20**(1): 68. https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-019-0952-5.pdf

BACKGROUND: General practitioners (GPs) play a key role in securing and coordinating appropriate use of healthcare services, by providing primary and preventive healthcare and by acting as gatekeepers for secondary healthcare services. Historically, European GPs have reported high job satisfaction, attributed to high autonomy and good compatibility with family life. However, a trend of increasing workload in general practice has been seen in several European countries, including Norway, leading to recruitment problems and concerns about the well-being of both GPs and patients. This qualitative interview study with GPs and their co-workers aims to explore how they perceive and tackle their workload, and their experiences and reflections regarding explanations for and consequences of increased workload in Norwegian general practice. METHODS: We conducted seven focus groups and four individual interviews with GPs and their co-workers in seven GPs' offices in Mid-Norway: three in rural locations and four in urban locations. Our study population consisted of 21 female and 12 male participants; 23 were GPs and 10 were co-workers. The interviews were analysed using systematic text condensation. RESULTS: The analysis identified three main themes: (1) Heavy and increasing workload - more trend than fluctuation?; (2) Explanations for high workload; (3) Consequences of high workload. Our findings show that both GPs and their co-workers experience heavy and increasing workload. The suggested explanations varied considerably among the GPs, but the most commonly cited reasons were legislative changes, increased bureaucracy related to

documentation and management of a practice, and changes in patients' expectations and help-seeking behaviour. Potential consequences were also perceived as varying, especially regarding consequences for patients and the healthcare system. The participants expressed concerns for the future, particularly in regards to GPs' health and motivation, as well as the recruitment of new GPs. CONCLUSIONS: This study found heavy and increasing workload in general practice in Norway. The explanations appear to be multi-faceted and many are difficult to reverse. The GPs expressed worries that they will not be able to provide the population with the expected care and services in the future.

Szeto, M. C., Till, A. et McKimm, J. (2019). "Integrating physician associates into the health workforce: barriers and facilitators." Br J Hosp Med (Lond) **80**(1): 12-17.

Physician associates have been identified as a potential solution to the shortage of health-care workers in the UK, but the introduction of physician associates has not been universally welcomed and some uncertainty exists around their specific roles. This review enhances understanding of the barriers and facilitators for integrating physician associates into the workforce and identifies six key themes to inform future policy decisions at local and national levels.

Taylor, F., Halter, M. et Drennan, V. M. (2019). "Understanding patients' satisfaction with physician assistant/associate encounters through communication experiences: a qualitative study in acute hospitals in England." BMC Health Serv Res **19**(1): 603.
https://bmchealthservres.biomedcentral.com/counter/pdf/10.1186/s12913-019-4410-9.pdf

BACKGROUND: Physician assistants/associates (PAs) are a recent innovation in acute hospital teams in England and many other countries worldwide. Although existing evidence indicates generally high levels of patient satisfaction with their PA hospital encounters, little is known about the factors associated with this outcome. There is a lack of evidence on the process of PA-patient communication in hospital encounters and how this might influence satisfaction. This study therefore aimed to understand patients' satisfaction with PA acute hospital encounters through PA-patient communication experiences. METHODS: A qualitative study was conducted among patients and representatives of patients seen by or receiving care from one of the PAs working in acute hospital services in England. Semi-structured interviews were undertaken face-to-face with study participants in the hospital setting and shortly after their PA encounter. Data were coded and analysed using thematic analysis. The study was framed within a theoretical model of core functions of medical encounter communication. RESULTS: Fifteen patients and patient representatives who had experienced a PA encounter participated in interviews, across five hospitals in England. Four interrelated communication experiences were important to participants who were satisfied with the encounter in general: feeling trust and confidence in the relationship, sharing relevant and meaningful information, experiencing emotional care and support, and sharing discussion on illness management and treatment. However, many participants misconceived PAs to be doctors, raising a potential risk of reduced trust in the PA relationship and negative implications for satisfaction with their PA encounter. Participants considered it beneficial that patients be informed about the PA role to prevent confusion. CONCLUSIONS: PA encounters offer a constructive example of successful clinician-patient communication experiences in acute hospital encounters from the patient's perspective. Study participants were generally naïve to the PA role. Hospital services and organisations introducing these mid-level or advanced care practitioner roles should consider giving attention to informing patients about the roles.

Timmermans, M. J., van Vught, A. J., Van den Berg, M., et al. (2016). "Physician assistants in medical ward care: a descriptive study of the situation in the Netherlands." J Eval Clin Pract **22**(3): 395-402.
https://onlinelibrary.wiley.com/doi/10.1111/jep.12499

RATIONALE, AIMS AND OBJECTIVES: Medical ward care has been increasingly reallocated from medical doctors (MDs) to physician assistants (PAs). Insight into their roles and tasks is limited. This study aims to provide insight into different organizational models of medical ward care, focusing on the position, tasks and responsibilities of the involved PAs and MDs. METHODS: In this cross-sectional descriptive study 34 hospital wards were included. Characteristics of the organizational models were collected

from the heads of departments. We documented provider continuity by examination of work schedules. MDs and PAs in charge for medical ward care (n = 179) were asked to complete a questionnaire to measure workload, supervision and tasks performed. RESULTS: We distinguished four different organizational models for ward care: medical specialists in charge of admitted patients (100% MS), medical residents in charge (100% MR), PAs in charge (100% PA), both MRs and PAs in charge (mixed PA/MR). The wards with PAs had the highest provider continuity. PAs spend relatively more time on direct patient care; MDs spend relatively more time on indirect patient care. PAs spend more hours on quality projects (P = 0.000), while MDs spend more time on scientific research (P = 0.030). CONCLUSION: Across different organizational models for medical ward care, we found variations in time per task, time per bed and provider continuity. Further research should focus on the impact of these differences on outcomes and efficiency of medical ward care.

Timmermans, M. J. C., van Vught, A., Peters, Y. A. S., et al. (2017). "The impact of the implementation of physician assistants in inpatient care: A multicenter matched-controlled study." PLoS One **12**(8): e0178212. https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0178212&type=printable

BACKGROUND: Medical care for admitted patients in hospitals is increasingly reallocated to physician assistants (PAs). There is limited evidence about the consequences for the quality and safety of care. This study aimed to determine the effects of substitution of inpatient care from medical doctors (MDs) to PAs on patients' length of stay (LOS), quality and safety of care, and patient experiences with the provided care. METHODS: In a multicenter matched-controlled study, the traditional model in which only MDs are employed for inpatient care (MD model) was compared with a mixed model in which besides MDs also PAs are employed (PA/MD model). Thirty-four wards were recruited across the Netherlands. Patients were followed from admission till one month after discharge. Primary outcome measure was patients' LOS. Secondary outcomes concerned eleven indicators for quality and safety of inpatient care and patients' experiences with the provided care. RESULTS: Data on 2,307 patients from 34 hospital wards was available. The involvement of PAs was not significantly associated with LOS (β 1.20, 95%CI 0.99-1.40, p = .062). None of the indicators for quality and safety of care were different between study arms. However, the involvement of PAs was associated with better experiences of patients (β 0.49, 95% CI 0.22-0.76, p = .001). CONCLUSIONS: This study did not find differences regarding LOS and quality of care between wards on which PAs, in collaboration with MDs, provided medical care for the admitted patients, and wards on which only MDs provided medical care. Employing PAs seems to be safe and seems to lead to better patient experiences. TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT01835444.

Vajer, P., Tamás, F., Urbán, R., et al. (2015). "[Pneumococcal vaccination in general practice]." Orv Hetil **156**(5): 186-191.
https://akjournals.com/downloadpdf/journals/650/156/5/article-p186.pdf

INTRODUCTION: The prevalence of invasive pneumococcal disease, which is depending on risk factors and comorbidities, is increasing over the age of 50 years. Most developed countries have recommendations but vaccination rates remain low. AIM: To assess the general practitioners' daily practice in relation to pneumococcal vaccination and analyse the effect of informing the subjects about the importance of pneumococcal vaccination on vaccination routine. METHOD: Subjects over 50 years of age vaccinated against influenza during the 2012/2013 campaign were informed about the importance of pneumococcal vaccination and asked to fill in a questionnaire. RESULTS: Of the 4000 subjects, 576 asked for a prescription of pneumococcal vaccine (16.5% of females and 11.6% of males, OR 1.67 CI 95% 1.37-2.04, p<0.001) and 310 were vaccinated. The mean age of females and males was 70.95 and 69.8 years, respectively (OR 1.01; CI 95% 1.00-1.02; p<0.05). Information given by physicians resulted in 33,6% prescription rate, while in case it was 8% when nurses provided information (OR 6.33; CI 95% 5.23-7.67; p<0.001). As an effect of this study the vaccination rate was 6.3 times higher than in the previous year campaign (p<0.001). CONCLUSIONS: General practitioners are more effective in informing subjects about the importance of vaccination than nurses. Campaign can raise the vaccination rate significantly.

van den Brink, G. T. et Jans, E. G. (2018). "Predictors of Successful Completion of the Master of Physician Assistant Studies in the Netherlands." J Physician Assist Educ **29**(3): 135-137.

PURPOSE: The selection of applicants for the Master of Physician Assistant Studies program in the Netherlands is nationally regulated. The minimum criteria are 2 years of experience in health care and a bachelor's degree in nursing or allied health care. However, when students lack the requisite degree, entering a physician assistant (PA) program is possible through an additional assessment process that includes a test of cognitive ability and personality traits. Since 2004, a national registry has tracked all PA students into their employment setting. An evaluation of Master of Physician Assistant graduates who processed through both portals, traditional and alternative, was compared for validation of criteria. METHODS: The success rate of PA students with a bachelor's degree was compared with the success of the cohort that completed the alternative assessment. Descriptive statistics and Pearson's chi square statistics were applied to ascertain differences between the 2 cohorts. RESULTS: From 2004 to 2014, there were 1241 students enrolled in a PA program in the Netherlands; 184 nurses and nurse anesthetists were enrolled through the alternate pathway. Of the cohort with an assessment, 167 of 184 students (91%) graduated. Of the group with a prerequisite bachelor's degree, 944 students graduated (89%). Differences were considered negligible. CONCLUSIONS: It seems that the nondegree alternative assessment of PA education is a reliable predictor of program completion. Because the nondegree alternative assessment is a national standard screening test, it was decided that there is no need to change the admission procedure for PA applicants.

van den Driesschen, Q. et de Roo, F. (2014). "Physician assistants in the Netherlands." Jaapa **27**(9): 10-11.

van der Biezen, M., Derckx, E., Wensing, M., et al. (2017). "Factors influencing decision of general practitioners and managers to train and employ a nurse practitioner or physician assistant in primary care: a qualitative study." BMC Fam Pract **18**(1): 16.
https://bmcprimcare.biomedcentral.com/counter/pdf/10.1186/s12875-017-0587-3.pdf

BACKGROUND: Due to the increasing demand on primary care, it is not only debated whether there are enough general practitioners (GPs) to comply with these demands but also whether specific tasks can be performed by other care providers. Although changing the workforce skill mix care by employing Physician Assistants (PAs) and Nurse Practitioners (NPs) has proven to be both effective and safe, the implementation of those professionals differs widely between and within countries. To support policy making regarding PAs/NPs in primary care, the aim of this study is to provide insight into factors influencing the decision of GPs and managers to train and employ a PA/NP within their organisation. METHODS: A qualitative study was conducted in 2014 in which 7 managers of out-of-hours primary care services and 32 GPs who owned a general practice were interviewed. Three main topic areas were covered in the interviews: the decision-making process in the organisation, considerations and arguments to train and employ a PA/NP, and the tasks and responsibilities of a PA/NP. RESULTS: Employment of PAs/NPs in out-of-hours services was intended to substitute care for minor ailments in order to decrease GPs' caseload or to increase service capacity. Mangers formulated long-term planning and role definitions when changing workforce skill mix. Lastly, out-of-hours services experienced difficulties with creating team support among their members regarding the employment of PAs/NPs. In general practices during office hours, GPs indented both substitution and supplementation for minor ailments and/or target populations through changing the skill mix. Supplementation was aimed at improving quality of care and extending the range of services to patients. The decision-making in general practices was accompanied with little planning and role definition. The willingness to employ PAs/NPs was highly influenced by an employees' motivation to start the master's programme and GPs' prior experience with PAs/NPs. Knowledge about the PA/NP profession and legislations was often lacking. CONCLUSIONS: Role standardisations, long-term political planning and support from professional associations are needed to support policy makers in implementing skill mix in primary care.

van Doorn-Klomberg, A., Ruiterkamp, B. et van den Brink, G. (2022). "The first 2 decades of the physician assistant movement in the Netherlands." Future Healthc J **9**(3): 301-304.
https://www.rcpjournals.org/content/futurehosp/9/3/301.full.pdf

In the Netherlands, the physician associate/assistant (PA) was introduced in 2001. We aim to describe the characteristics of PAs in the Netherlands. Information from public resources, mainly a report on capacity needs and a survey of PAs, was aggregated to provide an overview of the Dutch PA population. Results show that 73% were women; ages between 30 and 59 years were all evenly represented; and there was a wide variety in the background, specialty and location. Overall, the demographic characteristics of the Dutch PA profession are comparable with those of other PA workforces in the world. Presently, the PA movement in the Netherlands has a solid base of central support and national policy. PAs have full practice authority, and their numbers are steadily growing. While demand will eventually level out, the ideal number or PA ratio in the healthcare workforce remains unknown.

Van Erp, R. M. A., Van Doorn, A. L., Van den Brink, G. T., et al. (2021). "Physician Assistants and Nurse Practitioners in Primary Care Plus: A Systematic Review." International Journal of Integrated Care **21**(1): 17. <Go to ISI>://WOS:000637407000003

Introduction: Shifting specialist care from the hospital to primary care/community care (also called primary care plus) is proposed as one option to reduce the increasing healthcare costs, improve quality of care and accessibility. The aim of this systematic review was to get insight in primary care plus provided by physician assistants or nurse practitioners. Methods: Scientific databases and reference list were searched. Hits were screened on title/abstract and full text. Studies published between 1990-2018 with any study design were included. Risk of bias assessment was performed using QualSyst tool. Results: Search resulted in 5.848 hits, 15 studies were included. Studies investigated nurse practitioners only. Primary care plus was at least equally effective as hospital care (patient-related outcomes). The number of admission/referral rates was significantly reduced in favor of primary care plus. Barriers to implement primary care plus included obtaining equipment, structural funding, direct access to patient-data. Facilitators included multidisciplinary collaboration, medical specialist support, protocols. Conclusions and Discussion: Quality of care within primary care plus delivered by nurse practitioners appears to be guaranteed, at patient-level and professional-level, with better access to healthcare and fewer referrals to hospital. Most studies were of restricted methodological quality. Findings should be interpreted with caution.

van Vught, A. et van der Heijden, F. (2019). "[Physician assistant for the somatic care in the mental health care]." Tijdschr Psychiatr **61**(2): 81-83.

van Vught, A. J., Hettinga, A. M., Denessen, E. J., et al. (2015). "Analysis of the level of general clinical skills of physician assistant students using an objective structured clinical examination." J Eval Clin Pract **21**(5): 971-975. https://onlinelibrary.wiley.com/doi/10.1111/jep.12418

RATIONALE, AIMS AND OBJECTIVES: The physician assistant (PA) is trained to perform clinical tasks traditionally performed by medical doctors (MDs). Previous research showed no difference in the level of clinical skills of PAs compared with MDs in a specific niche, that is the specialty in which they are employed. However, MDs as well as PAs working within a specialty have to be able to recognize medical problems in the full scope of medicine. The objective is to examine PA students' level of general clinical skills across the breadth of clinical cases. METHOD: A cross-sectional study was conducted. PA students and recently graduated MDs in the Netherlands were observed on their clinical skills by means of an objective structured clinical examination comprising five stations with common medical cases. The level of mastering history taking, physical examination, communication and clinical reasoning of PA students and MDs were described in means and standard deviation. Cohen's d was used to present effect sizes. RESULTS: PA students and MDs score about equal on history taking (PA 5.8 ± 0.8 vs. MD 5.7 ± 0.7), physical examination (PA 4.8 ± 1.3 vs. MD 5.4 ± 0.8) and communication (PA: 8.2 ± 0.8 vs. MD: 8.6 ± 0.5) in the full scope of medicine. In the quality of the report, including the patient management plan, PA students scored a mean of 6.0 ± 0.6 and MDs 6.8 ± 0.6. CONCLUSIONS: In this setting in the Netherlands, PA students and MDs score about equal in the appraisal of common cases in medical practice. The slightly lower scores of PA students' clinical

reasoning in the full scope of clinical care may have raise attention to medical teams working with PAs and PA training programmes.

van Vught, A. J., van den Brink, G. T. et Wobbes, T. (2014). "Implementation of the physician assistant in Dutch health care organizations: primary motives and outcomes." Health Care Manag (Frederick) **33**(2): 149-153.

Physician assistants (PAs) are trained to perform medical procedures that were traditionally performed by medical physicians. Physician assistants seem to be deployed not only to increase efficiency but also to ensure the quality of care. What is not known is the primary motive for employing PAs within Dutch health care and whether the employment of the PAs fulfills the perceived need for them. Supervising medical specialists who used PAs in their practices were interviewed about their primary motives and outcomes. The interviews were semistructured. Two scientists coded the findings with respect to motives and outcomes. In total, 55 specialists were interviewed about their motives for employing a PA, and 15 were interviewed about the outcomes of employing a PA. With respect to the primary motives for employing a PA, the most frequent motive was to increase continuity and quality of care, followed by relieving the specialist's workload, increasing efficiency of care, and substituting for medical residents. The outcomes were found to be consistent with the motives. In conclusion, the primary motive for employing a PA in Dutch health care is to increase continuity and quality of care.

Viehmann, A., Kersting, C., Thielmann, A., et al. (2017). "Prevalence of chronic stress in general practitioners and practice assistants: Personal, practice and regional characteristics." PLoS One **12**(5): e0176658. https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0176658&type=printable

BACKGROUND: The majority of studies investigating stress in primary care have focused either on general practitioners (GPs) or practice assistants (PAs), but did not measure stress on a practice level. We analyzed the prevalence of chronic stress for both professional groups and on a practice level and investigated personal, practice, and regional characteristics. METHODS: Chronic stress was measured in GPs and PAs from 136 German practices using the standardized, self-administered TICS-SSCS questionnaire (12 items). Based on a sum-score, participants per professional group were categorized as having low or high strain due to chronic stress (≤ 25th and ≥ 75th percentile of the study population´s distribution, respectively). For a cluster-level analysis, the mean of all practice means was used to categorize low- and high-stress practices. The intra-class correlation coefficient (ICC) was calculated using ANOVA. Prevalence Ratios (PR) were used to compare low versus high strain due to stress, stratified for personal, practice and regional characteristics. RESULTS: The response rate was 74.1% (n = 137/185). Data from 214 GPs (34.1% female), 500 PAs (99.4% female), and 50 PAs in training (98.0% female) were analyzed. Chronic stress was highest in female GPs (median 19, IQR (interquartile range) 11.5), followed by PAs (16, IQR 12.25) and male GPs (15, IQR 10). On a practice level, 26.3% of the practice personnel reported a high stress level. We observed an overall ICC of 0.25, with higher ICCs when stratifying by professional group (PAs: ICC 0.36, GPs in group practices: ICC 0.51). High chronic stress was observed as the number of working hours per week increased (GPs: PR 2.03, 95% CI 1.16-3.56; PAs: PR 2.02, 95% CI 1.22-3.35). There were no differences for practice type (solo/group) and the various regional characteristics. CONCLUSION: Personal and practice characteristics were associated with chronic stress in GPs, PAs, and on a practice level. The high ICCs indicate a need for stress-reduction strategies geared at both professions on a practice level.

Vracheva, P. et Hooker, R. S. (2021). "Physician Assistant Education in Bulgaria." J Physician Assist Educ **32**(1): 43-47.

The development of physician assistants (PAs) in the Republic of Bulgaria began in 2014 with the inauguration of the first class at Trakia University, Stara Zagora, and at Faculty of Public Health, Sofia. Modeled after North American and European education systems, the preparation of PAs complies with state requirements for higher medical education from the Bulgarian Ministry of Health. As of 2020, the PA training program is in the state's register of regulated professions. Three programs, in Ruse, Burgas, and Plovdiv, will start in the early 2020s, building on the success of the initial programs in Sofia and Stara Zagora. In the Bulgarian PA education system, a bachelor's degree includes 8

semesters and nearly 5000 combined classroom and clinical hours (254 credits). Accreditation is through the state system, and graduation is achieved by passing 3 national examinations, after which the PA is awarded a diploma. The quality of PA education is guaranteed by the Ordinance of Unified State Requirements for the acquisition of higher education with a bachelor's degree in the PA specialty. As of 2020, 2 PA cohorts have graduated and serve in ambulatory medical roles throughout the state. Newer roles in curative (hospital) centers are being explored. This new medical workforce is designed to contribute to the national health system as a cost-effective medical resource that replaces an older feldsher system.

Vracheva, P. P. (2017). "From feldschers to physician assistants in Bulgaria." Jaapa **30**(8): 45-46.

The physician assistant (PA) profession was established in Bulgaria in 2014 in response to a growing shortage of medical staff and was modeled on the United States experience. Feldschers provided a similar role in Bulgaria from 1878 to 1999 but feldscher training was discontinued in 1999 because of a physician surplus. However, healthcare in Bulgaria changed after the country joined the European Union, and some physicians left for better opportunities elsewhere. The loss of physicians and an aging population meant that PAs were seen as a strategy to offset Bulgaria's growing healthcare demand.

Vu-Eickmann, P., Li, J., Müller, A., et al. (2018). "Associations of psychosocial working conditions with health outcomes, quality of care and intentions to leave the profession: results from a cross-sectional study among physician assistants in Germany." Int Arch Occup Environ Health **91**(5): 643-654.
https://link.springer.com/article/10.1007/s00420-018-1309-4

BACKGROUND: Numerous epidemiological studies among health care staff have documented associations of adverse psychosocial working conditions with poorer health-related outcomes, a reduced quality of patient care and intentions to leave the profession. The evidence for physician assistants in Germany remains limited though. METHODS: We surveyed a total of 994 physician assistants between September 2016 and April 2017. Psychosocial working conditions were measured by the established effort-reward imbalance (ERI) questionnaire and by a questionnaire specifically developed to capture psychosocial working conditions among physicians. Health outcomes (i.e., self-rated health, depression, anxiety), self-rated quality of care and the intention to leave the profession were assessed by established measures. We ran multivariable logistic regression analyses. RESULTS: The prevalence of work stress in terms of ERI equalled 73.77%. Work stress according to the ERI model was associated with significantly poorer self-rated health [odds ratio (OR) 3.62], elevated symptoms of depression (OR 8.83) and anxiety (OR 4.95), poorer quality of care (OR for medical errors 4.04; OR for interference of work with patient care 3.88) and an increased intention to leave one's current profession (OR 3.74). The PA-specific questionnaire showed similar, albeit weaker, associations (all ORs > 1.22). CONCLUSIONS: Our results are in line with previous findings among health care staff and provide specific and novel evidence for physician assistants. Interventions aiming at the improvement of working conditions seem needed given their potential adverse consequences in terms of employee health, quality of care, and personnel policy.

Vu-Eickmann, P. et Loerbroks, A. (2017). "[Psychosocial working conditions of physician assistants: results from a qualitative study on occupational stress, resources, possible approaches to prevention and intervention needs]." Z Evid Fortbild Qual Gesundhwes **126**: 43-51.
https://www.zefq-journal.com/article/S1865-9217(17)30151-4/fulltext

BACKGROUND: Numerous studies have documented adverse psychosocial working conditions among health care staff. Working conditions may not only impair the health outcomes of this professional group, but can also affect the quality of care they deliver to patients. Previous work stress research has mainly focused on physicians and nurses. Comparable evidence remains limited, however, for physician assistants (Medizinische Fachangestellte, MFAs), who represent the largest professional group in German primary care. This study aimed to gain insights into work stressors and resources experienced by MFAs and to explore both possible approaches to prevention and intervention needs. METHODS: Participants were recruited from a criterion-based sample of medical practices in and

around the city of Düsseldorf (Germany) and with assistance provided by the Medical Staff Association (VMF e. V.). In total, 26 qualitative in-depth interviews were conducted (11/2015-02/2016), transcribed and content analyzed using MaxQDA. RESULTS: MFAs reported a high workload and unforeseeable incidents as salient occupational stressors. Additional stressors included interpersonal relationship problems with superiors and a lack of social support from colleagues. At the same time though, support from superiors and colleagues can provide a key resource for coping with work stressors. Furthermore, social interactions with patients and diversified tasks were perceived as supportive professional resources. Possible approaches to prevention were exclusively seen to operate at the organizational level. The perceived need for intervention primarily concerned adequate wages and appreciation from superiors and society. CONCLUSIONS: Physician assistants described their working conditions as being characterized by high demands, low job control and low rewards. We suggest basic approaches for employers to improve the working experience of MFAs, which may represent the starting point for further research efforts to develop preventive measures.

Vu-Eickmann, P. et Loerbroks, A. (2018). "[Psychosocial Working Conditions and Quality of Care: Results of a Qualitative Study Among Physician Assistants (MFAs)]." Gesundheitswesen **80**(12): 1084-1087. https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0043-111232

BACKGROUND: Working conditions may not only impair the health of health care staff, but also the quality of delivered patient care. Evidence for this in relation to physician assistants remains limited despite the fact that they represent the largest professional group in German primary care and perform occupational tasks that are highly relevant to the quality of patient care. This study aimed to gain insights into the potential relationship of working conditions with the quality of care. METHODS: Participants were recruited from a randomized sample of medical practices in and around the city of Düsseldorf (Germany) and with support from the medical health care staff association (VMF e.V.). In total, 26 qualitative in-depth interviews were conducted (11/2015-02/2016), transcribed and content-analyzed using MaxQDA. RESULTS: The majority of participants expressed the view that working conditions impact on the quality of care. In particular, the quality of social interactions with patients and minor mistakes were alluded to in this regard. CONCLUSIONS: Working conditions of physician assistants are characterized by high demands. Their potential impact on the quality of social interactions with patients and the rate of minor mistakes highlights the relevance of preventive actions. Our findings may represent the starting point for further research into preventive measures.

Walbert, H. (2016). "[Non-physician practice assistant is worth more structurally than financially]." MMW Fortschr Med **158**(8): 38.

Wheeler, C., Halter, M., Drennan, V. M., et al. (2017). "Physician associates working in secondary care teams in England: Interprofessional implications from a national survey." J Interprof Care **31**(6): 774-776.

Physician associates (PAs) are a new type of healthcare professional to the United Kingdom; however, they are well established in the United States (where they are known as physician assistants). PAs are viewed as one potential solution to the current medical workforce doctor shortage. This study investigated the deployment of PAs within secondary care teams in England, through the use of a cross-sectional electronic, self-report survey. The findings from 14 questions are presented. Sixty-three PAs working in a range of specialties responded. A variety of work settings were reported, most frequently inpatient wards, with work generally taking place during weekdays. Both direct and non-direct patient care activities were reported, with the type of work undertaken varying at times, depending on the presence or absence of other healthcare professionals. PAs reported working within a variety of secondary care team staffing permutations, with the majority of these being interprofessional. Line management was largely provided by consultants; however day-to-day supervision varied, often relating to different work settings. A wide variation in ongoing supervision was also reported. Further research is required to understand the nature of PAs' contribution to collaborative care within secondary care teams in England.

While, A. (2015). "Reviewing roles: nurses vs physician assistants." Br J Community Nurs **20**(7): 362.

White, H. et Round, J. E. (2013). "Introducing physician assistants into an intensive care unit: process, problems, impact and recommendations." Clin Med (Lond) **13**(1): 15-18.
https://www.rcpjournals.org/content/clinmedicine/13/1/15.full.pdf

> The National Health Service (NHS) is facing substantial staffing challenges arising from reduced working hours, fewer trainees and more protected training of those trainees. Although increasing consultant-delivered care helps to meet these challenges, there remains a need to remodel the workforce. One component of the solution is physician assistants (PAs), who are professionals trained in patient assessment and care, working under the supervision of trained doctors. In October 2010, three PAs began working in the paediatric intensive care unit (PICU) at St George's Hospital, Tooting, which is a large tertiary hospital. This study used surveys and semi-structured interviews to explore the process and end results of this development. Initially, there was a large discrepancy between expectations and the capabilities of the PAs. Shortly after starting, there was friction arising from PAs being untrained in PICU activities, and the facts that they would take training opportunities from other staff and that their remuneration was disproportionate to their usefulness. At five months, all those interviewed stressed the positive impact of PAs on patient care and the running of the unit. Staff had found that the PAs had integrated well and there was little evidence of earlier frictions. When surveyed at 10 months, PAs were undertaking most PICU procedures, albeit with some supervision. The study shows that PAs can be a valuable addition to the medical workforce, but that predictable problems can mar their introduction. Solutions are suggested for other units intending to follow this model.

Wick, K. H. (2015). "International medical graduates as physician assistants." Jaapa **28**(7): 43-46.

> This study describes the MEDEX physician assistant (PA) program's experience with screening, educating, and graduating PA students who were international medical graduates (IMGs). METHODS: The study reviewed IMG-PA demographics including country of origin; prior primary care practice; and current practice location, specialty, and medically underserved designation. Descriptive statistics and chi-square analysis or Fisher exact test summarize outcomes. RESULTS: Thirty-nine IMG-PAs were graduated from 1991 through 2013. IMGs came from central and eastern Europe (48.7%), Asia (33.3%), and other regions. Most (69.2%) are women. Almost all (91.7%) practice in urban settings, 55.6% are in primary care, and 30.6% work in medically underserved areas. IMG-PAs in primary care were more likely to practice in underserved areas (P=0.009). CONCLUSION: MEDEX has graduated IMG-PAs who possess appropriate clinical and professional PA skills.

Williams, L. E. et Ritsema, T. S. (2014). "Satisfaction of doctors with the role of physician associates." Clin Med (Lond) **14**(2): 113-116.
https://www.rcpjournals.org/content/clinmedicine/14/2/113.full.pdf

> Physician associates (PAs) are a new profession to the UK. There has been no prior national assessment of the perspectives of doctors who work with PAs with regard to their role. Doctors who supervise PAs were surveyed in late 2012; respondents were found generally to be satisfied with the role of PAs and believed that the addition of the PA to the team benefited doctors and patients. Doctors reported that they have received positive feedback from patients about the role of PAs as well. Respondents believe that the current unregulated status of the profession impairs their ability to use their PA staff to their fullest potential.

## Etats-Unis, Canada

(2020). "Does expanded state scope of practice for nurse practitioners and physician assistants increase primary care utilization in community health centers?" J Am Assoc Nurse Pract **32**(6): 459-460.

Aaron, E. M. et Andrews, C. S. (2016). "Integration of advanced practice providers into the Israeli healthcare system." Isr J Health Policy Res **5**: 7.
https://ijhpr.biomedcentral.com/counter/pdf/10.1186/s13584-016-0065-8.pdf

Many countries around the world have integrated various types of Advanced Practice Providers (APPs) into their healthcare systems. The main motivating factors for recognizing and developing APPs worldwide include physician shortages and the need for improved access or delivery (US, France, Belgium, Scotland, Switzerland), reduced residency hours (US, UK), shortages in underserved regions (US, Canada, Finland, Australia), and cost containment (Germany, Netherlands, UK, US). Israel is experiencing a shortage of physicians in peripheral geographic regions and in critical medical specialties. Recent by-laws approved by the Knesset (Parliament), combined with Israel Ministry of Health (MOH) policies, have thus far been unable to fully address the shortages. To understand the potential contribution of APPs in Israel, we evaluated the international historical foundations and development of APP roles. We assessed how APPs have impacted healthcare in other countries by analyzing public data and published international research about APP education, safety, quality of care, motivators, barriers, and impact. We found that APPs are recognized in dozens of countries, and have similar scopes of practice, graduate level education requirements (in developed countries), and clinical training. At the same time, there is wide variability among countries in the actual function and independence of the advanced practice nurse (APN), particularly the nurse practitioner (NP). APPs have been established as cost effective, safe healthcare providers who improve healthcare access. Israel has begun to introduce APPs, specifically NPs, in a variety of fields, including geriatrics, palliative care and diabetic care. We recommend a rapid expansion of existing and new APP roles into the Israeli healthcare system based on evidence and the recommendations of international evaluations by non-government organizations. By shifting the education to a university setting, mirroring successful, evidence-based, and established APP models found internationally, Israel could lessen the projected Israeli physician shortage, improve healthcare access in specific areas, and bolster existing resources towards a larger and richer pool of healthcare providers in Israel.

Abdulahad, D., Ekpa, N., Baker, E., et al. (2020). "Being a Medical Scribe: Good Preparation for Becoming a Doctor." Medical Science Educator **30**(1): 569-572.
<Go to ISI>://WOS:000624424700084

Alexander, L. M., Auth, P., Carlson, R., et al. (2018). "Assessing the Impact of a Professional Development Program for Physician Assistant Program Directors." J Physician Assist Educ **29**(3): 138-143.

PURPOSE: The growth of physician assistant (PA) programs nationally has stretched the available capacity of experienced PA program directors. To address this need, a professional developmental program was designed to provide new program directors with the knowledge, skills, and resources necessary to succeed in the role. This study sought to characterize the impact of program attendance over time. Data were collected from individuals representing 5 cohorts that participated in the annual Physician Assistant Education Association New Program Directors Retreat between 2011 and 2015. METHODS: An electronic survey was developed and sent to all 5 cohorts (n = 139). Anonymous responses were collected and quantitative data were analyzed in the aggregate and also by year of participation. Qualitative data were analyzed, and a thematic analysis was conducted. Results were compared with baseline data collected during the program registration process and with published national data on program director characteristics. RESULTS: Seventy-five program participants completed the survey, for a response rate of 57%. Program director stability, educational achievement, and involvement in leadership and service activities were found to be positive outcomes for individuals who had participated in the professional development program. CONCLUSION: Survey respondents reported positive outcomes after attending a professional development program; these outcomes are consistent with research on similar programs published in the literature. Our findings suggest that new program directors who participated in this professional development program not only derived career-stabilizing benefits but also succeeded in creating supportive peer networks while gaining greater confidence in their new academic role.

Anderson, D. L. (2021). "Why Hybrid Programs Are the Future of Physician Assistant Education." J Physician Assist Educ **32**(4): 282-285.

Angerer-Fuenzalida, F. M. (2018). "Quality and Importance of Health Policy, Reform, and Public Health Topics: A Study in Physician Assistant Education." J Physician Assist Educ **29**(2): 89-98.

PURPOSE: As key players in a changing US health care system, physician assistants (PAs) must be prepared to act with a clear understanding of health policy as reform changes are enacted. The purpose of this study was to assess the perceptions of graduating PA students about the importance of health policy, reform, and public health and their perception of their preparedness in these areas. The research question was: Do PA students identify these topic areas as important, and, for each topic area, do they feel adequately prepared with sufficient knowledge for clinical practice? METHODS: Participants in the study included 352 PA students from 14 PA programs randomly selected from 4 geographic regions of the continental United States. A 20-item instrument, the Health Policy Perception Tool, was developed and validated for data collection. RESULTS: Physician assistant students rated content items high on the importance scale and displayed a wide range of ratings on their perceived preparedness in each content area. Health policy/reform items demonstrated the highest disparity, with students indicating that they were least prepared in content areas relating to the Affordable Care Act, such as patient-centered medical home and accountable care organizations. They also rated health system structure/function items as moderately important, but indicated that they were ill prepared on this topic. Public health topics were rated highly on both scales. CONCLUSIONS: Physician assistant programs appear to be addressing public health issues well; however, PA education leaders must address the low levels of preparedness in the other areas of health care, specifically those related to health structure/function and health reform.

Asprey, D. P. et Agar Barwick, T. (2017). "Physician Assistant Education Association: Past, Present, and Future." J Physician Assist Educ **28 Suppl 1**: S49-s55.

The Physician Assistant Education Association (PAEA), known as the Association of Physician Assistant Programs (APAP) until 2006, is the professional organization that represents physician assistant (PA) programs in the United States. Its mission is to "pursue excellence, foster faculty development, advance the body of knowledge that defines quality education and patient-centered care, and promote diversity in all aspects of PA education." PAEA has played an important role in promoting and shaping the educational mission of the PA profession. PAEA experienced a modest beginning, but it has evolved quickly as it increased its governance structure, staff, budget, and member services to support a rapidly growing profession over the last couple of decades. PAEA's current progress has positioned the profession well to increase our national visibility and our ability to affect the future of health care delivery. The future of PA education and PAEA will certainly be impacted by our continuing ability to adapt to change and to be visionary in our approach to the significant challenges we will face. Collectively, the Association staff, volunteers, and members will strive to fulfill its mission.

Auerbach, D. I., Chen, P. G., Friedberg, M. W., et al. (2013). "Nurse-managed health centers and patient-centered medical homes could mitigate expected primary care physician shortage." Health Aff (Millwood) **32**(11): 1933-1941.

Numerous forecasts have predicted shortages of primary care providers, particularly in light of an expected increase in patient demand resulting from the Affordable Care Act. Yet these forecasts could be inaccurate because they generally do not allow for changes in the way primary care is delivered. We analyzed the impact of two emerging models of care--the patient-centered medical home and the nurse-managed health center--both of which use a provider mix that is richer in nurse practitioners and physician assistants than today's predominant models of care delivery. We found that projected physician shortages were substantially reduced in plausible scenarios that envisioned greater reliance on these new models, even without increases in the supply of physicians. Some less plausible scenarios even eliminated the shortage. All of these scenarios, however, may require additional changes, such as liberalized scope-of-practice laws; a larger supply of medical assistants, licensed practical nurses, and aides; and payment changes that reward providers for population health management.

Bai, G., Kelen, G. D., Frick, K. D., et al. (2019). "Nurse practitioners and physician assistants in emergency medical services who billed independently, 2012-2016." Am J Emerg Med **37**(5): 928-932.

OBJECTIVE: As nurse practitioners (NPs) and physician assistants (PAs) become an integral part of delivering emergency medical services, we examined the involvement of NPs and PAs who billed independently in emergency departments (EDs). METHODS: We used Medicare provider utilization and

payment data from 2012 to 2016 to conduct a retrospective analysis. We examined the changes in the number of each clinician type who billed independently for four common emergency services (CPT codes: 99282-5), the change in their service volume, and the change in their average number of services billed. RESULTS: Between 2012 and 2016, the proportion of NPs and PAs billing independently increased from 18% to 22% for ED visits of low severity (99282), 23% to 29% for visits with moderate severity (99283), 21% to 27% for visits with high severity (99284), 18% to 24% for visit with the highest severity (99285), and 23% to 29% across all four services. The proportion of services provided by emergency physicians decreased from 66% to 63% across all four services, and from 11% to 9% for internists and family physicians. The number of NPs, PAs billing independently, and emergency physicians increased by 65%, 35% and 12% respectively. CONCLUSIONS: NPs and PAs are increasingly billing emergency services of all levels of severity, independent of physicians. This trend is driven by a growing number of NPs and PAs independently billing services, despite a relatively stable number of emergency physicians (excepting the decline in rural areas), and diminished involvement of family physicians and internists in EDs.

Balasa, D. A. (2017). "Nurse Practitioners and Physician Assistants: How Expanding Reimbursement and Scopes of Practice Can Facilitate High-Quality, Efficient Healthcare." J Med Pract Manage **32**(5): 298-300.

As the demand for healthcare increases in the United States, nonphysician practitioners such as nurse practitioners (NPs) and physician assistants (PAs) are being called upon to provide more services in a greater variety of settings. State laws have been amended to broaden the scopes of practice of NPs and PAs. New Medicare programs such as Chronic Care Management and Transitional Care Management are well suited for NPs and PAs. This article discusses these developments, their impact on healthcare delivery and reimbursement, and how medical offices, clinics, and health systems can utilize NPs and PAs to provide excellent healthcare in an efficient manner.

Barnes, H., Richards, M. R., Martsolf, G. R., et al. (2022). "Association between physician practice Medicaid acceptance and employing nurse practitioners and physician assistants: A longitudinal analysis." Health Care Manage Rev **47**(1): 21-27.

BACKGROUND: Access to care is often a challenge for Medicaid beneficiaries due to low practice participation. As demand increases, practices will likely look for ways to see Medicaid patients while keeping costs low. Employing nurse practitioners (NPs) and physician assistants (PAs) is one low-cost and effective means to achieve this. However, there are no longitudinal studies examining the relationship between practice Medicaid acceptance and NP/PA employment. PURPOSE: The purpose of this study was to examine the association of practice Medicaid acceptance with NP/PA employment over time. METHODS: Using SK&A data (2009-2015), we constructed a panel of 102,453 unique physician practices to assess for changes in Medicaid acceptance after newly employing NPs and PAs. We employed practice-level fixed effects linear regressions. RESULTS: Our results showed that, among practices employing both NPs and PAs, there was a roughly 2% increase in the likelihood of Medicaid participation over time. When stratifying our sample by practice size and specialty, the positive correlation localized to small primary care and medical practices. When both NPs and PAs were present, small primary care practices had a 3.3% increase and small medical practices had a 6.9% increase in the likelihood of accepting Medicaid. CONCLUSION: NP and PA employment was positively associated with increases in Medicaid participation. PRACTICE IMPLICATIONS: As more individuals gain coverage under Medicaid, organizations will need to decide how to adapt to greater patient demand. Our results suggest that hiring NPs and PAs may be a potential lower cost strategy to accommodate new Medicaid patients.

Benitez, J., Coplan, B., Dehn, R. W., et al. (2015). "Payment source and provider type in the US healthcare system." Jaapa-Journal of the American Academy of Physician Assistants **28**(3): 46-53.
<Go to ISI>://WOS:000357583800015

Greater use of physician assistants (PAs) and nurse practitioners (NPs) to meet growing demand for healthcare in the United States is an increasingly common strategy to improve access to care and control costs. Evidence suggests that payment for services differs depending on the type of provider. This study sought to determine if the source of payment for a medical visit varies based on whether care is provided by a physician, PA, or NP. Data from the National Hospital Ambulatory Medical Care Survey (2006 through 2010) were analyzed. Physicians were proportionally more likely than NPs or PAs to provide care

for medical visits compensated by private insurance or Medicare. Conversely, PAs and NPs were more likely to serve as providers of care for services with other payment sources such as Medicaid and out-of-pocket.

Bodenheimer, T. S. et Smith, M. D. (2013). "Primary Care: Proposed Solutions To The Physician Shortage Without Training More Physicians." Health Affairs **32**(11): 1881-1886.
<Go to ISI>://WOS:000326841400004

The adult primary care "physician shortage" is more accurately portrayed as a gap between the adult population's demand for primary care services and the capacity of primary care, as currently delivered, to meet that demand. Given current trends, producing more adult primary care clinicians will not close the demand-capacity gap. However, primary care capacity can be greatly increased without many more clinicians: by empowering licensed personnel, including registered nurses and pharmacists, to provide more care; by creating standing orders for nonlicensed health personnel, such as medical assistants, to function as panel managers and health coaches to address many preventive and chronic care needs; by increasing the potential for more patient self-care; and by harnessing technology to add capacity.

Bossen, C., Jensen, L. G. et Udsen, F. W. (2014). "Boundary-Object Trimming: On the Invisibility of Medical Secretaries' Care of Records in Healthcare Infrastructures." Computer Supported Cooperative Work-the Journal of Collaborative Computing and Work Practices **23**(1): 75-110.
<Go to ISI>://WOS:000330730700004

As health care IT gradually develops from being stand-alone systems towards integrated infrastructures, the work of various groups, occupations and units is likely to become more tightly integrated and dependent upon each other. Hitherto, the focus within health care has been upon the two most prominent professions, physicians and nurses, but most likely other non-clinical occupations will become relevant for the design and implementation of health care IT. In this paper, we describe the cooperative work of medical secretaries at two hospital departments, based on a study evaluating a comprehensive electronic health record (EHR) shortly after implementation. The subset of data on medical secretaries includes observation (11 hours), interviews (three individual and one group) and survey data (31 of 250 respondents were medical secretaries). We depict medical secretaries' core task as to take care of patient records by ensuring that information is complete, up to date, and correctly coded, while they also carry out information gatekeeping and articulation work. The importance of these tasks to the departments' work arrangements was highlighted by the EHR implementation, which also coupled the work of medical secretaries more tightly to that of other staff, and led to task drift among professions. Medical secretaries have been relatively invisible to health informatics and CSCW, and we propose the term 'boundary-object trimming' to foreground and conceptualize one core characteristic of their work: maintenance and optimization of the EHR as a boundary object. Finally, we reflect upon the hitherto relative invisibility of medical secretaries which may be related to issues of gender and power.

Bradley-Guidry, C., Burwell, N., Dorough, R., et al. (2022). "An assessment of physician assistant student diversity in the United States: a snapshot for the healthcare workforce." BMC Med Educ **22**(1): 680.
https://bmcmededuc.biomedcentral.com/counter/pdf/10.1186/s12909-022-03717-9.pdf

BACKGROUND: The Physician Assistant (PA) workforce falls short of mirroring national demographics mainly due to a lack of diversity in student enrollment. Few studies have systematically examined diversity across PA programs at the national level, and little is known about best practices for consistently graduating a diverse group of students. We descriptively characterized the extent to which PA programs are graduating a diverse group of students and identified top performing PA programs. METHODS: Data from the Integrated Postsecondary Education Data System (IPEDS) were used to calculate the number and proportion of racial or ethnically diverse graduates. The study sample included 139 accredited PA programs that had graduated a minimum of five cohorts from 2014-2018. Within each of the United States Census Divisions, programs were ranked according to the number and proportion of graduates who were underrepresented minority (URM) race, Hispanic ethnicity, and of non-white (URM race, Hispanic, and Asian). RESULTS: Amongst PA programs in the United States, a large disparity in the number and proportion of racial and ethnic graduates was observed. Of 34,625 PA

graduates, only 2,207 (6.4%) were Hispanic ethnicity and 1,220 (3.5%) were URM race. Furthermore, a large number of diverse graduates came from a small number of top performing programs. CONCLUSION: Despite the abundance of evidence for the need to diversify the healthcare workforce, PA programs have had difficulty recruiting and graduating a diverse group of students. This study provides empirical evidence that PA programs have not been able to attain the level of diversity necessary to shift the lack of diversity in the PA workforce. Based upon this study's findings, the top performing PA programs can be used as role models to establish benchmarks for other programs. The results of this descriptive study are currently being used to guide a qualitative study to identify the top performers' strategies for success.

Brock, D. M., Orrahood, S. A., Cooper, C. K., et al. (2017). "Interservice Physician Assistant Program: Educators for an Expanding Profession." J Physician Assist Educ **28 Suppl 1**: S66-s70.

PURPOSE: The number of physician assistant (PA) programs has increased exponentially across the past decade, and the demand for PAs will likely remain strong through 2025. Because of this rapid growth, both new and established PA programs face significant challenges in recruiting experienced educators. We describe the value of using PAs trained through the Interservice Physician Assistant Program (IPAP) as civilian PA educators. METHODS: The literature on IPAP and its graduates proved too limited to conduct a formal systematic review. We searched the PubMed and Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases for works speaking to the value that IPAP-trained PAs may bring to civilian PA training. Those findings were supplemented with informal conversations with IPAP-trained PAs currently employed in the military and those working in civilian PA education. Themes were identified supporting the potential value of IPAP-trained PAs in civilian training. RESULTS: Military PAs work within hierarchical organizations and may transition easily to academic settings. They leave military service not only as highly trained and proficient primary care providers but also as experienced educators. Military PAs must demonstrate professionalism across their entire military careers. They serve as leaders and work in teams, but they are also experienced in negotiating up chains of command. They are trained in and apply the latest innovations in health care delivery and have provided care with a degree of autonomy uncommon in civilian PA practice. CONCLUSIONS: The PAs trained through IPAP leave the service with skills and experiences valuable to civilian PA training. Employing these PAs in civilian education honors their service contributions while addressing emerging PA educator workforce demands.

Bushardt, R. L., Whitt, F. K. et Gregory, T. (2014). "Training physician assistants for rural Appalachia: an academic partnership for interprofessional collaboration." N C Med J **75**(1): 53-55.
https://ncmedicaljournal.com/article/54653.pdf

Wake Forest School of Medicine and the College of Health Sciences at Appalachian State University are partnering to train physician assistants to practice as primary care providers in medically underserved parts of Western North Carolina. The partnership will also develop interprofessional education and team-based training activities for health professions students.

Byun, H. et Westfall, J. M. (2022). "Family Medicine and Emergency Redeployment: Unrealized Potential." Fam Med **54**(1): 44-46.
https://journals.stfm.org:/media/4550/byun-2020-0542.pdf

BACKGROUND AND OBJECTIVES: Discussions of scope of practice among family physicians has become a crucial topic amidst the COVID-19 pandemic, coupled with new attention to residency training requirements. Family medicine has seen a gradual narrowing of practice due to a host of issues, including physician choice, expanding scope of practice from physician assistants and nurses, an increased emphasis on patient volume, clinical revenue, and residency training competency requirements. We sought to demonstrate the flexibility of the family medicine workforce as shown through their scopes of practice, and argue that this is indication of their potential for redeployment during emergencies. METHODS: This study computes scopes of practice for 78,416 family physicians who treat Medicare beneficiaries. We used Evaluation and Management (E/M) codes in Medicare's 2017 Part-B public use file to calculate volumes of services done across six sites of service per physician. We aggregated counts and proportions of physicians and the E/M services they provided across sites of practice to characterize

scope, and performed a separate analysis on rural physicians. RESULTS: The study found most family physicians practicing at a single site, namely, the ambulatory clinic. However, family physicians in rural areas, where need is greater, exhibit broader scope. This suggests that a significant number of family physicians have capacity for COVID-19 deployment into other settings, such as emergency rooms or hospitals. CONCLUSIONS: Family physicians are a potential resource for emergency redeployment, however the current breadth of scope for most family physicians is not aligned with current residency training requirements and raises questions about the future of family medicine scope of practice.

Carter, R. D., Ballweg, R. et Konopka-Sauer, L. (2017). "Preserving 50 Years of Physician Assistant History." J Physician Assist Educ **28 Suppl 1**: S85-s89.

Physician assistants (PAs) have been making history for 50 years. For the past 15 years, the PA History (PAHx) Society has been working to make sure this history is not lost. The Society began in 2002 as a membership organization based at Duke University and since 2011 has been a supporting organization of the National Commission on Certification of Physician Assistants (NCCPA). Highly visible and active in the PA community, the Society encourages all PAs to understand their professional history and embrace it as a part of their professional identity. The Society, through the work of its board of trustees, historians, and staff, tells the story of the collective efforts of physicians, PAs, nurses, lawyers, educators, and policy makers to create a human innovation that has changed how medicine is practiced in the United States and, more recently, in other countries. The Society provides PA faculty and students access to a growing collection of historically relevant and primary source materials that can be used for educational, research, and literary purposes.

Cawley, J. F. et Jones, P. E. (2013). "Institutional sponsorship, student debt, and specialty choice in physician assistant education." J Physician Assist Educ **24**(4): 4-8.

Physician assistant (PA) educational programs emerged in the mid 1960s in response to health workforce shortages and decreasing access to care and, specifically, the decline of generalist physicians. There is wide diversity in the institutional sponsorship of PA programs, and sponsorship has trended of late to private institutions. We analyzed trends in sponsorship of PA educational programs and found that, in the past 15 years, there were 25 publicly sponsored and 96 privately sponsored programs that gained accreditation, a 3.84:1 private-to-public ratio. Of the 96 privately sponsored programs, only seven (7.3%) were located within institutions reporting membership in the Association of Academic Health Centers, compared to eight of the 25 publicly sponsored programs (32%). In 1978, a large majority (estimated 43 of the 48 then-existing PA programs) received their start-up or continuing funding through the US Public Health Service, Section 747 Title VII program, whereas in 2012 there were far fewer (39 of 173). The finding of a preponderance of private institutions may correlate with the trend of PAs selecting specialty practice (65%) over primary care. Specialty choice of graduating PA students may or may not be related to the disproportionate debt burden associated with attending privately sponsored programs, where the public-to-private tuition difference is significant. Moreover, the waning number of programs participating in the Title VII grant process may also have contributed to the overall rise in tuition rates among PA educational programs due to the loss of supplemental funding.

Cawley, J. F., Jones, P. E., Miller, A. A., et al. (2016). "Expansion of Physician Assistant Education." J Physician Assist Educ **27**(4): 170-175.

Physician assistant (PA) educational programs were created in the 1960s to prepare a new type of health care practitioner. Physician assistant programs began as experiments in medical education, and later, they proved to be highly successful in preparing capable, flexible, and productive clinicians. The growth of PA educational programs in US medical education-stimulated by grants, public policy, and anticipated shortages of providers-has gone through 3 distinct phases. At present, such programs are in the midst of the third growth spurt that is expected to continue beyond 2020, as a large number of colleges and universities seek to sponsor PA programs and attain accreditation status. Characteristics of these new programs are described, and the implications of the current expansion of PA education are examined.

Cawley, J. F., Lane, S., Smith, N., et al. (2016). "Physician assistants in rural communities." Jaapa **29**(1): 42-45.

About 12% of all PAs work in rural settings, according to the 2013 Annual Survey of the American Academy of Physician Assistants. PAs in rural areas are more likely to practice in primary care specialties, have a wider scope of practice, and see patients who are uninsured or covered by Medicaid or Medicare. The positive effect of PAs on rural health has been demonstrated in extensive studies. PAs in rural areas are often the usual care providers for patients with chronic conditions, provide care that is cost effective and safe, and in certain cases increase access to care. Hiring a PA in a rural medical practice can have a salutary economic effect on the practice as well as the community.

Chapman, S. A. et Blash, L. K. (2017). "New Roles for Medical Assistants in Innovative Primary Care Practices." Health Serv Res **52**: 383-406.
<Go to ISI>://WOS:000393579700003

Objective. To identify and describe new roles for medical assistants (MAs) in innovative care models that improve care while providing training and career advancement opportunities for MAs. Data Sources/Study Setting. Primary data collected at 15 case study sites; 173 key informant interviews and de-identified secondary data on staffing, wages, patient satisfaction, and health outcomes. Study Design. Researchers used snowball sampling and screening calls to identify 15 organizations using MAs in new roles. Conducted site visits from 2010 to 2012 and updated information in 2014. Data Collection/Extraction Methods. Thematic analysis explored key topics: factors driving MA role innovation, role description, training required, and wage gains. Categorized outcome data in patient and staff satisfaction, quality of care, and efficiency. Principal Findings. New MA roles included health coach, medical scribe, dual role translator, health navigator, panel manager, cross-trained flexible role, and supervisor. Implementation of new roles required extensive training. MA incentives and enhanced compensation varied by role type. Conclusions. New MA roles are part of a larger attempt to reform workflow and relieve primary care providers. Despite some evidence of success, spread has been limited. Key challenges to adoption included leadership and provider resistance to change, cost of additional MA training, and lack of reimbursement for nonbillable services.

Clark, T. L., Fortmann, A. L., Philis-Tsimikas, A., et al. (2022). "Process evaluation of a medical assistant health coaching intervention for type 2 diabetes in diverse primary care settings." Translational Behavioral Medicine **12**(2): 350-361.
<Go to ISI>://WOS:000755952100015

Team-based models that use medical assistants (MAs) to provide self-management support for adults with type 2 diabetes (T2D) have not been pragmatically tested in diverse samples. This cluster-randomized controlled trial compares MA health coaching with usual care in adults with T2D and poor clinical control ("MAC Trial"). The purpose was to conduct a multi-method process evaluation of the MAC Trial using the Reach, Effectiveness, Adoption, Implementation, and Maintenance framework. Reach was assessed by calculating the proportion of enrolled participants out of the eligible pool and examining representativeness of those enrolled. Key informant interviews documented adoption by MA Health Coaches. We examined implementation from the research and patient perspectives by evaluating protocol adherence and the Patient Perceptions of Chronic Illness Care (PACIC-SF) measure, respectively. Findings indicate that the MAC Trial was efficient and effective in reaching patients who were representative of the target population. The acceptance rate among those approached for health coaching was high (87%). Both MA Health Coaches reported high satisfaction with the program and high levels of confidence in their role. The intervention was well-implemented, as evidenced by the protocol adherence rate of 79%; however, statistically significant changes in PACIC-SF scores were not observed. Overall, if found to be effective in improving clinical and patient-reported outcomes, the MAC model holds potential for wider-scale implementation given its successful adoption and implementation and demonstrated ability to reach patients with poorly controlled T2D who are at-risk for diabetes complications in diverse primary care settings. A medical assistant health coaching intervention for adults with type 2 diabetes was effective in reaching many patients, was well-accepted, and was delivered as intended.

Coerver, D., Multak, N., Marquardt, A., et al. (2017). "The Use of Simulation in Physician Assistant Programs: A National Survey." J Physician Assist Educ **28**(4): 175-181.

PURPOSE: The purpose of this study was to develop a national-level description of the current use of simulation activities in physician assistant (PA) education and to assess the degree to which the use of simulation varies by PA program size and institutional type. METHODS: An electronic survey on medical simulation was sent to 177 PA program directors or to a designated simulation activities coordinator, using the directory on the Physician Assistant Education Association website. The survey addressed program characteristics, types of simulation modalities in use, and frequency of use of those modalities in PA training. The specific content areas addressed were error disclosure, medical knowledge, patient care, and psychomotor skills. RESULTS: The survey was emailed 3 times from early April to mid-May 2014, with a follow-up call to nonrespondents in August 2014. Of the 177 PA programs contacted, 63 completed the survey, for a response rate of 35.6%. Results indicate widespread use of simulation by survey respondents, especially in teaching, assessment of medical knowledge, and clinical skills, with somewhat lower levels of use in content areas such as error disclosure, delivery of bad news, and team training. CONCLUSIONS: Although barriers exist to its use in training health care professionals, simulation has become an important tool for training PAs in a variety of medical and interpersonal skills. It is also clear that simulation is an important tool for conducting interprofessional training. More research is needed to identify optimal approaches to the use of simulation in health care professions training.

Colletti, T. P., Salisbury, H., Hertelendy, A. J., et al. (2016). "Relationship Between Physician Assistant Program Length and Physician Assistant National Certifying Examination Pass Rates." J Physician Assist Educ **27**(1): 3-6.

PURPOSE: This study was conducted to examine the relationship between physician assistant (PA) educational program length and PA programs' 5-year average Physician Assistant National Certifying Examination (PANCE) first-time pass rates. METHODS: This was a retrospective correlational study that analyzed previously collected data from a nonprobability purposive sample of accredited PA program Web sites. Master's level PA programs (n = 108) in the United States with published average PANCE scores for 5 consecutive classes were included. Provisional and probationary programs were excluded (n = 4). Study data were not normally distributed per the Kolmogorov-Smirnov test, P = .00. RESULTS: There was no relationship between program length and PANCE pass rates, ρ (108) = -0.04, P = .68. Further analyses examining a possible relationship between program phase length (didactic and clinical) and PANCE pass rates also demonstrated no differences (ρ [107] = -0.05, P = .60 and ρ [107] = 0.02, P = .80, respectively). CONCLUSION: The results of this study suggest that shorter length PA programs perform similarly to longer programs in preparing students to pass the PANCE. In light of rapid expansion of PA educational programs, educators may want to consider these findings when planning the length of study for new and established programs.

Coombs, J. M., Hooker, R. S. et Brunisholz, K. D. (2013). "What do we know about retired physician assistants? A preliminary study." Jaapa **26**(3): 44-48.

Retirement generally means the complete end of employment. Retirement is a new phenomenon for physician assistants (PAs), as those trained in the 1970s exit their careers. To better understand retirement patterns of PAs, we undertook a survey in 2011 using a national database. A cadre of 625 respondents met the criteria of being retired and living; the mean age of PA retirement was 61 years (range 47-75 years). Duration of a PA career was 29 years on average (range, 10-40 years). Forty-three percent of respondents retired from family/general medicine and 11% from emergency medicine. Almost all reported receiving Social Security and Medicare; most had some form of a pension. Fewer than one-fifth retired for health reasons. When asked about the timeliness of retiring, 20% wished they had retired later in life; 4% of the men and 7% of the women thought they should have retired earlier; 74% of the men and 73% of the women said they had retired at the right time. Reasons for retiring varied widely. Approximately one-quarter reported volunteering in a medically-related capacity. We suggest that retirement is a concept undergoing evolution in American society and that PAs represent a health profession that reflects the complexity of this evolution.

Coplan, B., Cawley, J. et Stoehr, J. (2013). "Physician assistants in primary care: trends and characteristics." Ann Fam Med **11**(1): 75-79.
https://www.annfammed.org/content/annalsfm/11/1/75.full.pdf

PURPOSE: Physician assistants (PAs) have made major contributions to the primary care workforce. Since the mid-1990s, however, the percentage of PAs working in primary care has declined. The purpose of this study was to identify demographic characteristics associated with PAs who practice in primary care. METHODS: We obtained data from the 2009 American Academy of Physician Assistants' Annual Census Survey and used univariate analyses, logistic regression analyses, and χ(2) trend tests to assess differences in demographics (eg, age, sex, race) between primary care and non-primary care PAs. Survey respondents had graduated from PA school between 1965 and 2008. RESULTS: Of 72,433 PAs surveyed, 19,608 participated (27% of all PAs eligible to practice). Incomplete questionnaires were eliminated resulting in a final sample of 18,048. One-third of PAs reported working in primary care. Female, Hispanic, and older PAs were more likely to work in primary care practice. Trend tests showed a decline in the percentage of PAs working in primary care in the sample overall (average 0.3% decrease per year; P <.0001). In the cohort of 2004-2008 graduates, however, the percentage of primary care PAs increased slightly by an average of 0.9% per year (P = .02). Nonetheless, the low response rate of the census limits the ability to generalize these findings to the total population of PAs. CONCLUSIONS: Demographics associated with an increased likelihood of primary care practice among PAs appear to be similar to those of medical students who choose primary care. Knowledge of these characteristics may help efforts to increase the number of primary care PAs.

Cuenca, J. P., Ganser, K., Luck, M., et al. (2022). "Diversity in the Physician Assistant Pipeline: Experiences and Barriers in Admissions and PA School." J Physician Assist Educ **33**(3): 171-178.

INTRODUCTION: The purpose of this study was to identify perceived barriers faced by physician assistant (PA) students who identified as an underrepresented minority in medicine (URM-med), sexual or gender minority (SGM), coming from low socioeconomic status (low SES), or a person with a disability (PWD). METHODS: More than 2700 PA students across the United States provided information regarding their PA school application process and program experiences. This study examined differences among URM-med, SGM, low SES, and PWD compared to those who were not in those groups to determine the relationship between these factors and student concerns about bias in the application process, as well as a variety of experiences in PA school. RESULTS: Using ordinal logistic regression analyses to examine the odds of experiencing a variety of barriers or experiences in applying to PA school and postmatriculation experiences, results suggested that, among disadvantaged groups within the PA student body, barriers include concerns about bias in the application process, lack of belonging, and the lack of academic and social support. DISCUSSION: PA students who identified as URM-med, SGM, low SES, and/or PWD faced barriers as they navigated the path to becoming a PA. To decrease these barriers, emphasis on raising awareness and interest in pursuing a career as a PA should occur early. Programs should work to identify biases within admissions processes, diversify faculty, and identify ways to support minority students once matriculated. Ultimately, increasing the diversity of healthcare providers has the potential to increase access to and quality of care for patients.

Dai, M., Ingham, R. C. et Peterson, L. E. (2019). "Scope of Practice and Patient Panel Size of Family Physicians Who Work With Nurse Practitioners or Physician Assistants." Fam Med **51**(4): 311-318.
https://journals.stfm.org:/media/2253/dai-2018-0146.pdf

BACKGROUND AND OBJECTIVES: Little is known about how the presence of nurse practitioners (NPs) and physician assistants (PAs) in a practice impacts family physicians' (FPs') scope of practice. This study sought to examine variations in FPs' practice associated with NPs and PAs. METHODS: We obtained data from American Board of Family Medicine practice demographic questionnaires completed by FPs who registered for the Family Medicine Certification Examination during 2013-2016. Scope of practice score was calculated for each FP, ranging from 0-30 with higher numbers equating to broader scope of practice. FPs self-reported patient panel size. Primary care teams were classified into NP only, PA only, both NP and PA, or no NP or PA. We estimated variation in scope and panel size with different team configurations in regression models. RESULTS: Of 27,836 FPs, nearly 70% had NPs or PAs in their practice but less than half (42.5%) estimated a panel size. Accounting for physician and practice characteristics, the presence of NPs and/or PAs was associated with significant increases in panel sizes (by 410 with PA only, 259 with NP only and 245 with both; all P<0.05) and in scope score (by 0.53 with PA only, 0.10 with NP only and 0.51 with both; all P<0.05). CONCLUSIONS: We found evidence that team-based care involving NPs and PAs was associated with higher practice capacity of FPs. Working with PAs seemed to

allow FPs to see a greater number of patients and provide more services than working with NPs. Delineation of primary care team roles, responsibilities and boundaries may explain these findings.

Davis, J. et Zuber, K. (2021). "The changing landscape of nephrology physician assistants and nurse practitioners." J Am Assoc Nurse Pract **33**(1): 51-56.

BACKGROUND: Physician assistants (PAs) and nurse practitioners (NPs) have expanded roles in nephrology as both the patient load and acuity of care needed for this population have increased. PURPOSE: To evaluate workforce patterns of PAs and NPs working in nephrology over the past decade. METHODS: Using the biannual survey from the National Kidney Foundation Council of Advanced Practitioners, data were collected and analyzed over the past decade. RESULTS: Surveys of nephrology practitioners show the evolution of the dialysis-centralized practitioner to one encompassing all aspects of nephrology: hospital, intensive care unit, research, office, and all types of dialysis. Salaries and benefits have increased to compensate for the expansion of responsibilities. IMPLICATIONS FOR PRACTICE: Physician assistants and NPs in nephrology have the opportunity to use their skills and training in caring for this high-risk population.

Davis, M. A., Guo, C., Titler, M. G., et al. (2017). "Advanced practice clinicians as a usual source of care for adults in the United States." Nurs Outlook **65**(1): 41-49.
https://www.nursingoutlook.org/article/S0029-6554(16)30124-5/fulltext

BACKGROUND: Advanced practice clinicians (APCs) including nurse practitioners and physician assistants are increasingly used to deliver care, yet little is known about these providers as a usual source of primary care. PURPOSE: This study examined the extent to which APCs serve as a usual source of care and the impact of such use on health care expenditures and quality. METHODS: We performed a cross-sectional study by identifying 90,279 adults from the 2002 to 2013 Medical Expenditure Panel Survey who self-reported their usual source of care as either an APC or a primary care physician (PCP). Using complex survey design methods to make national estimates, we compared annual health care expenditures and quality measures among adults whose usual source of care is an APC to that of adults whose usual source of care is a PCP. DISCUSSION: Nationally, 32 million adults visit an APC each year, yet only 1.4 million adults report their usual source of care to be an APC. In adjusted analyses, mean annual health care expenditures were $7,323 among APC patients vs. $7,959 among PCP patients, a difference of -$635 (95% confidence interval [-$1,408 to $138]). Across specific health services, APC patients trended toward having lower expenditures except for marginally higher expenditures on emergency room visits ($256 vs. $227 p < .001). APC patients were similar to that of PCP patients across health care quality measures. CONCLUSIONS: Few U.S. adults report their usual source of care to be an APC. Health care spending and quality measures are similar between APC patients and PCP patients. Expanding use of APCs as a usual source of care will likely not lead to increased health care spending.

Dill, J., Morgan, J. C. et Chuang, E. (2021). "Career Ladders for Medical Assistants in Primary Care Clinics." Journal of General Internal Medicine **36**(11): 3423-3430.
<Go to ISI>://WOS:000647508700003

Background This study examines the use of career ladders for medical assistants (MAs) in primary care practices as a mechanism for increasing wages and career opportunity for MAs. A growing body of research on primary care suggests that successful expansion of support staff roles such as MAs may have positive organizational and quality of care outcomes, but little is known about worker outcomes. Objective Evaluate the effectiveness of career ladders in improving wages and career opportunity among MAs. Design We use a mixed-methods design to evaluate the impact of career ladders on MA job quality. Participants We draw on interview data collected from 115 key informants at four large health systems (ranging from 24 to 29 clinics each), and we analyze wage and employment data for MAs from primary care clinics in the four health systems in the sample. Approach We describe the MA career ladder context and infrastructure within primary care clinics and evaluate the rewards to MAs for participation in the career ladder programs. Key Results The expanded roles within career ladders for MAs focused on the following four clinical and educational areas: panel management and care coordination, EHR documentation support, supporting delivery of person-centered care, and supervision and training. The three primary components of the career ladder infrastructure were training and education for MAs and

providers, credentialing and certification for MAs, and differentiated job levels for MAs. The use of career ladders in the four large health systems in our case study sample resulted in yearly income increases ranging from $3000 to $10,000 annually. Conclusion Investing in career ladders in primary care clinics can improve MA job quality while also potentially addressing issues of equity, efficiency, and quality in the health care sector.

Dill, J., Morgan, J. C., Chuang, E., et al. (2021). "Redesigning the Role of Medical Assistants in Primary Care: Challenges and Strategies During Implementation." Medical Care Research and Review **78**(3): 240-250. <Go to ISI>://WOS:000483246600001

Efforts to reform primary care increasingly focus on redesigning care in ways that utilize nonprovider staff such as medical assistants (MAs), but the implementation of MA role redesign efforts remains understudied in the U.S. health care literature. This article draws on rich, longitudinal case study data collected from four health care systems across the United States to examine critical challenges in the planning, implementation, and early sustainment of MA role redesign efforts in primary care. During the planning period, challenges included recruitment of highly trained MAs, compliance with organizational and state regulations regarding MA scope of practice, provision of consistent training across primary care clinics, and creation of career ladders that provided tiered compensation for MAs. During active implementation, challenges included provider training and preventing MA burnout. Strategies for addressing challenges in MA role redesign efforts are discussed, as well as early sustainment of program practices and organizational policies.

Doescher, M. P., Andrilla, C. H., Skillman, S. M., et al. (2014). "The contribution of physicians, physician assistants, and nurse practitioners toward rural primary care: findings from a 13-state survey." Med Care **52**(6): 549-556.

BACKGROUND: Estimates of the relative contributions of physicians, physician assistants (PAs), and nurse practitioners (NPs) toward rural primary care are needed to inform workforce planning activities aimed at reducing rural primary shortages. OBJECTIVES: For each provider group, this study quantifies the average weekly number of outpatient primary care visits and the types of services provided within and beyond the outpatient setting. METHODS: A randomly drawn sample of 788 physicians, 601 PAs, and 918 NPs with rural addresses in 13 US states responded to a mailed questionnaire that measured reported weekly outpatient visits and scope of services provided within and beyond the outpatient setting. Analysis of variance and $\chi(2)$ testing were used to test for bivariate associations. Multivariate regression was used to model average weekly outpatient volume adjusting for provider sociodemographics and geographical location. RESULTS: Compared with physicians, average weekly outpatient visit quantity was 8% lower for PAs and 25% lower for NPs ($P<0.001$). After multivariate adjustment, this gap became negligible for PAs ($P=0.56$) and decreased to 10% for NPs ($P<0.001$). Compared with PAs and NPs, primary care physicians were more likely to provide services beyond the outpatient setting, including hospital care, emergency care, childbirth attending deliveries, and after-hours call coverage (all $P<0.001$). CONCLUSIONS: Although our findings suggest that a greater reliance on PAs and NPs in rural primary settings would have a minor impact on outpatient practice volume, this shift might reduce the availability of services that have more often been traditionally provided by rural primary care physicians beyond the outpatient clinic setting.

Edwards, S. T., Rubenstein, L. V., Meredith, L. S., et al. (2015). "Who is responsible for what tasks within primary care: Perceived task allocation among primary care providers and interdisciplinary team members." Healthc (Amst) **3**(3): 142-149.

BACKGROUND: Unclear roles in interdisciplinary primary care teams can impede optimal team-based care. We assessed perceived task allocation among primary care providers (PCPs) and staff during implementation of a new patient-centered care model in Veterans Affairs (VA) primary care practices. METHODS: We performed a cross-sectional survey of PCPs and primary care staff (registered nurses (RNs), licensed practical/vocational nurses (LPNs), and medical assistants/clerks (MAs)) in 23 primary care practices within one VA region. We asked subjects whether PCPs performed each of 14 common primary care tasks alone, or relied upon staff for help. Tasks included gathering preventive service history, disease screening, evaluating patients and making treatment decisions, intervening on lifestyle factors, educating patients about self-care activities and medications, refilling prescriptions, receiving and resolving patient

messages, completing forms, tracking diagnostic data, referral tracking, and arranging home health care. We then performed multivariable regression to determine predictors of perceived PCP reliance on staff for each task. RESULTS: 162 PCPs and 257 staff members responded, a 60% response rate. For 12/14 tasks, fewer than 50% of PCPs reported relying on staff for help. For all 14 tasks, over 85% of RNs reported they were relied upon. For 12/14 tasks, over 50% of LPNs reported they were relied on, while for 5/14 tasks a majority of MAs reported being relied upon. Nurse practitioners and physician assistants (NP/PAs) reported relying on staff less than physicians. CONCLUSIONS: Early in the implementation of a team-based primary care model, most PCPs perceived they were solely responsible for most clinical tasks. RNs, and LPNs felt they were relied upon for most of the same tasks, while medical assistants/clerks reported being relied on for fewer tasks. Better understanding of optimal inter-professional team task allocation in primary care is needed.

Eilrich, F. C. (2016). "The economic effect of a physician assistant or nurse practitioner in rural America." Jaapa **29**(10): 44-48.

Revenues generated by physician assistants (PAs) and NPs in clinics and hospitals create employment opportunities and wages, salaries, and benefits for staff, which in turn are circulated throughout the local economy. An input-output model was used to estimate the direct and secondary effects of a rural primary care PA or NP on the community and surrounding area. This type of model explains how input/output from one sector of industry can be the output/input for another sector. Given two example scenarios, a rural PA or NP can have an employment effect of 4.4 local jobs and labor income of $280,476 from the clinic. The total effect to a community with a hospital increases to 18.5 local jobs and $940,892 of labor income.

Ellis, J., Bacon-Baguley, T. et Otieno, S. (2021). "Academic Entitlement in Physician Assistant Students." J Physician Assist Educ **32**(1): 1-9.

PURPOSE: The purpose of this study was to identify the prevalence and characteristics of academic entitlement (AE) among physician assistant (PA) students in the United States. METHODS: A cross-sectional survey design was used to assess AE using 2 previously validated AE surveys. Current PA students were recruited via email, and survey data were analyzed using descriptive statistics and cumulative logistic regression. RESULTS: Overall, the 337 PA students who participated in the study reported low levels of AE. Students displayed the highest level of AE on statements related to the role of professors and the lowest level of entitlement on statements pertaining to student responsibility and grade entitlement. Students who struggled academically were more likely to report AE in relation to professors' roles. Older students were more likely to display AE related to provision of necessary resources by the university and less likely to display AE regarding the method of delivery for learning materials. Higher levels of grade-related AE were found in students in the didactic phase, female students, and students who did not identify as White. In addition, students who did not identify as White were more likely to display AE in relation to tests. CONCLUSIONS: Literature shows that AE has increased and is a major concern in higher education. Although the overall study results indicated relatively low AE, we found increased AE in certain student groups. Earlier identification of students at increased risk for AE would allow educators to intervene more effectively in a timely manner.

Erikson, C. E., Pittman, P., LaFrance, A., et al. (2017). "Alternative payment models lead to strategic care coordination workforce investments." Nurs Outlook **65**(6): 737-745.
<Go to ISI>://WOS:000418624100010

Background: Care coordination is generally viewed as a key to success for health systems seeking to adapt to a range of new value-based payment policies. Purpose: This: study explores care coordination staffing in four health systems participating in new payment models, including Medicaid payment reform and Accountable Care Organizations. Methods: Comparative case study design is used to describe models of care coordination. Analysis of 43 semi-structured interviews with leadership, clinicians, and care coordination staff at four health systems engaged in value-based contracts. Discussion: Each of the sites engaged in significant task shifting of low-complexity care coordination activities to licensed practical nurses, medical assistants, and other unlicensed personnel freeing up registered nurses and social workers for more complex patients. Few have care coordination experience, requiring a significant

investment in on-the-job training. Conclusion: Payment reform is leading to a greater investment in the care coordination workforce. However, demonstrating the return on investment remains a challenge.

Everett, C., Chatterjee, S., Westneat, S., et al. (2018). "Physicians in Kentucky Perceive Physician Assistants to Be Competent Health Care Providers." BMJ Open **29**(4): 197-204.
https://bmjopen.bmj.com/content/bmjopen/11/5/e043972.full.pdf

PURPOSE: The use of certified physician assistants (PA) has increased throughout the US health care system. The purpose of this study was to objectively evaluate physicians' perceptions of PAs' mastery of specific skills. It is important to understand stakeholders' perceptions of PAs' capabilities to support future changes in policies for better utilization of PAs in our health care system. METHODS: From 2014 to 2015, randomly chosen "active" physicians listed with the Kentucky Board of Medical Licensure were surveyed about their perceptions of competencies of certified PAs. Six competency domains (medical knowledge, interpersonal and communication skills, patient care, professionalism, practice-based learning, and improvement and systems-based practice) were rated using a Likert scale. Each competency-derived skill-based question was ranked by the number of physicians giving the highest scores on the Likert scale (a score of 4 or 5) and by effect size. Cronbach's alpha for the survey was calculated. RESULTS: An overwhelming majority of the physicians perceived certified PAs to be competent (n ≥ 161, ≥ 60%) for specific skills. The survey had internal consistency with Cronbach's alpha ranging from 0.75 to 0.87 for competency domains. Effect size ranged from 0.44 to 0.98 for scores given by physicians with, versus without, experience with PAs. CONCLUSIONS: For the first time, there is objective evidence of physicians' perceptions of PAs' mastery of specific competency-derived PA skill sets. This study will help guide effective utilization of PAs throughout the health care system and future PA education.

Filipova, A. A. (2014). "Factors influencing the satisfaction of rural physician assistants: a cross-sectional study." J Allied Health **43**(1): 22-31.

The purpose of the study was to determine factors that attract physician assistants (PAs) to rural settings, and what they found satisfying about their practice and community. A cross-sectional survey design was used. All PAs who were practicing in both nonmetropolitan counties and rural communities in metropolitan counties, in a single midwestern US state, served as the population for the study. A total of 414 usable questionnaires were returned of the 1,072 distributed, a 39% response rate. Factor analysis, descriptive statistics, Pearson's correlation analysis, and robust regression analyses were used. Statistical models were tested to identify antecedents of four job satisfaction factors (satisfaction with professional respect, satisfaction with supervising physician, satisfaction with authority/ autonomy, and satisfaction with workload/salary). The strongest predictor of all four job satisfaction factors was community satisfaction, followed by importance of job practice. Additionally, the four job satisfaction factors had some significant associations with importance of socialization, community importance, practice attributes (years of practice, years in current location, specialty, and facility type), job responsibilities (percentage of patient load not discussed with physician, weekly hours as PA, inpatient visits), and demographics (marital status, race, age, education).

Forbes, J., Smith, A., Papa, J., et al. (2021). "Comparing the Physician Assistant National Certifying Examination Pass Rate of Graduates From Programs Utilizing Distance Education to the National Average." J Physician Assist Educ **32**(2): 71-73.

PURPOSE: The goal of this study was to compare the Physician Assistant National Certifying Examination (PANCE) pass rate of graduates from physician assistant (PA) programs utilizing distance education to the national average of PANCE pass rates. METHODS: The Physician Assistant Education Association online PA program directory was used to obtain the name and number of physician assistant (PA) programs that offered distance education in their curriculum. The National Commission on Certification of Physician Assistants PANCE Exam Performance Summary Report was reviewed for each PA program that offered distance education. The 5-year first-time taker mean pass rate for all PA programs offering distance education was calculated and compared to the 5-year national first-time taker average for all PA programs in the United States over the same 5-year period. RESULTS: The mean 5-year first-time taker pass rate for PA programs offering distance education was 96.9%. The 5-year national first-time taker

average pass rate for all PA programs was 96.0%. CONCLUSION: The results of this study show that graduates from PA programs utilizing distance education are effectively prepared to pass the PANCE and do so at a rate that is higher than the national mean for all PA programs.

Foster, C. B., Simone, S., Bagdure, D., et al. (2016). "Optimizing Team Dynamics: An Assessment of Physician Trainees and Advanced Practice Providers Collaborative Practice." Pediatr Crit Care Med **17**(9): e430-436.

OBJECTIVES: The presence of advanced practice providers has become increasingly common in many ICUs. The ideal staffing model for units that contain both advanced practice providers and physician trainees has not been described. The objectives of this study were to evaluate ICU staffing models that include physician trainees and advanced practice providers and their effects on patient outcomes, resident and fellow education, and training experience. A second aim was to assess strategies to promote collaboration between team members. DATA SOURCES: PubMed, CINAHL, OVID MEDLINE, and Cochrane Review from 2002 to 2015. STUDY SELECTION: Experimental study designs conducted in an ICU setting. DATA EXTRACTION: Two reviewers screened articles for eligibility and independently abstracted data using the identified search terms. DATA SYNTHESIS: We found 21 articles describing ICU team structure and outcomes. Four articles were found describing the impact of advanced practice providers on resident or fellow education. Two articles were found discussing strategies to promote collaboration between advanced practice providers and critical care fellows or residents. CONCLUSIONS: Several articles were identified describing the utilization of advanced practice providers in the ICU and the impact of models of care on patient outcomes. Limited data exist describing the impact of advanced practice providers on resident and fellow education and training experience. In addition, there are minimal data describing methods to enhance collaboration between providers. Future research should focus on determining the optimal ICU team structure to improve patient outcomes, education of trainees, and job satisfaction of team members and methods to promote collaboration between advanced practice providers and physicians in training.

Fraher, E. P., Cummings, A. et Neutze, D. (2021). "The Evolving Role of Medical Assistants in Primary Care Practice: Divergent and Concordant Perspectives from MAs and Family Physicians." Medical Care Research and Review **78**(1_SUPPL): 7S-17S.
<Go to ISI>://WOS:000583706100001

Medical assistants (MAs) are a flexible and low-cost resource for primary care practices and their roles are swiftly transforming. We surveyed MAs and family physicians in primary care practices in North Carolina to assess concordance in their perspectives about MA roles, training, and confidence in performing activities related to visit planning; direct patient care; documentation; patient education, coaching or counseling; quality improvement; population health and communication. For most activities, we did not find evidence of role confusion between MAs and physicians, physician resistance to delegate tasks to properly trained MAs, or MA reluctance to pursue training to take on new roles. Three areas emerged where the gap between the potential and actual implementation of MA role transformation could be narrowed-population health and panel management; patient education, coaching, and counseling; and scribing. Closing these gaps will become increasingly important as our health care system moves toward value-based models of care.

Fraher, E. P., Morgan, P. et Johnson, A. (2016). "Specialty distribution of physician assistants and nurse practitioners in North Carolina." Jaapa **29**(4): 38-43.

Physician workforce projections often include scenarios that forecast physician shortages under different assumptions about the deployment of physician assistants (PAs) and nurse practitioners (NPs). These scenarios generally assume that PAs and NPs are an interchangeable resource and that their specialty distributions do not change over time. This study investigated changes in PA and NP specialty distribution in North Carolina between 1997 and 2013. The data show that over the study period, PAs and NPs practiced in a wide range of specialties, but each profession had a specific pattern. The proportion of PAs-but not NPs-reporting practice in primary care dropped significantly. PAs were more likely than NPs to report practice in urgent care, emergency medicine, and surgical subspecialties. Physician workforce models need to account for the different and changing specialization trends of NPs and PAs.

Fréchette, D. et Shrichand, A. (2016). "Insights into the physician assistant profession in Canada." Jaapa **29**(7): 35-39.

Freund, T., Everett, C., Griffiths, P., et al. (2015). "Skill mix, roles and remuneration in the primary care workforce: Who are the healthcare professionals in the primary care teams across the world?" International Journal of Nursing Studies **52**(3): 727-743.
<Go to ISI>://WOS:000350184700008

> World-wide, shortages of primary care physicians and an increased demand for services have provided the impetus for delivering team-based primary care. The diversity of the primary care workforce is increasing to include a wider range of health professionals such as nurse practitioners, registered nurses and other clinical staff members. Although this development is observed internationally, skill mix in the primary care team and the speed of progress to deliver team-based care differs across countries. This work aims to provide an overview of education, tasks and remuneration of nurses and other primary care team members in six OECD countries. Based on a framework of team organization across the care continuum, six national experts compare skill-mix, education and training, tasks and remuneration of health professionals within primary care teams in the United States, Canada, Australia, England, Germany and the Netherlands. Nurses are the main non-physician health professional working along with doctors in most countries although types and roles in primary care vary considerably between countries. However, the number of allied health professionals and support workers, such as medical assistants, working in primary care is increasing. Shifting from 'task delegation' to 'team care' is a global trend but limited by traditional role concepts, legal frameworks and reimbursement schemes. In general, remuneration follows the complexity of medical tasks taken over by each profession. Clear definitions of each team-member's role may facilitate optimally shared responsibility for patient care within primary care teams. Skill mix changes in primary care may help to maintain access to primary care and quality of care delivery. Learning from experiences in other countries may inspire policy makers and researchers to work on efficient and effective teams care models worldwide. (C) 2014 The Authors. Published by Elsevier Ltd.

Gadbois, E. A., Miller, E. A., Tyler, D., et al. (2015). "Trends in state regulation of nurse practitioners and physician assistants, 2001 to 2010." Med Care Res Rev **72**(2): 200-219.

> Nurse practitioners and physician assistants can alleviate some of the primary care shortage facing the United States, but their scope-of-practice is limited by state regulation. This study reports both cross-sectional and longitudinal trends in state scope-of-practice regulations for nurse practitioners and physician assistants over a 10-year period. Regulations from 2001 to 2010 were compiled and described with respect to entry-to-practice standards, physician involvement in treatment/diagnosis, prescriptive authority, and controlled substances. Findings indicate that most states loosened regulations, granting greater autonomy to nurse practitioners and physician assistants, particularly with respect to prescriptive authority and physician involvement in treatment and diagnosis. Many states also increased barriers to entry, requiring high levels of education before entering practice. Knowledge of state trends in nurse practitioner and physician assistant regulation should inform current efforts to standardize scope-of-practice nationally.

GAO (2019). Health care workforce: Views on Expanding Medicare Graduate Medical Education Funding to Nurse Practitioners and Physician Assistants. Washington GAO**:** 32.
https://www.gao.gov/products/GAO-20-162

> Studies point to a physician shortage in the U.S., making it harder for people to get needed health care. Training more nurse practitioners and physician assistants could help people get care. Most federal funding to educate health care providers funds physician residencies through Medicare's graduate medical education program. Could that program be expanded to include nurse practitioners and physician assistants? According to stakeholders, there could be benefits and challenges. For example, the program would provide reliable funding from year to year. But stakeholders were also concerned about diverting resources from physician residencies.

Gillette, C., Everett, C., Ostermann, J., et al. (2022). "Job attributes valued by physicians, PAs, and NPs: A cross-sectional survey." Jaapa **35**(9): 46-50.

OBJECTIVE: This study evaluated the relative importance of job-, community-, and individual-related factors that contribute to job choice among physicians, physician assistants (PAs), and NPs, to inform policy options to recruit clinicians to rural areas. METHODS: A cross-sectional online survey of PA preceptors from three institutions in two states. Participants were asked to rate the importance of 16 job-, community-, and individual-related factors when choosing a job. RESULTS: We received responses from 45 physicians, 74 PAs, and 15 NPs (24.2% response rate), who rated most job-, community-, and individual-related factors as important; ratings were similar across clinicians. PAs rated loan repayment programs and work hours higher than physicians, though the magnitude of the difference was small. CONCLUSIONS: Clinicians similarly rated many factors as important. A better understanding of the tradeoffs clinicians are willing to make between these factors when making a job choice is critical to increase the attractiveness of rural positions.

Goldgar, C., Hills, K. J., VanderMeulen, S. P., et al. (2019). "Using the Core Competencies for New Physician Assistant Graduates to Prioritize Admission Criteria for PA Practice in 2025." J Physician Assist Educ **30**(2): 111-117.

In a fast-changing medical and educational environment, it is incumbent upon the physician assistant (PA) education community to periodically consider what the future practice environment might look like for our graduates. Changes in technology, regulation, reimbursement, health system economics, and health care delivery are among the many forces shaping the practice environment of the future. The 2018 Physician Assistant Education Association (PAEA) Presidents Commission reflected on what PA practice might look like in 2025 and used the Association's Core Competencies for New PA Graduates to consider what characteristics might therefore be required of the PA graduates who will practice in this future. We postulate that the future PA practice environment will require enhanced skills in such areas as interpreting technology-driven clinical data for patients and practices, consulting effectively with increasingly specialized members of health care teams, understanding population health and predictive analytics, and knowing how to access and critically assess new medical information. Working backward, we identify certain noncognitive attributes that will likely need to be prioritized in our admission processes and suggest some tools that can be used to assess them. These attributes include ethical responsibility, communication, critical thinking, situational judgment, and professionalism. As with all Presidents Commission articles, this piece is intended primarily to stimulate thought, dialogue, and future research. We encourage all faculty to participate in this dialogue, through the new PAEA Digital Learning Hub (https://paealearning.org/learn/digital-learning-hub/) and other channels.

Gordes, K. L., Fleming, S., Cawley, J. F., et al. (2021). "Advancing Physician Assistant Faculty Development: A New Model." J Physician Assist Educ **32**(3): 171-175.

PURPOSE: The purpose of this article is to describe the development, implementation, and evaluation of an innovative physician assistant (PA) faculty development model. METHODS: The Maryland Physician Assistant Leadership and Learning Academy's (PALLA's) executive team developed a 10-month fellowship designed to build a skilled faculty pipeline. The fellowship framework was grounded in the PA educator competencies, the 3 pillars of academia, and the 5th edition Accreditation Standards for Physician Assistant Education. The self-perceived impact of the fellowship was evaluated through multiple surveys. RESULTS: Survey results show that all of the learning activities met fellows' expectations, and fellows indicated strong agreement in self-perceived achievement in meeting the fellowship outcome goals. CONCLUSION: Study results provide evidence that formal training increases self-perceived competence in clinicians transitioning to academia. PALLA can serve as a model for other states to ensure faculty capacity within PA education.

Graeff, E. C., Leafman, J. S., Wallace, L., et al. (2014). "Job satisfaction levels of physician assistant faculty in the United States." J Physician Assist Educ **25**(2): 15-20.

PURPOSE: Understanding job satisfaction in academia is important in order to recruit and retain faculty. Faculty members with greater job dissatisfaction are more likely to leave than faculty members who are satisfied. Physician assistant (PA) faculty job satisfaction needs to be assessed to determine which job

facets are satisfying or dissatisfying. METHODS: A quantitative descriptive study was done using a Web-based survey sent to PA faculty. The Job Descriptive Index (JDI), a validated survey, was used to measure levels of job satisfaction. The means for each facet were calculated to indicate levels of satisfaction with the job overall, work, supervision, co-workers, pay, promotion, levels of stress, and trustworthiness in management. Correlations were run among demographic factors, salary, and overall job satisfaction. RESULTS: Of the 1,241 PA faculty that received the survey, 239 responses (19.3% response rate) met the criteria for study inclusion. The highest level of satisfaction was with one's co-workers (mean 46.83, range 0 to 54). The promotion facet received the lowest mean level of satisfaction with a 22.2 (range 0 to 54). A small correlation was found between job satisfaction and academic rank (r = -.153, P = .020). CONCLUSION: Job satisfaction is linked to increased productivity and performance. It is important to understand job satisfaction to make improvements in the appropriate areas. Overall, the results indicate that PA faculty are satisfied with their jobs. Further research is needed to understand the factors that contribute to satisfaction among PA faculty.

Graham, K. et Beltyukova, S. (2015). "Development and initial validation of a measure of intention to stay in academia for physician assistant faculty." J Physician Assist Educ **26**(1): 10-18.

PURPOSE: The purpose of this research was to construct and validate a measure of "intention to stay in academia" for physician assistant faculty members. METHODS: The 70-item instrument was developed through a literature review, a qualitative investigation of how experienced physician assistant faculty members conceptualized "intention to stay in academia," and an expert review of survey items. The items were pilot tested on a convenience sample of 53 faculty members from 9 physician assistant programs; the revised survey was then administered to all 1002 physician assistant program faculty members in the United States with physician assistant credentials. Rasch analyses were conducted to examine psychometric properties of the measure and collect evidence of validity. RESULTS: The national survey had a 48% response rate, and participants were representative of all physician assistant faculty members. Although the overall instrument demonstrated acceptable construct coverage, good reliability estimates, and adequate fit statistics for the majority of the items, only 36.5% of the variance in the data could be explained by the measure. A subset of 19 items relating to a supportive academic environment ("Supportive Environment" scale) was extracted and met the expectations of the Rasch model. CONCLUSIONS: The Supportive Environment scale produced a meaningful progression of indicators of "intention to stay in academia" for physician assistant faculty members and demonstrated characteristics of a linear measure. Administrators can make valid inferences regarding physician assistant faculty intention to stay from the subscale analysis.

Graves, J. A., Mishra, P., Dittus, R. S., et al. (2016). "Role of Geography and Nurse Practitioner Scope-of-Practice in Efforts to Expand Primary Care System Capacity: Health Reform and the Primary Care Workforce." Med Care **54**(1): 81-89.

BACKGROUND: Little is known about the geographic distribution of the overall primary care workforce that includes both physician and nonphysician clinicians--particularly in areas with restrictive nurse practitioner scope-of-practice laws and where there are relatively large numbers of uninsured. OBJECTIVE: We investigated whether geographic accessibility to primary care clinicians (PCCs) differed across urban and rural areas and across states with more or less restrictive scope-of-practice laws. RESEARCH DESIGN: An observational study. SUBJECTS: 2013 Area Health Resource File (AHRF) and US Census Bureau county travel data. MEASURES: The measures included percentage of the population in low-accessibility, medium-accessibility, and high-accessibility areas; number of geographically accessible primary care physicians (PCMDs), nurse practitioners (PCNPs), and physician assistants (PCPAs) per 100,000 population; and number of uninsured per PCC. RESULTS: We found divergent patterns in the geographic accessibility of PCCs. PCMDs constituted the largest share of the workforce across all settings, but were relatively more concentrated within urban areas. Accessibility to nonphysicians was highest in rural areas: there were more accessible PCNPs per 100,000 population in rural areas of restricted scope-of-practice states (21.4) than in urban areas of full practice states (13.9). Despite having more accessible nonphysician clinicians, rural areas had the largest number of uninsured per PCC in 2012. While less restrictive scope-of-practice states had up to 40% more PCNPs in some areas, we found little evidence of differences in the share of the overall population in low-accessibility areas across scope-of-practice categorizations. CONCLUSIONS: Removing restrictive scope-of-practice laws may expand the

overall capacity of the primary care workforce, but only modestly in the short run. Additional efforts are needed that recognize the locational tendencies of physicians and nonphysicains.

Gray, C. P., Harrison, M. I. et Hung, D. (2016). "Medical Assistants as Flow Managers in Primary Care: Challenges and Recommendations." Journal of Healthcare Management **61**(3): 181-191.
<Go to ISI>://WOS:000376474900005

As healthcare organizations look for ways to reduce costs and improve quality, many rely increasingly on allied healthcare professionals and, in particular, medical assistants (MAs) to supplement the work of physicians and other health professionals. MAs usually work in primary care, where they often play important roles on healthcare teams. Drawing on an empirical study of a large, multispecialty delivery system engaged in reconfiguration of primary care, we found that using MAs as flow managers required overcoming several challenges. These included entrenched social and occupational hierarchies between physicians and MAs, a lack of adequate training and mentorship, and difficulty attracting and retaining talented MAs. We offer several recommendations for healthcare organizations interested in using MAs as flow managers in their practices.

Gruca, T. S., Nelson, G. C., Smith, V. A., et al. (2020). "Utilization and Costs by Primary Care Provider Type: Are There Differences Among Diabetic Patients of Physicians, Nurse Practitioners, and Physician Assistants?" Health Serv Res **58**(8): 681-688.
https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1475-6773.13280?download=true

OBJECTIVE: The objective of this study was to compare health care utilization and costs among diabetes patients with physician, nurse practitioner (NP), or physician assistant (PA) primary care providers (PCPs). RESEARCH DESIGN AND METHODS: Cohort study using Veterans Affairs (VA) electronic health record data to examine the relationship between PCP type and utilization and costs over 1 year in 368,481 adult, diabetes patients. Relationship between PCP type and utilization and costs in 2013 was examined with extensive adjustment for patient and facility characteristics. Emergency department and outpatient analyses used negative binomial models; hospitalizations used logistic regression. Costs were analyzed using generalized linear models. RESULTS: PCPs were physicians, NPs, and PAs for 74.9% (n=276,009), 18.2% (n=67,120), and 6.9% (n=25,352) of patients respectively. Patients of NPs and PAs have lower odds of inpatient admission [odds ratio for NP vs. physician 0.90, 95% confidence interval (CI)=0.87-0.93; PA vs. physician 0.92, 95% CI=0.87-0.97], and lower emergency department use (0.67 visits on average for physicians, 95% CI=0.65-0.68; 0.60 for NPs, 95% CI=0.58-0.63; 0.59 for PAs, 95% CI=0.56-0.63). This translates into NPs and PAs having ~$500-$700 less health care costs per patient per year (P<0.0001). CONCLUSIONS: Expanded use of NPs and PAs in the PCP role for some patients may be associated with notable cost savings. In our cohort, substituting care patterns and creating similar clinical situations in which they practice, NPs and PAs may have reduced costs of care by up to 150-190 million dollars in 2013.

Han, X., Chen, C. et Pittman, P. (2021). "Use of Temporary Primary Care Providers in Federally Qualified Health Centers." J Rural Health **37**(1): 61-68.
https://onlinelibrary.wiley.com/doi/10.1111/jrh.12424

OBJECTIVE: This study examines the use of temporary providers in federally qualified health centers (FQHCs) in recent years and identifies associated factors. METHODS: Using 2013-2017 federal administrative data of 1,028 FQHCs, we describe trends in the number and percentage of FQHCs that used temporary primary care physicians and advanced practice providers (nurse practitioners, physician assistants, and certified nurse midwives). We employed descriptive statistics to compare facility and patient characteristics between FQHCs that used and did not use temporary providers and constructed multivariate linear probability models to identify factors associated with their use. FINDINGS: Slightly over one-third of FQHCs used temporary primary care providers during 2013-2017. During this period, fewer FQHCs used temporary family physicians, while more FQHCs used nurse practitioners and physician assistants. Centers that used temporary providers were larger and less rural. Multivariate regression analysis showed that neither Health Professional Shortage Area facility scores (a measure of provider shortage), nor the county primary care provider-to-population ratio, was a predictor of temporary provider usage in FQHCs. Instead, facility regular primary care staff-to-patient ratio was

positively associated with use of temporary providers. CONCLUSION: Temporary providers tend to be used in FQHCs where measure of underservice appears to be less severe. Future research should use qualitative interviews or other data sources to explore further the underlying reasons for using temporary providers in FQHCs.

Harrison, R. S., Adamson, K. J. et Kroger, S. M. (2015). "The Interservice Physician Assistant Program: Education quantity and quality." Jaapa **28**(12): 56-61.

The Interservice Physician Assistant Program (IPAP) was formed in 1996 by the assimilation of three service programs (Army, Air Force, and Navy). Applicants are selected from each service and upon successful completion of the program become commissioned officers within their respective medical corps. Clinical training takes place within military treatment facilities across the United States. Located in San Antonio, Texas, the program graduates about 169 PAs a year. Graduates are deployed to attend to service personnel, refugees, civilians, and victims of epidemics. The IPAP is unique in that it is the largest PA program in the world and its applicant pool is restricted to military personnel.

Hing, E. et Hsiao, C. J. (2014). "State variability in supply of office-based primary care providers: United States, 2012." NCHS Data Brief(151): 1-8.

Data from the National Ambulatory Medical Care Survey (NAMCS) and the NAMCS Electronic Health Records Survey In 2012, 46.1 primary care physicians and 65.5 specialists were available per 100,000 population. From 2002 through 2012, the supply of specialists consistently exceeded the supply of primary care physicians. Compared with the national average, the supply of primary care physicians was higher in Massachusetts, Rhode Island, Vermont, and Washington; it was lower in Arkansas, Georgia, Mississippi, Nevada, New Mexico, and Texas. In 2012, 53.0% of office-based primary care physicians worked with physician assistants or nurse practitioners. Compared with the national average, the percentage of physicians working with physician assistants or nurse practitioners was higher in 19 states and lower in Georgia. Primary care providers include primary care physicians, physician assistants, and nurse practitioners. Primary care physicians are those in family and general practice, internal medicine, geriatrics, and pediatrics (1). Physician assistants are state-licensed health professionals practicing medicine under a physician's supervision. Nurse practitioners are registered nurses (RNs) with advanced clinical training (2-6). The ability to obtain primary care depends on the availability of primary care providers (3). This report presents state estimates of the supply of primary care physicians per capita, as well as the availability of physician assistants or nurse practitioners in primary care physicians' practices. Estimates are based on data from the National Ambulatory Medical Care Survey (NAMCS), Electronic Health Records (EHR) Survey, a nationally representative survey of office-based physicians.

Hing, E., Kurtzman, E., Lau, D. T., et al. (2017). "Characteristics of Primary Care Physicians in Patient-centered Medical Home Practices: United States, 2013." Natl Health Stat Report(101): 1-9.

Objective-This report describes the characteristics of primary care physicians in patient-centered medical home (PCMH) practices and compares these characteristics with those of primary care physicians in non-PCMH practices. Methods-The data presented in this report were collected during the induction interview for the 2013 National Ambulatory Medical Care Survey, a national probability sample survey of nonfederal physicians who see patients in office settings in the United States. Analyses exclude anesthesiologists, radiologists, pathologists, and physicians in community health centers. In this report, PCMH status is self-defined as having been certified by one of the following organizations: Accreditation Association for Ambulatory Health Care, The Joint Commission, National Committee for Quality Assurance, URAC, or other certifying bodies. Estimates exclude physicians missing information on PCMH status. Sample data are weighted to produce national estimates of physicians and characteristics of their practices. Results-In 2013, 18.0% of office-based primary care physicians worked in practices certified as PCMHs. A higher percentage of primary care physicians in PCMH practices (68.8%) had at least one physician assistant, nurse practitioner, or certified nurse midwife on staff compared with non-PCMH practices (47.7%). A higher percentage of primary care physicians in PCMH practices reported electronic transmission (69.6%) as the primary method for receiving information on patients hospitalized or seen in emergency departments compared with non-PCMH practices (41.5%). The percentage of primary care physicians in practices reporting quality measures or quality indicators to payers or organizations

monitoring health care quality was higher in PCMH practices (86.8%) compared with non-PCMH practices (70.2%).

Hocking, J., Crowley, D. et Cawley, J. F. (2013). "Physician assistant education: an analysis of the Journal of Physician Assistant Education." J Physician Assist Educ **24**(2): 6-11.

PURPOSE: The literature of a profession reflects its vitality, activity, and intellectual temperature. A thorough review of literature can reveal areas of growth and improvement as well as serve as a means to share relevant research accomplishments. As the physician assistant (PA) education profession continues to thrive and expand, it is important for the literature that reflects the profession to also develop and expand its audience. METHODS: A retrospective, systematic analysis of published research articles in the Journal of Physician Assistant Education (JPAE) and its predecessor publication, Perspective on Physician Assistant Education, from 2001-2011 (N = 145) was conducted. Articles were organized by study topic, cohort of interest, and methodology and further analyzed to determine respective response rates and frequency of topics. RESULTS: Nearly one-fourth of all articles considered were dedicated to studying various PA curricula. Methodological approaches used in these studies tended toward Internet-based surveys, but telephone-based surveys retained the highest response rate (97%). Among study subjects (cohorts) examined, the most frequently studied cohort consisted of PA students, who displayed high response rates (74.4%). CONCLUSION: The total number of articles published in JPAE increased annually; study methodology reflects a predominance of survey research approaches. Analysis from this review of 10 years of JPAE content suggests that studies using effective methodology to gain high response rates, those that have more sophisticated designs and use appropriate statistical measures, and those that aim to reach a more diverse pool of cohorts may be future goals.

Hoekzema, G. S. et Stevermer, J. J. (2018). "Characterization of Licensees During the First Year of Missouri's Assistant Physician Licensure Program." Jama **320**(16): 1706-1707.

This study characterizes the number of licenses issued to assistant physicians in the first year of Missouri's assistant physician program, which authorizes physicians who have not completed their residencies to provide primary care services in underserved areas.

Hoff, T. et Prout, K. (2019). "Physician Use of Health Care Teams for Improving Quality in Primary Care." Qual Manag Health Care **28**(3): 121-129.

OBJECTIVES: Health care teams may be used to improve quality in the primary care setting. Absent in the extant literature on health care teams is knowledge of how physicians seek to deploy this innovation on an everyday basis to improve care quality. This study's aim was to explore how physicians use teams in practice to deliver higher-quality care. METHODS: A qualitative study using data collected through 39 interviews with primary care physicians and 9 interviews with medical assistants, employed across different primary care settings in the northeastern region of the United States. RESULTS: Physicians used teams for 2 care quality functions: "getting basic care duties off their plate" to have more time for complex care delivery and "as relational extensions" of themselves to enhance the patient experience and provide care continuity. Physicians identified the following ingredients for using teams for these functions: (a) achieving long-term continuity working with the same team members; (b) having the correct mix of personalities and skills sets on the team; and (c) a "who is doing what" focus in the team for achieving role clarity. CONCLUSIONS: The findings illuminate how primary care physicians attempt to use teams to improve care quality and enhance their role as care providers.

Honda, T., Barry, C., Buchs, S. R., et al. (2019). "Considerations Around Predicting Physician Assistant National Certifying Exam Scores From PACKRAT®: A Multiprogram Study." J Physician Assist Educ **30**(2): 86-92.

PURPOSE: The Physician Assistant Clinical Knowledge Rating and Assessment Tool (PACKRAT®) is a known predictor of performance on the Physician Assistant National Certifying Exam (PANCE). It is unknown, however, whether these associations (1) vary across programs; (2) differ by PACKRAT metrics (first-year [PACKRAT 1], second-year [PACKRAT 2], and composite score [arithmetic mean of PACKRAT 1 and PACKRAT 2]); or (3) are modified by demographic or socioeconomic variables. METHODS: Linear and logistic hierarchical regression models (HRMs) were used to evaluate associations between PACKRAT

metrics and (1) continuous PANCE scores and (2) odds of low PANCE performance (LPP), respectively. Likelihood ratio tests were used to evaluate differences in associations between programs and effect modification by demographic and socioeconomic variables. Receiver operating characteristic (ROC) curves were used to examine the sensitivity, specificity, positive predictive values, and negative predictive values for various PACKRAT metrics/cut points. Models were adjusted for demographic and socioeconomic variables. The PACKRAT scores were standardized for each year to the national mean and SD. RESULTS: Adjusted HRMs across 5 programs (n = 1014) found the composite score to have the strongest association, with a 10-percentile-point increase associated with a 22-point (95% confidence interval [CI]: 19-26) increase in PANCE score. The composite score also strongly predicted decrements in odds of LPP (odds ratio: 0.46; 95% CI: 0.38-0.55). Hierarchical regression models and ROC curves identified significant variability in associations among programs. Effect modification was not observed by any investigated variable. CONCLUSIONS: The composite score had the largest magnitudes of association with PANCE scores and odds of LPP. The significant difference in association identified between programs suggests that the predictive ability of the exam is not uniform. The lack of effect modification by demographic and socioeconomic variables suggests that associations do not significantly differ by these metrics.

Hooker, R. S., Brock, D. M. et Cook, M. L. (2016). "Characteristics of nurse practitioners and physician assistants in the United States." J Am Assoc Nurse Pract **28**(1): 39-46.

BACKGROUND: Nurse practitioners (NP) and physician assistants (PA) serve as independent or semiautonomous providers and as fundamental members of healthcare teams. PURPOSE: Differentiating roles of health professionals is needed for optimal employment utilization. Clinically practicing PAs and NPs were characterized. METHODOLOGY: Data included wage and workforce projections to 2022.Variables included number practicing, age, gender, race, ethnicity, education, principal employer, practice specialty, and wages. RESULTS: Health delivery establishments employed 88,110 PA and 113,370 NP clinicians in 2013. Both were predominantly female: NPs were older (49 years) on average than PAs (38 years). A significant number of them practiced in physicians' offices or in acute care hospitals. Median wages were at parity. Growth predictions from 2012 to 2022 were 31%-35%. CONCLUSIONS: PAs and NPs constitute 20% of the composite clinician labor force (MD, DO, PA, NP). Labor market analysis suggests they are in demand. A majority of NPs and a third of PAs work in primary care fields. Their collective projected growth suggests a solution to emerging workforce shortages and an ability to help meet healthcare demands. IMPLICATIONS FOR PRACTICE: Adaptability to changing roles, especially in primary care and underserved areas, makes them facile responders to market demands in a continuously evolving healthcare environment.

Hooker, R. S. et Cawley, J. F. (2021). "Physician assistants/associates at 6 decades." Am J Manag Care **27**(11): 498-504.

The introduction of the American physician assistant/associate (PA) was predicated on the belief that the nation's health care needs had outpaced the supply of physicians. The notion that the medical experience of veterans could be utilized in the civilian sector was at the forefront of discussion. From 1965 to the third decade of the new century, the PA has become established in this role and has become an integrated part of society. As of 2021, more than 125,000 PAs are in clinical practice; most (76%) are female, with a mean age of 41 years. PAs work in 65 distinct areas of medicine and surgery, with a quarter in the primary care disciplines. The most visible practice settings are family medicine, surgical subspecialities, emergency medicine, and orthopedics. Sites of PA employment include primary care offices, emergency departments, and inpatient settings. PAs work as hospitalists and intensivists, with some skilled in cardiac catheterization and traumatology. Increasingly, PAs are utilized in graduate medical education, supporting the continuity of care across hospital teaching wards. In a wide range of studies, the evidence demonstrates that PAs produce care indistinguishable from that of a physician in general medicine. When care by PAs for patients with complex and chronic diseases is compared with physician care, the outcomes are the same but the labor cost is considerably lower. The economics of PAs favor their employment, and patient satisfaction is the same as that with doctors. In 2021, at least 11,000 PAs graduated from 277 accredited programs. This graduation rate is increasing, with 20 more programs in development. Predictive modeling by the Bureau of Labor Statistics suggests that the employment growth of PAs will continue beyond 2030.

Hooker, R. S. et Cawley, J. F. (2022). "Physician Associates/Assistants in Primary Care: Policy and Value." J Ambul Care Manage **45**(4): 279-288.

Since the new century, primary care physician supply has worsened. Analysts predict that health service demand in the United States will grow faster than physician supply. One strategy is the utilization of physician assistants/associates (PAs). Most PAs work full-time, and approximately one quarter are employed in family medicine/general medicine. PAs deliver primary care services in a team-oriented fashion in a wide variety of settings, including private health systems and community health centers. One fifth work in rural and medically underserved areas. Together PAs and nurse practitioners provide approximately one third of the medical services in family medicine, urgent care, and emergency medicine.

Hooker, R. S. et Muchow, A. N. (2014). "Supply of physician assistants: 2013-2026." Jaapa **27**(3): 39-45.

As part of healthcare reform, physician assistants (PAs) are needed to help mitigate the physician shortage in the United States. This requires understanding the population of clinically active PAs for accurate prediction purposes. An inventory projection model of PAs drew on historical trends, the PA stock, graduation estimates, retirement trends, and PA intent to retire data. A new source of licensed health professionals, Provider 360 Database, was obtained to augment association information. Program growth and graduate projections indicated an annual 4.7% trend in new entrants to the workforce, offset by annual attrition estimates of 2.9%. As of 2013, there were 84,064 licensed PAs in the United States. The stock and flow equation conservatively predicts the supply of PAs to be 125,847 by 2026. Although the number of clinically active PAs is projected to increase at least by half by 2026, substantial gaps remain in understanding career trends and early attrition influences. Furthermore, education production could be constrained by inadequate clinical training sites and scarcity of faculty.

Hooker, R. S. et Muchow, A. N. (2015). "Modifying State Laws for Nurse Practitioners and Physician Assistants Can Reduce Cost Of Medical Services." Nurs Econ **33**(2): 88-94.

"Bending the cost curve" for health care services in the United States challenges policymakers. A cost analysis was undertaken based on what would occur if more physician assistants (PAs) and nurse practitioners (NPs) per capita were deployed over a 10-year period. The State of Alabama was used as a case study because it is one of a handful of U.S. states with restrictive legislation impacting the scope of practice of PAs and NPs. Changing PA and NP scope of practice legislation in Alabama to match states in the upper quartile of collaborative legislation such as Washington and Arizona would increase the employment and distribution of PAs and NPs. Even modest changes in legislation will result in a net savings of $729 million over the 10-year period. Underutilization of PAs and NPs by restrictive licensure inhibits the cost benefits of increasing the supply of PAs and NPs and reducing the reliance on a stagnant supply of primary care physicians in meeting the needs of its citizens.

Huang, L. M. (2015). "Executive Summary: 30th Report on Physician Assistant Educational Programs in the United States." J Physician Assist Educ **26**(3): 123-125.

PURPOSE: The purpose of this executive summary was to provide an overview of key findings from By the Numbers: 30th Report on Physician Assistant Educational Programs in the United States. METHODS: The 2014 Program Survey is a Web-based survey and is administered annually to all member physician assistant (PA) program directors. This executive summary will focus on 4 of the 7 sections of the survey instrument: general, financial, program personnel, and students. RESULTS: The typical PA program's sponsoring institution is private and in a nonacademic health center. Most PA programs (93.0%) offer a master's degree as the primary or highest credential. The average total program budget was $2,221,751 (SD=$2,426,852). The average total resident tuition was $64,961, and the average total nonresident tuition was $75,964. Overall, 181 programs reported 1843 program faculty. Of those, 1467 were identified as core faculty and 376 were identified as adjunct faculty. A typical first-year PA student is 26 years old (SD=2.51), female (70.3%, n=5898), non-Hispanic (89.3%, n=3631), White (79.9%, n=3712), and has an overall undergraduate and science grade point average (GPA) of 3.52 (SD=0.14) and 3.47 (SD=0.16), respectively. In 2014, there were approximately 7556 graduates from 164 responding programs.

CONCLUSION: By gaining a better understanding of the characteristics of PA programs and their faculty and students, policy makers can be better informed. Physician assistant educators and stakeholders are encouraged to use this information to advance and advocate for the profession.

Jeffery, C., Morton-Rias, D., Rittle, M., et al. (2017). "Physician assistant dual employment." Jaapa-Journal of the American Academy of Physician Assistants **30**(7): 35-38.
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National health workforce supply and demand models help predict requirements built on individual annual productivity assumptions. Dual employment rarely is addressed, yet in 2015, about 13.5% of certified physician assistants (PAs) reported two or more clinical positions. Of PAs working two positions, 44% reported the main reason was to supplement earnings, followed by role variety. The mean number of hours worked by all certified PAs was 40.7 per week and the average number of patients was 75. Dual-employed PAs averaged more than 51 hours and 97 patients per week. This new finding reveals an added dimension to provider productivity statistics requiring refinements to annual output calculations.

Jhaveri, P., Abdulahad, D., Fogel, B., et al. (2022). "Impact of Scribe Intervention on Documentation in an Outpatient Pediatric Primary Care Practice." Acad Pediatr **22**(2): 289-295.
https://www.academicpedsjnl.net/article/S1876-2859(21)00256-4/fulltext

PURPOSE: The use of the electronic health record (EHR) has led to physician dissatisfaction, physician burnout, and delays in documentation and billing. Medical scribes can mitigate these unintended consequences by reducing documentation workload and increasing efficiency. OBJECTIVE: To study the effects of medical scribes on time to completion of notes and clinician experience, with a focus on time spent charting during clinic and after-hours. We hypothesized that medical scribes in an outpatient pediatric setting would decrease clinician time spent charting, time to finalize encounter notes, and clinician's perceived documentation time. METHODS: This 15-month single-center observational study was carried out with 3 study periods: pre-scribe, with-scribe, and scribe-withheld. Time spent in EHR was extracted by our EHR vendor. Participants completed surveys regarding time spent documenting. Six clinicians (5 physicians, 1 nurse practitioner) participated in this study to trial the implementation of medical scribes. RESULTS: EHR time data were collected for 4329 patient visits (2232 pre-scribe, 1888 with-scribe, 209 scribe-withheld periods). Comparing pre-scribe versus with-scribe periods, documentation time per patient decreased by 3-minutes 28-seconds per patient (pre-scribe IQR: 6, with-scribe IQR: 3, P = .028); note timeliness decreased from 0.96 days to 0.26 days (pre-scribe IQR: 0.22, with-scribe IQR: 0.11, P = .028); and clinicians' estimates of time spent in the EHR decreased by 1.2 hours per clinic session (pre-scribe IQR: 0.5, with-scribe IQR: 0.5, P = .031). CONCLUSIONS: Medical scribes in an outpatient pediatric setting result in: 1) decreased time spent charting, 2) reduced time to final sign clinic notes, and 3) decrease in clinician's perceived time spent documenting.

Jones, I. W. (2020). "Seeing Value in Physician Assistants." Physician Assistant Clinics **5**(1): 79-+.
<Go to ISI>://WOS:000500736000009

A qualitative approach and literature review are used to provide perspective on the paradigms and opinions on value as a key theoretic concept for Physician Assistants (PA). Considering the social implications of efficiency and effectiveness means looking at what people value, or the human factor in the PA role. The article investigates how PAs are valued in medical practice by physicians and explores the different viewpoints used in evaluating the concept of value in medicine.

Jones, I. W. et St-Pierre, N. (2014). "Physician assistants in Canada." Jaapa **27**(3): 11, 13.

Jun, H. J., Gordes, K. L., Fleming, S., et al. (2022). "Developing and evaluating an instrument to assess perceptions of an entry-level physician associate doctoral degree." BMC Med Educ **22**(1): 617.
https://bmcmededuc.biomedcentral.com/counter/pdf/10.1186/s12909-022-03668-1.pdf

BACKGROUND: Most health professions in the United States have adopted clinical or practice doctorates, sparking an ongoing debate on whether physician assistants/associates (PAs) should transition from a master's to a doctorate as the terminal degree for the profession. Although more studies are anticipated,

there is no validated instrument assessing perceptions of various stakeholders regarding an entry-level PA doctoral degree. The objective of this study was to develop and evaluate a novel self-report measure to assess perceptions of an entry-level PA doctoral degree. METHODS: A multifaceted, mixed-methods approach was adopted. Based on a comprehensive literature review of the doctoral transition experiences in other health professions, an initial version of perceptions of an entry-level terminal PA doctoral degree scale (PEDDS) was generated. This scale was pilot tested with a group of PA faculty, students, and clinicians. Then, a cross-sectional survey consisting of 67 items was conducted with a national random sample of practicing PAs and PA students. Additionally, semi-structured interviews were conducted to ensure the validity of PEDDS. A principal component analysis (PCA) was conducted to reduce the number of items and reveal the underlying structure of PEDDS. RESULTS: The PCA confirmed 10 factors of PEDDS consisting of 53 items as the best-fit factor structure with adequate internal consistency of subscales. Those factors include a) expected positive impact on the PA profession, b) expected impact on prerequisites, (c) expected impact on the student preparedness as PA faculty and educators, (d) expected impact on the student preparedness as clinicians, (e) expected impact on accreditation and certification, (f) expected impact on curriculum, (g) expected impact on PA educators, (h) expected positive impact on diversity, (i) expected negative impact on the PA profession, and (j) expected impact on the student competency. CONCLUSIONS: The present study highlights the need to develop valid and reliable measurements to assess perceptions regarding the transition to the entry-level doctorate across health professions. This study could be used to guide further discussion of the entry-level doctorates for PAs and other health professions by bridging the gap of existing literature related to valid, reliable, and standardized measures on this topic.

Kanofsky, S. (2020). "Competency-Based Medical Education for Physician Assistants The Development of Competency-Based Medical Education and Competency Frameworks in the United States and Canada." Physician Assistant Clinics **5**(1): 91-+.
<Go to ISI>://WOS:000500736000010

Competency-based medical education and competency frameworks, introduced in the 1990s, are arguably the greatest contributions to the renewal of medical education since Abraham Flexner revolutionized the field with his Flexner Report in 1910. The benefits of competency-based medical education include clear identification of learning outcomes to guide teaching and assessment; the ability to standardize curricula across jurisdictions and institutions, and establish criteria for accreditation, certification, and licensure; and the identification of interpersonal and professional skills that were previously undervalued compared with clinical knowledge and technical skills.

Keller, A. O., Hooker, R. S. et Jacobs, E. A. (2018). "Visits for Depression to Physician Assistants and Nurse Practitioners in the USA." J Behav Health Serv Res **45**(2): 310-319.
https://link.springer.com/article/10.1007/s11414-017-9579-2

Depression is a prevalent condition in the US, and limited access to mental health providers is a significant national public health issue. Use of physician assistants (PA) and nurse practitioners (NP) to provide depression management could increase access to care for this important problem. Visits for depression to PAs and NPs in ambulatory care were examined using the 2005–2011 National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey. The seven-year data identified that approximately 7 billion visits for depression were evaluated by one of three medical providers (93.3% physician only, 2.9% PA/NP only, 3.9% combined). Overall, PA/NPs were involved in 42 million (6.7%) of depression visits. Some differences in sociodemographic and health characteristics of patients emerged by provider type. Compared to physicians, PA/NP only visits were more likely to be with patients that were from urban areas and patients with public insurance. Patients more likely to be seen by a physician were older and racial and ethnic minorities. Increased use of PAs and NPs may be an important strategy for improving access to depression care.

Kerber, R., Andraka-Christou, B., Sorbero, M., et al. (2022). "Geographic Distribution of Otolaryngology Advance Practice Providers and Physicians." Med Care Res Rev **167**(1): 48-55.
https://aao-hnsfjournals.onlinelibrary.wiley.com/doi/10.1177/01945998211040408

OBJECTIVES: Advanced practice providers (APPs), namely physician assistants (PAs) and nurse practitioners (NPs), play an increasing role in meeting growing demands for otolaryngologic services, particularly in rural communities. This study analyzes the geographic distribution of otolaryngology providers, which is essential to addressing future demands. STUDY DESIGN: Cross-sectional study. SETTING: Medicare Provider Utilization and Payment Data for 2017. METHODS: Current Procedural Terminology codes were used to identify APPs providing 10 common otolaryngologic services. Geographic distribution was evaluated by calculating densities of APPs and otolaryngologists per 100,000 persons in urban versus rural counties as defined by the National Center for Health Statistics Urban-Rural Classification Scheme. RESULTS: We identified cohorts of 8573 otolaryngologists, 1148 NPs, and 895 PAs. There were significantly higher population-controlled densities of otolaryngologists and APPs in urban counties as compared with rural counties. The majority of otolaryngologists (92.1%) and APPs (83.3%) were in urban counties. However, the proportion of APPs (16.7%) in rural counties was significantly higher than the proportion of otolaryngologists (7.9%) in rural counties ($P < .01$). A significant majority of rural counties (72.2%) had zero identified providers, and a greater proportion of rural counties (5.0%) were served exclusively by APPs as compared with urban counties (3.2%). CONCLUSIONS: Although otolaryngologists and APPs mostly practiced in urban counties, a relatively higher proportion of APPs practiced in rural counties when compared with otolaryngology physicians. The majority of rural counties did not have any otolaryngologic providers. Given the expected shortages of otolaryngology physicians, APPs may play a critical role in addressing these gaps in access.

Kidd, V. D., Vanderlinden, S. et Spisak, J. M. (2021). "An analysis of the selection criteria for postgraduate physician assistant residency and fellowship programs in the United States." BMC Med Educ **21**(1): 621. https://bmcmededuc.biomedcentral.com/counter/pdf/10.1186/s12909-021-03059-y.pdf

BACKGROUND: This study aims to investigate the admission criteria used by physician assistant postgraduate education programs in selecting licensed PA applicants for postgraduate training in the United States. To our knowledge, there have been no previously published reports on selection criteria and/or other factors influencing postgraduate PA admission decisions. METHOD: A non-experimental, descriptive research study was designed to obtain information from members of the Association of Postgraduate Physician Assistant Programs (APPAP). RESULTS: Twenty-three out of 73 postgraduate programs (35%) responded to the survey. The study reported that applicant PAs and NPs are largely selected on the basis of several factors. The most heavily weighted factor is the interview itself; other selection criteria perceived to be extremely/very important included board certification/eligibility, letters of recommendation, advanced degree, and personal essay. Survey data suggest that publications, undergraduate transcripts, and class rankings are not considered to be of high importance in applicant selection. The number of PA applicants applying to each postgraduate training program averages around 26 and total number of enrollees is about 3.6 per program. Additionally, some programs reported furloughing of trainees (temporary suspension of didactic and clinical training) during the pandemic, whereas the vast majority of postgraduate PA programs remained operational and some even experienced an increase in application volume. The total cost of training a PA resident or fellow in postgraduate programs is currently $93,000 whereas the average cost of training a categorical physician resident is estimated at $150,000 per year when considering both salary and benefits. CONCLUSIONS: This novel study examined criteria and other factors used by postgraduate PA programs in selecting candidates for admission. Results can be used by postgraduate programs to improve or modify current selection criteria to enhance the quality of trainee selection. Further research is needed to examine correlations between applicant attributes, selection criteria, and trainee success in completing postgraduate training.

Kohlhepp, W. C. (2017). "Physician Assistant Education: 50 Years and Counting." J Physician Assist Educ **28 Suppl 1**: S3.

Kulo, V., Fleming, S., Gordes, K. L., et al. (2021). "A physician assistant entry-level doctoral degree: more harm than good?" BMC Med Educ **21**(1): 274. https://bmcmededuc.biomedcentral.com/counter/pdf/10.1186/s12909-021-02725-5.pdf

BACKGROUND: As most health professions in the United States have adopted clinical or practice doctorates, there has been an ongoing debate on whether physician assistants (PAs) should transition

from a master's to a doctorate as the terminal degree. The authors examined perceived risks, benefits and impact of transitioning to an entry-level PA doctoral degree. METHODS: A multi-prong, mixed-methods approach was used that included a literature review and collecting quantitative and qualitative data using a survey and interviews. Bivariate analysis and binomial logistic regression were performed to evaluate relationships between perceptions/perspectives on an entry-level PA doctoral degree and the anticipated impact of it causing more harm than good to the PA profession. Deductive content analysis was used to analyze the qualitative data. RESULTS: Of 636 PA clinicians and students (46% response rate), 457 (72%) disagreed that an entry-level PA doctoral degree should be required. More than half of the respondents (54%) agreed that it should be offered but not required and 380 respondents (60%) agreed that an entry-level doctoral degree would cause more harm than good. Race, educational attainment, occupation, and length of practice as a PA were significantly associated with having a perception of causing more harm. There was strong positive association between the perception of a doctoral degree causing more harm with expectations of having a negative impact on the availability of clinical training sites (OR = 4.39, p < .05). The most commonly cited benefits were parity with other professions and competitive advantage, whereas the perceived risks were increased cost for education, decreased diversity in the profession, and negative impact on the PA/physician relationship. CONCLUSIONS: The major takeaway of our study was that perceived benefits and risks are strongly influenced by the lens of the stakeholder. While the majority of PAs and students appear to be not in favor mainly due to the potential harm, the proportion of those in favor is not insignificant and their views should not be ignored. Addressing concerns with key stakeholders could help the PA profession to transition to a doctoral degree with minimal adverse impact.

Kurtzman, E. T. et Barnow, B. S. (2017). "A Comparison of Nurse Practitioners, Physician Assistants, and Primary Care Physicians' Patterns of Practice and Quality of Care in Health Centers." Med Care **55**(6): 615-622.

BACKGROUND: Under the Affordable Care Act, the number and capacity of community health centers (HCs) is growing. Although the majority of HC care is provided by primary care physicians (PCMDs), a growing proportion is delivered by nurse practitioners (NPs) and physician assistants (PAs); yet, little is known about how these clinicians' care compares in this setting. OBJECTIVES: To compare the quality of care and practice patterns of NPs, PAs, and PCMDs in HCs. RESEARCH DESIGN: Using 5 years of data (2006-2010) from the HC subsample of the National Ambulatory Medical Care Survey and multivariate regression analysis, we estimated the impact of receiving NP-delivered or PA-delivered care versus PCMD-delivered care. We used design-based and model-based inference and weighted all estimates. SUBJECTS: Primary analyses included 23,704 patient visits to 1139 practitioners-a sample representing approximately 30 million patient visits to HCs in the United States. MEASURES: We examined 9 patient-level outcomes: 3 quality indicators, 4 service utilization measures, and 2 referral pattern measures. RESULTS: On 7 of the 9 outcomes studied, no statistically significant differences were detected in NP or PA care compared with PCMD care. On the remaining outcomes, visits to NPs were more likely to receive recommended smoking cessation counseling and more health education/counseling services than visits to PCMDs (P≤0.05). Visits to PAs also received more health education/counseling services than visits to PCMDs (P≤0.01; design-based model only). CONCLUSIONS: Across the outcomes studied, results suggest that NP and PA care were largely comparable to PCMD care in HCs.

Kwan, B. M., Hamer, M. K., Bailey, A., et al. (2022). "Implementation and Qualitative Evaluation of a Primary Care Redesign Model with Expanded Scope of Work for Medical Assistants." Journal of General Internal Medicine **37**(5): 1129-1137.
<Go to ISI>://WOS:000740126700001

Background Implementation of primary care models involving expanded scope of work and redesigned workflows for medical assistants (MAs) as primary care team members can be challenging. Implementation strategies and participatory evaluation informed by implementation science frameworks may inform organizational decisions about model scale-up and sustainment. Objective This paper reports implementation strategies and qualitative evaluation of a primary care redesign (PCR) model implementation that included an expanded scope of work for MAs. Design Qualitative evaluation of implementation strategies and clinician and staff experience with implementation of PCR using semi-structured key informant interviews. The evaluation was guided by the RE-AIM framework and the Consolidated Framework for Implementation Research. Participants Sixty-nine clinicians, staff, practice

leaders, and administrators from 7 primary care practices (4 general internal medicine, 3 family medicine) implementing PCR. Interventions The PCR model included enhanced rooming and documentation support. The health system used multiple strategies to implement PCR, including rapid improvement events, changing clinic space configurations, developing electronic health record templates and performance dashboards, and practice coaching. Approach The Consolidated Framework for Implementation Research and the RE-AIM evaluation and planning framework guided development of semi-structured interview guides. A deductive, structural coding approach was used for analysis. Key Results PCR implementation was facilitated by clear communication about the intervention source, mechanisms for feedback about model goals, and physical environments and electronic health record (EHR) systems that supported the added staff and modified clinic workflow. Clinicians and staff benefited from the ability to see the model in action prior to go-live and opportunities for consistent provider-MA pairings. Conclusions The PCR model can support achieving the Quadruple Aim when fully implemented with paired MAs and clinicians who are well prepared to follow redesigned workflows and function as a team. Implementation can be effectively supported by a participatory evaluation guided by implementation science frameworks.

Lai, A. Y., Fleuren, B. P. I., Larkin, J., et al. (2022). "Being "low on the totem pole": What makes work worthwhile for medical assistants in an era of primary care transformation." Health Care Manage Rev **47**(4): 340-349. <Go to ISI>://WOS:000844823900009

Background Primary care is undergoing a transformation to become increasingly team-based and multidisciplinary. The medical assistant (MA) is considered a core occupation in the primary care workforce, yet existing studies suggest problematic rates and costs of MA turnover. Purpose We investigated what MAs perceive their occupation to be like and what they value in it to understand how to promote sustainable employability, a concept that is concerned with an employee's ability to function and remain in their job in the long term. Approach We used a case of a large, integrated health system in the United States that practices team-based care and has an MA career development program. We conducted semistructured interviews with 16 MAs in this system and performed an inductive analysis of themes. Results Our analysis revealed four themes on what MAs value at work: (a) using clinical competence, (b) being a multiskilled resource for clinic operations, (c) building meaningful relationships with patients and coworkers, and (d) being recognized for occupational contributions. MAs perceived scope-of-practice regulations as limiting their use of clinical competence. They also perceived task similarity with nurses in the primary care setting and expressed a relative lack of performance recognition. Conclusion Some of the practice changes that enable primary care transformation may hinder MAs' ability to attain their work values. Extant views on sustainable employability assume a high bar for intrinsic values but are limited when applied to low-wage health care workers in team-based environments. Practice Implications Efforts to effectively employ and retain MAs should consider proactive communications on scope-of-practice regulations, work redesign to emphasize clinical competence, and the establishment of greater recognition and respect among MAs and nurses.

Landon, B. E., Kidd, V. D., Vanderlinden, S., et al. (2021). "A National Survey of postgraduate physician assistant fellowship and residency programs." BMJ Open **21**(1): 212. https://bmjopen.bmj.com/content/bmjopen/12/4/e055138.full.pdf

INTRODUCTION: The development of postgraduate programs for physician assistants (PAs) began in 1973 and by 2020 there were approximately 72 programs spread across a broad range of medical and surgical disciplines. PA Post-graduate education programs are voluntary and available to American licensed PAs. Therefore, an assessment of the characteristics of PA post-graduate fellowships and residencies programs was initiated. METHOD: A non-experimental, descriptive research study was designed to obtain information on the characteristics of PA postgraduate education programs in the US. The source of information was from surveyed members of the Association of Postgraduate Physician Assistant Programs (APPAP). Questions were drawn from consensus discussions. Directors of postgraduate programs that were operational in 2020 were eligible to participate. RESULTS: Seventy-two postgraduate program directors were invited to the survey and 34 program directors replied. These programs are geographically distributed across the US in 13 states. The respondents represent a wide range of medicine: surgery, emergency medicine, critical care, orthopaedics, hospitalist, psychiatry, oncology, primary care, pediatrics, and cardiology. Most programs are associated with an academic

medical center and some institutions have more than one postgraduate specialty track. The curriculum includes bedside teaching, lectures, mentorship, assigned reading, procedures, simulation, and conferences. An average program length is 12 months and awards a certificate. Stipends for PA fellows are $50,000-80,000 (2020 dollars) and benefits include paid time off, health and liability insurance. About half of the programs bill for the services rendered by the PA. Over 90% of graduates are employed within 2 months of completing a PA postgraduate training program. CONCLUSION: A trend is underway in American medicine to include PAs in postgraduate education. PA postgraduate training occurs across a broad spectrum of medical and surgical areas, as well as diverse institutions and organizations overseeing these programs. Most PA postgraduate programs are in teaching hospitals where the PA resident or PA fellow also serves as a house officer alongside a categorical resident. This study sets the stage for more granular economic and social research on this growing phenomenon in American medicine.

Lang, T., Berkowitz, O. et Heistermann, P. (2022). "A Comparison of German and United States Physician Assistant Curricula." J Physician Assist Educ **33**(1): 66-71.

Larson, E. H. et Frogner, B. K. (2019). "Characteristics of Physician Assistant Students Planning to Work in Primary Care: A National Study." J Physician Assist Educ **30**(4): 200-206.

PURPOSE: While the number of physician assistants (PAs) participating in the primary care workforce continues to rise, the proportion of PAs practicing in primary care rather than other specialties has decreased. The purpose of this study was to identify the characteristics of matriculating PA students planning to enter primary care specialties and compare them with students planning on entering other specialties. METHODS: Data from the Physician Assistant Education Association Matriculating Student Survey (MSS) from 2013 and 2014 were analyzed. In a series of bivariate analyses, demographic characteristics, educational backgrounds, clinical experiences, and practice expectations of students intending to enter primary care practice were compared with those of their counterparts who did not intend to enter primary care. Logistic regression was used to assess the overall importance of demographic, background, and practice expectations variables on practice intentions. RESULTS: A total of 9283 students responded to the MSS from 2013 and 2014. More than half (58.3%) stated an intention to practice in primary care upon graduation. Those students were more likely than their counterparts to be married, to be Hispanic or Asian, and to have participated in community service prior to starting PA training. They were also less likely to view high income as essential to their careers and more likely to view practicing in rural or underserved areas favorably. CONCLUSIONS: The findings of this study could be used to identify student characteristics associated with an interest in primary care and could contribute to more successful student recruitment and PA curriculum design, especially for PA training programs with a mission focused on producing primary care PAs.

Latini, D. M., Cole, D. S., Woodmansee, D., et al. (2018). "Veterans Health Administration's Physician Assistant Primary Care Residency: An Evaluation of the First 3 Years." J Physician Assist Educ **29**(4): 226-229.

PURPOSE: Results from an evaluation of a 12-month postgraduate Veterans Health Administration (VHA) residency in primary care for physician assistants (PAs). METHODS: Descriptive and open-ended data were collected to describe the experience of faculty and trainees participating in the first 3 years of this pilot residency. Quantitative data were summarized using descriptive statistics. Text data were transcribed and reviewed for common themes across residency sites and respondents. Data were collected at 2 time points-the end of the first year and the beginning of year 4. RESULTS: In the first 3 years of the program, 18 residents were enrolled at 6 sites, with 89% completing the residency. At the second time point, 8 more residents were enrolled. Residents were primarily female (69%). Of the residents completing the program, 56% obtained VHA employment, and 75% of the current residents planned to work for the VHA upon completing the program. Program infrastructure, such as written curriculum, a dedicated administrative staff, and written evaluations for trainees, was more common at the second time point. Recurring themes included the importance of establishing relationships with potential applicants, preceptors, medical center leadership, and trainees to support the program and the importance of securing resources such as space and protected time for faculty. CONCLUSIONS: Although postgraduate residency programs are less common for PAs than for some other health professions, our

data suggest that a one-year residency can provide training for new graduates to help solidify their clinical experience and facilitate their transition to practice.

Leszinsky, L. et Candon, M. (2019). "Primary Care Appointments for Medicaid Beneficiaries With Advanced Practitioners." Ann Fam Med **17**(4): 363-366.
https://www.annfammed.org/content/annalsfm/17/4/363.full.pdf

Primary care access in Medicaid improved after the Patient Protection and Affordable Care Act despite millions of new beneficiaries. One possible explanation is that practices are scheduling more appointments with advanced practitioners. To test this theory, we used data from a secret shopper study in which callers simulated new Medicaid patients and requested appointments with 3,742 randomly selected primary care practices in 10 states. Conditional on scheduling an appointment, simulated patients asked whether the practitioner was a physician or advanced practitioner. From 2012 through 2016, the proportion of appointments scheduled with advanced practitioners increased from 7.7% to 12.9% (P <.001) across the 10 states.

Lie, D., Walsh, A., Segal-Gidan, F., et al. (2013). "Physician assistant students' views regarding interprofessional education: a focus group study." J Physician Assist Educ **24**(1): 35-41.

PURPOSE: The purpose of this study was to identify and report physician assistant (PA) student experiences, learning, and opinions regarding interprofessional education (IPE). METHODS: A series of open-ended questions was constructed and designed to solicit PA students' opinions about the need for IPE, preferred teaching strategies, and implementation methods, using focus group methodology. We used two sets of questions, one for students who had participated in a formal geriatrics IPE experience (n = 12), the other for students who did not have the experience (n = 10). Focus group sessions were audiotaped and transcripts coded. Key themes were identified and ranked. RESULTS: Twenty-two students participated in four focus groups. Theme saturation was reached and six overlapping themes emerged: (1) PA students learned the most about occupational and physical therapist roles; (2) They were surprised at other professions' lack of knowledge about the PA profession; (3) They strongly expressed that IPE should be required early in training; (4) They expressed preference for direct patient care with other health professions students, with trained faculty oversight; (5) They requested diverse clinical settings; and (6) They identified the optimal number of different students in a single IPE experience as four/five. The group exposed to geriatrics IPE noted the critical importance of faculty training for facilitation, while the nonexposed group emphasized the challenge of limited curricular time. CONCLUSION: PA students recognize the importance of IPE and request early, required clinical experiences led by well-trained interprofessional faculty with the option to choose clinical sites. Student preferences should be considered in IPE curriculum design.

Loder, R., Coombs, J., Najmabadi, S., et al. (2023). "Gender Disparities in Physician Assistant Educator Promotion and Compensation: A Mixed Methods Approach." J Physician Assist Educ **34**(1): 3-8.

INTRODUCTION: The gender wage gap is well documented in many industries. A disparity in salary between female and male physician assistant (PA) educators has been demonstrated, but disparities in academic rank have not been shown. The purpose of this study was to re-examine gender disparities in compensation to PA educators and to explore whether gender-based disparities exist in promotion to higher academic rank in this field. METHODS: An explanatory sequential mixed-methods design was used to determine differences in salary and rank by gender. PA Education Association Faculty and Directors Survey data from 2014, 2017, and 2019 were analyzed. A focus group was conducted to explain the findings and understand the barriers to promotion for female faculty. RESULTS: Female PA faculty members earn $7573 less than their male colleagues when controlling for all other variables. Female faculty members have an increased likelihood (RR 1.150) for being in early career stage versus late career stage. Obtaining a doctoral degree decreased the risk for being in an early career stage (RR 0.567) with men twice as likely to have a doctoral degree as women. DISCUSSION: Rank and salary disparities exist in PA faculty by gender. Female faculty are less likely to hold doctoral degrees or to be promoted to higher academic ranks, and they earn less than men. Degree level and career track are themes unique to the PA education profession, and further research is needed to understand their impact. With more women entering PA education, pay equity and promotion need to be addressed.

Loef, J., Vloet, L. et Harrison, J. M. (2022). "State Policies and Buprenorphine Prescribing by Nurse Practitioners and Physician Assistants." F1000Res **79**(6): 789-797.
https://f1000research.s3.amazonaws.com/manuscripts/28573/19b3a26e-835f-4318-8d90-af96369b576d_25891_-_risco_van_vliet.pdf?doi=10.12688/f1000research.25891.1&numberOfBrowsableCollections=93&numberOfBrowsableInstitutionalCollections=4&numberOfBrowsableGateways=50

Nurse practitioner (NP) and physician assistant (PA) prescribing can increase access to buprenorphine treatment for opioid use disorder. In this cross-sectional study, we used deidentified claims from approximately 90% of U.S. retail pharmacies (2017-2018) to examine the association of state policies with the odds of receiving buprenorphine treatment from an NP/PA versus a physician, overall and stratified by urban/rural status. From 2017 to 2018, the percentage of buprenorphine treatment episodes prescribed by NPs/PAs varied widely across states, from 0.4% in Alabama to 57.2% in Montana. Policies associated with greater odds of buprenorphine treatment from an NP/PA included full scope of practice (SOP) for NPs, full SOP for PAs, Medicaid pay parity for NPs (reimbursement at 100% of the fee-for-service physician rate), and Medicaid expansion. Although most findings with respect to policies were similar in urban and rural settings, the association of Medicaid expansion with NP/PA buprenorphine treatment was driven by rural counties.

Mabee, J., Tramel, J. et Lie, D. (2014). "Current status of procedural skills training in physician assistant programs in the United States." J Physician Assist Educ **25**(4): 4-11.

PURPOSE: To describe procedural skills training in physician assistant (PA) programs in the United States. METHODS: An online cross-sectional seven-item survey was administered to program directors of the then 154 accredited PA programs in the US in 2012. Outcome measures were: number of programs having formal skills lists, skills courses, and/or learning activities; sources used in developing list contents; and methods used in evaluating performance competency during the preclinical, clinical, and summative evaluation phases. Respondents were invited to submit a copy of their skills list. RESULTS: One hundred and one programs responded, for a response rate of 66%. Ninety-six percent of respondents maintained skills lists, and 99% taught skills during the preclinical curriculum. The most frequent sources used in developing list contents were: program director; academic coordinator; other PA faculty; and clinical coordinator. Thirty-five percent of respondents submitted skills lists. The five most common skills taught were: bladder catheterization, casting and splinting, suturing, venipuncture, and injection techniques. However, not all skills were uniformly taught. Faculty evaluation on inanimate or live models was the most common assessment method in the preclinical phase; student self-reporting was the most common in the clinical phase. Seventy-six percent of respondents evaluated performance competency as a part of summative evaluation. CONCLUSION: Most US PA programs had a skills list and taught skills during their preclinical curriculum. List contents were determined primarily by program faculty but lacked uniformity. Across programs, skills evaluation was more consistent during the preclinical than the clinical phase.

Mafi, J. N. et Chen, A. (2022). "US emergency care patterns among nurse practitioners and physician assistants compared with physicians: a cross-sectional analysis." BMJ Open **12**(4): e055138.
https://bmjopen.bmj.com/content/bmjopen/12/4/e055138.full.pdf

OBJECTIVES: Nurse practitioners and physician assistants (NPs/PAs) increasingly practice in emergency departments (EDs), yet limited research has compared their practice patterns with those of physicians. DESIGN, SETTING AND PARTICIPANTS: Using nationally representative data from the National Hospital Ambulatory Medical Care Survey (NHAMCS), we analysed ED visits among NPs/PAs and physicians between 1 January 2009 and 31 December 2017. To compare NP/PA and physician utilisation, we estimated propensity score-weighted multivariable regressions adjusted for clinical/sociodemographic variables, including triage acuity score (1=sickest/5=healthiest). Because NPs/PAs may preferentially consult physicians for more complex patients, we performed sensitivity analyses restricting to EDs with >95% of visits including the NP/PA-physician combination. EXPOSURES: NPs/PAs. MAIN OUTCOME MEASURES: Use of hospitalisations, diagnostic tests, medications, procedures and six low-value services, for example, CT/MRI for uncomplicated headache, based on Choosing Wisely and other practice guidelines. RESULTS: Before propensity weighting, we studied visits to 12 410 NPs/PAs-alone, 21 560 to the NP/PA-physician combination and 143 687 to physicians-alone who saw patients with increasing age

(41, 45 and 47 years, p<0.001) and worsening triage acuity scores (3.03, 2.85 and 2.67, p<0.001), respectively. After weighting, NPs/PAs-alone used fewer medications (2.62 vs 2.80, p=0.002), diagnostic tests (3.77 vs 4.66, p<0.001), procedures (0.67 vs 0.77, p<0.001), hospitalisations (OR 0.35 (95% CI 0.26 to 0.46)) and low-value CT/MRI studies (OR 0.65 (95% CI 0.53 to 0.80)) than physicians. Contrastingly, the NP/PA-physician combination used more medications (3.08 vs 2.80, p<0.001), diagnostic tests (5.07 vs 4.66, p<0.001), procedures (0.86 vs 0.77, p<0.001), hospitalisations OR 1.33 (95% CI 1.17 to 1.51) and low-value CT/MRI studies (OR 1.23 (95% CI 1.07 to 1.43)) than physicians-results were similar among EDs with >95% of NP/PA visits including the NP/PA-physician combination. CONCLUSIONS AND RELEVANCE: While U.S. NPs/PAs-alone used less care and low-value advanced diagnostic imaging, the NP/PA-physician combination used more care and low-value advanced diagnostic imaging than physicians alone. Findings were reproduced among EDs where nearly all NP/PA visits were collaborative with physicians, suggesting that NPs/PAs seeing more complex patients used more services than physicians alone, but the converse might be true for more straightforward patients.

Mafi, J. N., Wee, C. C., Davis, R. B., et al. (2016). "Comparing Use of Low-Value Health Care Services Among U.S. Advanced Practice Clinicians and Physicians." Ann Intern Med **165**(4): 237-244.

BACKGROUND: Many physicians believe that advanced practice clinicians (APCs [nurse practitioners and physician assistants]) provide care of relatively lower value. OBJECTIVE: To compare use of low-value services among U.S. APCs and physicians. DESIGN: Service use after primary care visits was evaluated for 3 conditions after adjustment for patient and provider characteristics and year. Patients with guideline-based red flags were excluded and analyses stratified by office- versus hospital-based visits, acute versus nonacute presentations, and whether clinicians self-identified as the patient's primary care provider (PCP). SETTING: National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), 1997 to 2011. PATIENTS: Patients presenting with upper respiratory infections (URIs), back pain, or headache. MEASUREMENTS: Use of guideline-discordant antibiotics (for URIs), radiography (for URIs and back pain), computed tomography (CT) or magnetic resonance imaging (MRI) (for headache and back pain), and referrals to other physicians (for all 3 conditions). RESULTS: 12 170 physician and 473 APC office-based visits and 13 359 physician and 2947 APC hospital-based visits were identified. Although office-based clinicians saw similar patients, hospital-based APCs saw younger patients (mean age, 42.6 vs. 45.0 years; P < 0.001), and practiced in urban settings less frequently (49.7% vs. 81.7% of visits; P < 0.001) than hospital-based physicians. Unadjusted and adjusted results revealed that APCs ordered antibiotics, CT or MRI, radiography, and referrals as often as physicians in both settings. Stratification suggested that self-identified PCP APCs ordered more services than PCP physicians in the hospital-based setting. LIMITATION: NHAMCS reflects hospital-based APC care; NAMCS samples physician practices and likely underrepresents office-based APCs. CONCLUSION: APCs and physicians provided an equivalent amount of low-value health services, dispelling physicians' perceptions that APCs provide lower-value care than physicians for these common conditions. PRIMARY FUNDING SOURCE: U.S. Health Services and Research Administration, Ryoichi Sasakawa Fellowship Fund, and National Institutes of Health.

Martel, M. L., Imdieke, B. H., Holm, K. M., et al. (2018). "Developing a Medical Scribe Program at an Academic Hospital: The Hennepin County Medical Center Experience." Joint Commission Journal on Quality and Patient Safety **44**(5): 238-249.
<Go to ISI>://WOS:000432378500002

Background: Medical scribes are frequently incorporated into the patient care model to improve provider efficiency and enable providers to refocus their attention to the patient rather than the electronic health record (EHR). The medical scribe program was based on four pillars (objectives): (1) provider satisfaction, (2) standardized documentation, (3) documentation components for risk adjustment, and (4) revenue enhancement. Methods: The medical scribe program was deployed in nine non-resident-supported clinics (internal medicine, ophthalmology, orthopedics, hematology/oncology, urology), with the medical scribes (who have no clinical duties) supporting both physicians and advanced practice providers (nurse practitioners and physician assistants). This paper describes a prospective quasi-experimental study conducted at an academic, inner-city, hospital-based clinic system. Results: A pre-post analysis showed positive results; of the 51 providers, 44 responded to the survey pre and 41 responded post. Respondents in the post-scribe group felt that a scribe was valuable (90.2%), that documentation time at

the office improved (75.0% poor or marginal pre-scribe, vs. 24% post; p < 0.0001), and that time spent on the EHR at home declined (63.6% with excessive or moderately high home EHR time pre vs. 31.7% post; p = 0.003). 'Mort: providers felt satisfied with their role in clinic with the use of scribes, and more providers felt that with scribes they could listen sufficiently to patients (p < 0.05). Conclusion: Scribe support was well received across the institution in multiple clinical settings. Benefits for providers were seen in documentation time and ability to listen to patients. Scribes appear to be an effective intervention for improving clinician work life.

McCarthy, E. M., Feinn, R. et Thomas, L. A. (2022). "Self-efficacy and confidence of medical students with prior scribing experience: A mixed methods study." Medical Education Online **27**(1): 6.
<Go to ISI>://WOS:000757019700001

Purpose Medical scribing is an increasingly common way for pre-medical students to gain clinical experience. Scribes are a valuable part of the healthcare team and have high rates of matriculation into health professional programs. Little is known about the effects of scribing on the success of the student. This manuscript aims to determine the effect of scribing experience on clinical self-efficacy during medical school. Participants and Methods Perceived clinical self-efficacy was evaluated with validated survey questions using a 5-point Likert-type scale as well as free text responses. The survey was completed by 175 medical students at the Frank H. Netter, MD School of Medicine. Statistical analysis was conducted using SPSS. As part of the mixed methods study, free text responses were analyzed using thematic analysis. Results Quantitative results showed no statistical difference in perceived clinical self-efficacy between medical students with scribing experience and those without. Analysis of free text responses showed that medical students believed their scribing experience improved comfort in the clinical setting and increased familiarity with medical terminology. Discussion and Conclusions Medical students with scribing experience did not demonstrate greater clinical self-efficacy than their peers without scribing experience. However, medical students with scribing experience have a perceived value of their pre-medical scribing experience on their success in medical school.

Moore, M. A., Coffman, M., Cawley, J. F., et al. (2017). "Analysis of 2011 physician assistant education debt load." Jaapa **30**(3): 37-43.

This study seeks to investigate how physician assistants (PAs) finance their education and to characterize the educational debt of PA students. Data from the 2011 American Academy of PAs (AAPA)-Physician Assistant Education Association Graduating Student Survey were used to explore the educational debt of PA students. The median total educational debt of a PA student graduating in 2011 was $80,000. Little financial assistance, other than student loans, is available to PA students. Eighty-five percent of PA students report owing some PA education debt amount, with 23% owing at least $100,000. This study provides a baseline look at PA student debt loads as a starting point for more detailed and robust research into new graduate specialty choices and PA career migration into other specialties. Further research is needed to explore the effect of student debt on students' specialty choices.

Morgan, P., Everett, C. M., Humeniuk, K. M., et al. (2016). "Physician assistant specialty choice: Distribution, salaries, and comparison with physicians." Jaapa **29**(7): 46-52.

OBJECTIVES: To describe trends in physician assistant (PA) specialty distribution, compare these trends with physicians, and quantify the relationship of PA specialty prevalence with both PA and physician salary. METHODS: PA specialty and salary data were obtained from the 2013 American Academy of PAs' Annual Survey; physician specialty and salary data from the American Medical Association Physician Masterfile and the Medical Group Management Association. Analyses included descriptive statistics and linear regression. RESULTS: The proportion of PAs working in primary care decreased from 50% in 1997 to 30% in 2013. Substantial growth in PA proportions occurred in surgical and medical subspecialties. Regression models showed a higher prevalence of PAs in specialties with higher PA salary, higher physician salary, and higher physician-to-PA salary ratio (P<0.05). CONCLUSIONS: PAs are moving toward subspecialty practice. Our study suggests that demand for PAs may be an important factor driving the trend toward specialization.

Morgan, P. A., Smith, V. A., Berkowitz, T. S. Z., et al. (2019). "Impact Of Physicians, Nurse Practitioners, And Physician Assistants On Utilization And Costs For Complex Patients." Health Aff (Millwood) **38**(6): 1028-1036.

Because of workforce needs and demographic and chronic disease trends, nurse practitioners (NPs) and physician assistants (PAs) are taking a larger role in the primary care of medically complex patients with chronic conditions. Research shows good quality outcomes, but concerns persist that NPs' and PAs' care of vulnerable populations could increase care costs compared to the traditional physician-dominated system. We used 2012-13 Veterans Affairs data on a cohort of medically complex patients with diabetes to compare health services use and costs depending on whether the primary care provider was a physician, NP, or PA. Case-mix-adjusted total care costs were 6-7 percent lower for NP and PA patients than for physician patients, driven by more use of emergency and inpatient services by the latter. We found that use of NPs and PAs as primary care providers for complex patients with diabetes was associated with less use of acute care services and lower total costs.

Morreale, M. K., Balon, R., Coverdale, J., et al. (2020). "Supporting the Education of Nurse Practitioners and Physician Assistants in Meeting Shortages in Mental Health Care." Acad Psychiatry **44**(4): 377-379. https://link.springer.com/content/pdf/10.1007/s40596-020-01256-3.pdf

Najmabadi, S., Honda, T. J. et Hooker, R. S. (2020). "Collaborative practice trends in US physician office visits: an analysis of the National Ambulatory Medical Care Survey (NAMCS), 2007-2016." BMJ Open **10**(6): e035414. https://bmjopen.bmj.com/content/bmjopen/10/6/e035414.full.pdf

OBJECTIVE: Practice arrangements in physician offices were characterised by examining the share of visits that involved physician assistants (PAs) and nurse practitioners (NPs). The hypothesis was that collaborative practice (ie, care delivered by a dyad of physician-PA and/or physician-NP) was increasing. DESIGN: Temporal ecological study. SETTING: Non-federal physician offices. PARTICIPANTS: Patient visits to a physician, PA or NP, spanning years 2007-2016. METHODS: A stratified random sample of visits to office-based physicians was pooled through the National Ambulatory Medical Care Survey public use linkage file. Among 317 674 visits to physicians, PAs or NPs, solo and collaborative practices were described and compared over two timespans of 2007-2011 and 2012-2016. Weighted patient visits were aggregated in bivariate analyses to achieve nationally representative estimates. Survey statistics assessed patient demographic characteristics, reason for visit and visit specialty by provider type. RESULTS: Within years 2007-2011 and 2012-2016, there were 4.4 billion and 4.1 billion physician office visits (POVs), respectively. Comparing the two timespans, the rate of POVs with a solo PA (0.43% vs 0.21%) or NP (0.31% vs 0.17%) decreased. Rate of POVs with a collaborative physician-PA increased non-significantly. Rate of POVs with a collaborative physician-NP (0.49% vs 0.97%, p<0.01) increased. Overall, collaborative practice, in particular physician-NP, has increased in recent years (p<0.01), while visits handled by a solo PA or NP decreased (p<0.01). In models adjusted for patient age and chronic conditions, the odds of collaborative practice in years 2012-2016 compared with years 2007-2011 was 35% higher (95% CI 1.01 to 1.79). Furthermore, in 2012-2016, NPs provided more independent primary care, and PAs provided more independent care in a non-primary care medical specialty. Preventive visits declined among all providers. CONCLUSIONS: In non-federal physician offices, collaborative care with a physician-PA or physician-NP appears to be a growing part of office-based healthcare delivery.

Nasim, U., Morgan, Z. J. et Peterson, L. E. (2021). "The Declining Scope of Practice of Family Physicians Is Limited to Urban Areas." J Rural Health **37**(4): 734-744. https://onlinelibrary.wiley.com/doi/10.1111/jrh.12540

PURPOSE: Scope of practice of family physicians (FPs) has been decreasing overall. Our objective was to determine if the distribution of declining scope occurs across urban and rural settings. METHODS: We used secondary data from practicing FPs collected on the American Board of Family Medicine examination registration demographic questionnaire from 2014 to 2016 on scope of practice merged with county-level data from the Area Health Resources File. Rurality was assigned using 4 population-based groupings from the Rural Urban Continuum Codes. Outcome measures were scope of practice score (0-30, higher score reflecting broader scope) and provision of specific types of care/procedures. Bivariate statistics assessed changes in scope of practice over time. Adjusted regression models tested associations between time, physician, practice, and county characteristics with scope of practice score.

FINDINGS: Our sample was 27,343 practicing FPs. Overall, the scope score decreased from 15.5 to 15.0 (P value < .05) but was significant only for urban settings. Regression analysis found that scope decreased each year (β = -0.15), broader scope for rural FPs, and no interaction between year and rural. CONCLUSIONS: The decrease in FP scope of practice is largely an urban phenomenon. FPs in rural areas have a broad scope of practice, which may ensure access to care in rural areas that rely on FPs to provide a large portion of health care services. However, county characteristics like persistent poverty and the presence of nurse practitioners, physician assistants, and other physicians were associated with changes in scope that may modify the gains associated with rurality.

O'Brien Pott, M., Blanshan, A. S., Huneke, K. M., et al. (2021). "What Influences Choice of Continuing Medical Education Modalities and Providers? A National Survey of U.S. Physicians, Nurse Practitioners, and Physician Assistants." Acad Med **96**(1): 93-100.

PURPOSE: To explore what influences clinicians in selecting continuing medical education (CME) activities in the United States. METHOD: In August 2018, the authors conducted an Internet-based national survey, sampling 100 respondents from each of 5 groups: family medicine physicians, internal medicine and hospitalist physicians, medicine specialist physicians, nurse practitioners, and physician assistants. In total, 1,895 clinicians were invited and 500 (26%) responded. Questions addressed the selection and anticipated use of CME delivery modalities and perceived characteristics of specific CME providers. Response formats used best-worst scaling or 5-point ordinal response options. RESULTS: The factors identified as most important in selecting CME activities were topic (best-worst scaling net positivity 0.54), quality of content (0.51), availability of CME credit (0.43), and clinical practice focus (0.41), while referral frequency (-0.57) ranked lowest. The activities that the respondents anticipated using most in the future were live (mean 3.8 [1 = not likely, 5 = very likely]), online (mean 3.5), point-of-care (mean 3.5), and print-based (mean 3.5) activities. For online CME, the features of greatest appeal were that learning could be done when clinicians had time (mean 4.4), at their own pace (mean 4.2), and at lower cost (mean 4.2). For live CME, the features of greatest appeal were that the subject was best taught using this modality (mean 4.0), or the activity was located in a destination spot (mean 4.0) or a regional location (mean 3.9). When rating specific CME providers, most academic institutions received relatively high ratings for research focus and clinical practice focus, whereas commercial providers had slightly higher ratings for ease of access. Responses were generally similar across clinician types and age groups. CONCLUSIONS: Physicians, nurse practitioners, and physician assistants are interested in using a variety of CME delivery modalities. Appealing features of online and live CME were different.

Odenheimer, S., Goyal, D., Jones, V. G., et al. (2018). "Patient Acceptance of Remote Scribing Powered by Google Glass in Outpatient Dermatology: Cross-Sectional Study." Journal of Medical Internet Research **20**(6): 8. <Go to ISI>://WOS:000436205200001

Background: The ubiquitous use of electronic health records (EHRs) during medical office visits using a computer monitor and keyboard can be distracting and can disrupt patient-health care provider (HCP) nonverbal eye contact cues, which are integral to effective communication. Provider use of a remote medical scribe with face-mounted technology (FMT), such as Google Glass, may preserve patient-HCP communication dynamics in health care settings by allowing providers to maintain direct eye contact with their patients while still having access to the patient's relevant EHR information. The medical scribe is able to chart patient encounters in real-time working in an offsite location, document the visit directly into EHR, and free HCP to focus only on the patient. Objective: The purpose of this study was to examine patient perceptions of their interactions with an HCP who used FMT with a remote medical scribe during office visits. This includes an examination of any association between patient privacy and trust in their HCP when FMT is used in the medical office setting. Methods: For this descriptive, cross-sectional study, a convenience sample of patients was recruited from an outpatient dermatology clinic in Northern California. Participants provided demographic data and completed a 12-item questionnaire to assess their familiarity, comfort, privacy, and perceptions following routine office visits with an HCP where FMT was used to document the clinical encounter. Data were analyzed using appropriate descriptive and inferential statistics. Results: Over half of the 170 study participants were female (102/170, 59.4%), 60.0% were Caucasian (102/170), 24.1% were Asian (41/170), and 88.8% were college-educated (151/170). Age ranged between 18 and 90 years (mean 50.5, SD 17.4). The majority of participants (118/170, 69.4%) were familiar with FMT, not concerned with privacy issues (132/170, 77.6%), and stated that the use of FMT did

not affect their trust in their HCP (139/170, 81.8%). Moreover, participants comfortable with the use of FMT were less likely to be concerned about privacy (P<.001) and participants who trusted their HCP were less likely to be concerned about their HCP using Google Glass (P<.009). Almost one-third of them self-identified as early technology adopters (49/170, 28.8%) and 87% (148/170) preferred their HCP using FMT if it delivered better care. Conclusions: Our study findings support the patient acceptance of Google Glass use for outpatient dermatology visits. Future research should explore the use of FMT in other areas of health care and strive to include a socioeconomically diverse patient population in study samples.

Opacic, D. A. et Roessler, E. (2017). "Defining Scholarship in Physician Assistant Education." The Journal of Physician Assistant Education **28**(3): 143-145.
https://journals.lww.com/jpae/Fulltext/2017/09000/Defining_Scholarship_in_Physician_Assistant.7.aspx

The goal of educational scholarship is to establish evidence that identifies excellence in teaching, curriculum design, student assessment, mentoring, advising, leadership, and administration. Our challenge as faculty is to determine what best defines this within our profession. Responsibilities of physician assistant (PA) educators include not only increasing evidence supporting quality in PA education but also outlining strategies that lead us to this success. As innovative scholars, we should focus on expanding the definition of educational scholarship by reevaluating criteria that define it. We then can explore new opportunities for faculty to develop a portfolio that endorses their academic advancement. The outcomes of this scholarship can be used to further advance PA education and clinical practice. Educational scholarship should satisfy the following: address a need, expand existing research, and be provocative, measurable, and reproducible. As innovative scholars, we should also consider analyzing existing evidence and determine whether what has been defined as best practices in the general areas of health care education are also effective in PA education. The outcomes of this research can be used to establish best practices within PA education. Cultivating a collaborative environment among programs will enable our profession to gather robust evidence supporting a quality education.

Orcutt, V. L., James, K., Bradley-Guidry, C., et al. (2018). "Similarities and Differences Between Physician Assistant Program and Medical School Mission Statement Themes." J Physician Assist Educ **29**(1): 7-11.

PURPOSE: The purpose of this study was to examine the concordance of US physician assistant (PA) program mission statements with those of US public- and private-sponsored medical schools. With the exception of a broader medical school focus on research, the authors hypothesized that little difference in mission statement congruence would be found in a comparison of medical schools and PA programs. METHODS: Mission statements of 209 of the 210 accredited US PA programs as of May 2016 were obtained and analyzed. Keywords and phrases were identified, coded, and analyzed using NVivo. Themes that previously reported medical school mission statement analyses (including education, research, service, primary care, diversity, prevention, provider distribution, and cost control) were examined. Additional themes of evidence-based medicine (EBM), interprofessional care, patient safety, and quality improvement were included in the analyses. RESULTS: Analyses revealed similar emphasis in both PA programs and medical schools on themes of education, prevention, and cost control, with dissimilar emphases on themes of research, service, primary care, diversity, and provider distribution. Physician assistant programs were more likely to emphasize interprofessional care than EBM, patient safety, or quality improvement. CONCLUSIONS: In the comparison of mission statements of medical schools and PA programs, much less congruence was found than had been hypothesized. Although this study examined the similarities and differences between the mission statements of US medical schools and PA programs, it did not examine the extent to which programs succeeded in meeting the stated missions. Additional research is necessary to understand the factors that determine whether mission statements are actualized in measurable deliverables.

Orrantia, E. et Amand, S. S. (2017). "Establishing and growing the scope of practice of physician assistants." Can Fam Physician **63**(5): 373-374.

Osborn, M., Satrom, J., Schlenker, A., et al. (2019). "Physician assistant burnout, job satisfaction, and career flexibility in Minnesota." Jaapa **32**(7): 41-47.

OBJECTIVES: This study explores associations between job satisfaction, career flexibility, and burnout among physician assistants (PAs) in Minnesota. METHODS: A survey comprising the Maslach Burnout Inventory (a validated burnout tool) and original questions was emailed to PAs practicing in Minnesota. Spearman rank correlation coefficients were used to assess associations between variables and burnout. RESULTS: PAs (response rate = 31.4%, N = 312) reported moderate levels of burnout. Working in primary care and being female were independently associated with higher rates of burnout. Satisfaction with one's career and one's current position were both high (95.9% and 87.8%, respectively) and independently associated with lower rates of burnout. CONCLUSIONS: Despite high levels of career and job satisfaction, PAs in Minnesota report moderate levels of burnout, particularly women in primary care. Further research should examine a broader population and the effect of burnout on patient care.

Park, J., Han, X. et Pittman, P. (2020). "Does expanded state scope of practice for nurse practitioners and physician assistants increase primary care utilization in community health centers?" J Am Assoc Nurse Pract **32**(6): 447-458.

BACKGROUND AND PURPOSE: Expanding state scope of practice (SOP) for nurse practitioners (NPs) and physician assistants (PAs) can boost productivity and improve access to health care services. Existing analyses on regulatory policies in NP or PA SOP have primarily focused on the direct effects on their own professions but have not fully considered the potential cross-professional effects. This study examines the impact of expanded state SOP for NPs and PAs on primary care utilization by NP, PA, and primary care physician (PCP) in community health centers (CHCs). METHODS: We conducted a difference-in-differences approach using the Uniform Data System for 739 CHCs from 2009 to 2015. During our study period, 12 states liberalized NP SOP laws and 14 states changed their PA SOP regulations. The number of visits per full-time equivalent clinician (NP, PA, and PCP) per year was the outcome of interest and was linked to the degree of state SOP restriction for NPs and PAs in a given year. CONCLUSIONS: Granting independent practice and prescriptive authority for NPs resulted in statistically significant increases in NP visits, and decreases in both PA and PCP visits, for those CHCs with a high proportion of NPs and PAs along with the increased provision of support staff. PA SOP liberalization had no statistically significant effect on PA visits. IMPLICATIONS FOR PRACTICE: As the NP and PA workforce continues to grow, and as SOP laws continue to be liberalized, it is important to advance evidence on how to most efficiently deploy these staff.

Patel, S. Y., Huskamp, H. A., Frakt, A. B., et al. (2022). "Frequency Of Indirect Billing To Medicare For Nurse Practitioner And Physician Assistant Office Visits." Health Aff (Millwood) **41**(6): 805-813.
https://bmcmededuc.biomedcentral.com/counter/pdf/10.1186/s12909-021-02613-y.pdf

Nurse practitioners (NPs) and physician assistants (PAs) represent a growing share of the health care workforce, but much of the care they provide cannot be observed in claims data because of indirect (or "incident to") billing, a practice in which visits provided by an NP or PA are billed by a supervising physician. If NPs and PAs bill directly for a visit, Medicare and many private payers pay 85 percent of what is paid to a physician for the same service. Some policy makers have proposed eliminating indirect billing, but the possible impact of such a change is unknown. Using a novel approach that relies on prescriptions to identify indirectly billed visits, we estimated that the number of all NP or PA visits in fee-for-service Medicare data billed indirectly was 10.9 million in 2010 and 30.6 million in 2018. Indirect billing was more common in states with laws restricting NPs' scope of practice. Eliminating indirect billing would have saved Medicare roughly $194 million in 2018, with the greatest decrease in revenue seen among smaller primary care practices, which are more likely to use this form of billing.

Peikes, D. N., Reid, R. J., Day, T. J., et al. (2014). "Staffing patterns of primary care practices in the comprehensive primary care initiative." Ann Fam Med **12**(2): 142-149.
https://www.annfammed.org/content/annalsfm/12/2/142.full.pdf

PURPOSE: Despite growing calls for team-based care, the current staff composition of primary care practices is unknown. We describe staffing patterns for primary care practices in the Centers for Medicare and Medicaid Services (CMS) Comprehensive Primary Care (CPC) initiative. METHODS: We undertook a descriptive analysis of CPC initiative practices' baseline staffing using data from initial applications and a practice survey. CMS selected 502 primary care practices (from 987 applicants) in 7 regions based on their health information technology, number of patients covered by participating payers, and other

factors; 496 practices were included in this analysis. RESULTS: Consistent with the national distribution, most of the CPC initiative practices included in this study were small: 44% reported 2 or fewer full-time equivalent (FTE) physicians; 27% reported more than 4. Nearly all reported administrative staff (98%) and medical assistants (89%). Fifty-three percent reported having nurse practitioners or physician assistants; 47%, licensed practical or vocational nurses; 36%, registered nurses; and 24%, care managers/coordinators-all of these positions are more common in larger practices. Other clinical staff were reported infrequently regardless of practice size. Compared with other CPC initiative practices, designated patient-centered medical homes were more likely to have care managers/coordinators but otherwise had similar staff types. Larger practices had fewer FTE staff per physician. CONCLUSIONS: At baseline, most CPC initiative practices used traditional staffing models and did not report having dedicated staff who may be integral to new primary care models, such as care coordinators, health educators, behavioral health specialists, and pharmacists. Without such staff and payment for their services, practices are unlikely to deliver comprehensive, coordinated, and accessible care to patients at a sustainable cost.

Peterson, L. E., Blackburn, B., Petterson, S., et al. (2014). "Which family physicians work routinely with nurse practitioners, physician assistants or certified nurse midwives." J Rural Health **30**(3): 227-234. https://onlinelibrary.wiley.com/doi/10.1111/jrh.12053

PURPOSE: Facing rising numbers of insured with implementation of the Affordable Care Act, policy makers are interested in building teams of providers that can accommodate a growing demand for primary care services. Nurse Practitioners (NPs), Physician Assistants (PAs), and Certified Nurse Midwives (CNMs) already augment the physician workforce, particularly in rural areas. Our objective was to determine what physician and areal-level characteristics were associated with working with NPs, PAs or CNMs. METHODS: The sample consisted of a convenience sample of physicians through the American Board of Family Medicine (ABFM) website in the fall of 2011. We linked these data to demographic and practice information collected by the ABFM and with provider information supplied from the National Provider Identifier file aggregated at the Primary Care Service Area level. Hierarchical logistic regression models were used to determine variables associated with working with NPs, PAs, or CNMs. FINDINGS: Of the 3,855 family physicians in our sample, 60% reported routinely working with NPs, PAs, or CNMs. In regression analysis, characteristics positively associated with working with NPs, PAs, or CNMs were providing gynecological care (Odds Ratio = 1.23 [95% confidence interval, 1.06-1.42]), multispecialty group practice (OR = 1.72 [1.36-2.18]), any rural setting, and higher availability of PAs (OR = 1.40 [1.10-1.79]). Restrictive NP scope of practice laws failed to reach significance (OR = 0.86 [0.71-1.05]). CONCLUSIONS: This study suggests that the number of family physicians routinely working with NPs, PAs, and CNMs continues to increase, which may allow for improved access to health care, particularly in rural areas.

Phillips, A. W., Klauer, K. M. et Kessler, C. S. (2018). "Emergency physician evaluation of PA and NP practice patterns." Jaapa-Journal of the American Academy of Physician Assistants **31**(5): 38-43. <Go to ISI>://WOS:000433164800009

The unprecedented surge in physician assistants (PAs) and NPs in the ED developed quickly in recent years, but scope of practice and practice patterns are not well described. Methods: We conducted two cross-sectional electronic surveys of the American College of Emergency Physicians' council. Survey construction was informed by interviews and evaluated with validity and reliability studies. Univariate analyses to establish associations also were performed. Results: Most councilors' departments employ PAs and NPs (72.4% of 163 responses). Supervisory requirements varied greatly among respondents for the same emergency severity index (ESI) level. Regardless of experience level, NPs were reported to use significantly more resources than PAs; chi-square(4) = 105.292, P < .001 for less-experienced PAs or NPs; chi-square(4) = 120.415, P < .001 for more experienced PAs or NPs. Conclusion: Councilors reported great variation in PA and NP scope of practice. The results also suggest that new graduate PAs may be more clinically prepared to practice in the ED than new graduate NPs.

Phillips, T. A., Foley, K. A., Levi, B. H., et al. (2021). "The Impact of Medical Scribes on Relative Value Units in a Pediatric Primary Care Practice." Acad Pediatr **21**(3): 542-547. https://www.academicpedsjnl.net/article/S1876-2859(20)30188-1/fulltext

OBJECTIVE: Our study assessed the impact of adding medical scribes to an academic pediatric primary practice by measuring the relationship between work relative value units (wRVUs) and use of the medical scribe. METHODS: This is a retrospective comparative study on the effect of medical scribes on average wRVUs per patient encounter. wRVUs were abstracted from procedure codes in the billing system. RESULTS: Six clinicians performed 2277 patient visits included in the study over 2 different time periods during 2017 and 2018. The first period was without the use of medical scribes and the second period included scribes. Average clinician wRVU production per visit increased by 7.68% (P < .001) with medical scribes over the previous period without them. CONCLUSIONS: This study shows that scribes contribute to improving the wRVU per visit in a primary pediatric practice. This finding is consistent with other research showing that scribes help increase volume and improve wRVUs for specialists who perform complex procedures.

Pujalte, G. G. A., Pantin, S. A., Waller, T. A., et al. (2020). "Patient-Centered Medical Home With Colocation: Observations and Insights From an Academic Family Medicine Clinic." J Prim Care Community Health. **11**: 2150132720902560.

There is a movement in the United States to transform family medicine practices from single physician-based patient care to team-based care. These teams are usually composed of multiple disciplines, including social workers, pharmacists, registered nurses, physician assistants, nurse practitioners, and physicians. The teams support patients and their families, provide holistic care to patients of all ages, and allow their members to work to the highest level of their training in an integrated fashion. Grouping care team members together within visual and auditory distance of each other is likely to enhance communication and teamwork, resulting in more efficient care for patients. This grouping is termed colocation. The authors describe how the use of colocation can lead to clearer, faster communication between care team members. This practice style has the potential to be expanded into various clinical settings in any given health system and to almost all clinical specialties and practices.

Quella, A., Brock, D. M. et Hooker, R. S. (2015). "Physician assistant wages and employment, 2000-2025." Jaapa **28**(6): 56-58, 60-53.

This study sought to assess physician assistant (PA) wages, make comparisons with other healthcare professionals, and project their earnings to 2025. The Bureau of Labor Statistics PA employment datasets were probed, and 2013 wages were used to explore median wage differences between large employer categories and 14 years of historical data (2000-2013). Median wages of PAs, family physicians and general practitioners, pharmacists, registered nurses, advanced practice nurses, and physical therapists were compared. Linear regression was used to project the PA median wage to 2025. In 2013, the median hourly wage for a PA employed in a clinical role was $44.70. From 2000 to 2013, PA wages increased by 40% compared with the cumulative inflation rate of 35.3%. This suggests that demand exceeds supply, a finding consistent with similar clinicians such as family physicians. A predictive model suggests that PA employment opportunities and remuneration will remain high through 2025.

Quincy, B. et Snyder, J. (2020). "Coming of Age in Physician Assistant Education: Evolution of Program Characteristics." J Physician Assist Educ **31**(3): 112-120.

PURPOSE: This study aimed to describe the characteristics of physician assistant (PA) programs developed in 3 previously defined time periods. METHODS: Data were extracted from the websites of 238 PA programs, including admissions, curriculum, faculty, and program characteristics. Institutional characteristics were gathered from the Carnegie Classification website and the US Census Bureau. Program characteristics were analyzed in 3 groups based on when the program was first accredited-early (before 1980), middle (1980-1999), and current (2000-2019). RESULTS: Early (n = 40), middle (n = 69), and current (n = 129) phase programs are similar regarding the number of admissions, curriculum, faculty, program, and institutional characteristics. Program phase had the greatest effect on undergraduate GPA of matriculating students, the number of PA faculty at the rank of professor, and the size of the admitted cohort. The effect size was medium for outcomes including the number of required biology, chemistry, or physics prerequisites; the probability that the program required a graduate record examination for admission; the number of PA program faculty at the rank of associate professor; the annual tuition and

fees; and the probability that the PA program was housed with a medical school. CONCLUSION: The data describe some of the similarities and differences among the programs established in the 3 previously described time periods in the history of PA education. With the recent surge in new programs, there is value in deepening our understanding of how newer programs compare with more established programs.

Rajan, S. S., Akeroyd, J. M., Ahmed, S. T., et al. (2021). "Health care costs associated with primary care physicians versus nurse practitioners and physician assistants." J Am Assoc Nurse Pract **33**(11): 967-974.

BACKGROUND: Significant primary care provider (PCP) shortage exists in the United States. Expanding the scope of practice for nurse practitioners (NPs) and physician assistants (PAs) can help alleviate this shortage. The Department of Veterans' Affairs (VA) has been a pioneer in expanding the role of NPs and PAs in primary caregiving. PURPOSE: This study evaluated the health care costs associated with VA patients cared for by NPs and PAs versus primary care physicians (physicians). METHODS: A retrospective data analysis using two separate cohorts of VA patients, one with diabetes and the other with cardiovascular disease (CVD), was performed. The associations between PCP type and health care costs were analyzed using ordinary least square regressions with logarithmically transformed costs. RESULTS: The analyses estimated 12% to 13% (US dollars [USD] 2,626) and 4% to 5% (USD 924) higher costs for patients assigned to physicians as compared with those assigned to NPs and PAs, after adjusting for baseline patient sociodemographics and disease burden, in the diabetes and CVD cohort, respectively. Given the average patient population size of a VA medical center, these cost differences amount to a total difference of USD 14 million/year per center and USD 5 million/year per center for diabetic and CVD patients, respectively. IMPLICATIONS FOR PRACTICE: This study highlights the potential cost savings associated with primary caregiving by NPs and PAs. In light of the PCP shortage, the study supports increased involvement of NPs and PAs in primary caregiving. Future studies examining the reasons for these cost differences by provider type are required to provide more scientific evidence for regulatory decision making in this area.

Rana, R., Blazar, M., Jones, Q., et al. (2020). "PA job availability in primary care during 2014 and 2016." Jaapa **33**(7): 38-43.

OBJECTIVES: The objective of this project was to evaluate demand for PAs by examination of job postings. We compared proportions of PAs in primary care with proportions of job postings in primary care in 2014 and 2016 and described job postings for PAs by specialty in 2014 and 2016. METHODS: Internet job postings for PAs supplied by Burning Glass Technologies were evaluated for practice specialty. Job postings were compared with existing filled positions by specialty as reported by the National Commission for the Certification of Physician Assistants. RESULTS: In both years, more than 25% of PAs in practice were in primary care and fewer than 20% of job openings were in primary care. More than half of postings were in medical and surgical subspecialties. CONCLUSIONS: Our findings provide insights into which specialties have emerging high demand for PAs. The demand for PAs appears to remain much stronger for specialty jobs than for primary care jobs.

Reedy, A. B., Yeh, J. Y., Nowacki, A. S., et al. (2016). "Patient, Physician, Medical Assistant, and Office Visit Factors Associated With Medication List Agreement." J Patient Saf **12**(1): 18-24.

OBJECTIVES: Despite its importance for patient safety, there have been few studies of medication reconciliation in primary care. Our goal was to identify potential patient, physician, medical assistant (MA), and office visit factors associated with accurate medication lists in Cleveland Clinic primary care practices. METHODS: Physician and MA medication reconciliation activities were directly observed during office visits. The primary outcome was agreement between the electronic medical record medication list at the conclusion of the office visit and what the patients said they were actually taking, assessed by structured telephone interview within 2 weeks of the office visit. Medication list agreement was defined as the absence of any discrepancies in name, dose, frequency, route, and as-needed status. Associations between patient, physician, MA, and office visit factors and medication list accuracy were assessed using $\chi 2$ tests and logistic regression. RESULTS: Twenty-four physicians and 33 MAs were observed during 231 patient encounters. Nineteen patients (8%) could not be contacted for the telephone interview and were excluded from the analysis. Thirty-two patients (15%) had perfect medication list agreement for

prescription and nonprescription medications, and 66 patients (31%) had medication list agreement for prescription medications only. Of the 14 patient, physician, and MA medication reconciliation behaviors examined, only 1, in which the MA begins the medication review with an open-ended question, was significantly associated with a medication list in agreement (odds ratio, 2.96; confidence interval, 1.43-6.09) for prescription and nonprescription medications. This association was not significant when only prescription medications were included (odds ratio, 0.90; confidence interval, 0.43-1.91). No behaviors we observed significantly influenced prescription medication list agreement. CONCLUSIONS: Having MAs begin their medication review with an open-ended question may be a simple, inexpensive, and easily implemented process to increase accuracy of medication lists for prescription and nonprescription medications.

Reid, R. O., Duffy, E. L., Cohen, C. C., et al. (2020). "Identification of Alternative Physician Assistant Recertification Models: An Analysis of the Landscape and Evidence Surrounding Approaches to Recertification in the Health Professions." Rand Health Q **8**(4).

Health professional recertification is intended to be a mechanism for demonstration and fostering of professional knowledge and competence. Recertification requirements vary among health professions and are evolving over time. RAND Corporation researchers assessed the landscape of recertification requirements for physician assistants (PAs), advanced practice nurses (APNs), and physicians in the United States and other countries through an environmental scan, reviewed the literature regarding the impact of recertification requirements on patients and health professionals, and conducted semi-structured interviews with certifying organization representatives. Recertification requirements vary, including continuing education, exams or assessments, and other activities. Closed-book exams are most common in the United States. PA recertification currently requires a high-stakes closed-book exam; a pilot of a longitudinal assessment with smaller, regularly spaced batches of questions is planned. Many allopathic physician specialty boards are transitioning from recertification exams to longitudinal assessments; most osteopathic specialty boards require recertification exams. An exam is required for certified registered nurse anesthetist recertification, but not for other APNs. Evidence regarding the effects of recertification requirements on health professionals and patients for PAs, APNs, and professionals outside the United States is limited. The evidence mainly focuses on U.S. allopathic physicians. Physicians have mixed opinions about trade-offs between burden and professional benefit, and some, but not all, studies find associations between recertification and indicators of better care. Major themes reflected in interviews with certifying organizations included a desire to balance evaluative and educational goals, the tension felt between public responsibility and health professional preferences, and burden and applicability to practice.

Reinhold, M. I., Otieno, S. et Bacon-Baguley, T. (2017). "Integrating interprofessional experience throughout a first-year physician assistant curriculum improves perceptions of health care providers." Journal of Interprofessional Education & Practice **6**: 37-43.
https://www.sciencedirect.com/science/article/pii/S2405452616300039

Purpose Interprofessional collaboration is essential in Physician Assistant (PA) practice. Therefore, a three-semester sequence of Hospital Community Experience (HCE) was implemented during the didactic phase of the PA program providing students with weekly opportunities to shadow/observe health care professions. Methods This longitudinal, cohort study evaluated the effect of the HCE on PA students' perceptions of other health care professions prior to HCE, immediately after HCE, and one year later, after the clinical clerkships. The Interprofessional Perception Scale (IPS) survey was used to assess perceptions. Results Comparison of the IPS between the Pre-HCE and subsequent time points revealed statistically significant positive change in perception of other health care professions while also identified some areas for future research and curricular intervention. The greatest number of statistically significant changes occurred in statements which related to how other professions viewed the PA profession and how other professions worked with PAs. Conclusion The interprofessional HCEs emerged to be important in shaping the desired interprofessional professional identity of PA students.

Ritsema, T. S., Cawley, J. F. et Smith, N. (2018). "Physician assistants in urgent care." Jaapa **31**(8): 40-44.

OBJECTIVE: To describe the characteristics of physician assistants (PAs) who practice urgent care. METHODS: Data from national surveys conducted by the American Academy of PAs (AAPA) between 1998 and 2016 were analyzed, comparing PAs who practice in urgent care, emergency medicine, and all other specialties. RESULTS: The percentage of PAs who work in an urgent care setting has nearly doubled in the last 10 years. PAs who work in urgent care see more patients and perform more minor surgical procedures than those in emergency medicine. They are less likely to be newly graduated PAs than those in emergency medicine. PAs in urgent care are less likely than other PAs to consult a physician about their patients in real time. CONCLUSION: The number of PAs practicing urgent care is increasing. More research is needed to further characterize PA practice in this specialty.

Robert, J., Piemonte, N. et Truten, J. (2018). "The Reflective Scribe: Encouraging Critical Self-Reflection and Professional Development in Pre-Health Education." Journal of Medical Humanities **39**(4): 447-454. <Go to ISI>://WOS:000449714000005

Much has been said about the formative process that occurs via the hidden curriculum of medical education during which many students experience a disconnect between the professional values espoused within the formal curriculum and the implicit values communicated through interactions with peers and mentors. Less attention, however, has been paid to the formation of the future medical self that takes place during students' premedical years, a time in which many undergraduate students seek out immersive clinical experiences such as medical scribing before applying to medical school. Despite the fact that medical scribes undoubtedly are affected by their clinical experiences, scribes are rarely offered opportunities to reflect on them. The authors contend that the developmental processes of medical scribes, especially those who intend on pursuing a career in the health professions, ought to be supported. This can be achieved, at least in part, through engaging in well-designed reflective sessions with other scribes. Encouraging students to reflect on their experiences can help them make sense of troubling events and give voice to the inconsistencies and value conflicts within medical practice that are so often ignored. The authors describe the development of their new Reflective Scribe program and offer suggestions for future directions.

Rohrer, J. E., Angstman, K. B., Garrison, G. M., et al. (2013). "Nurse practitioners and physician assistants are complements to family medicine physicians." Popul Health Manag **16**(4): 242-245. https://www.liebertpub.com/doi/10.1089/pop.2012.0092

Controlling the overall cost of medical care requires controlling the number of physician visits. Nurse practitioners and physician assistants (NPs/PAs) may function as lower-cost substitutes for physicians or they may complement physician services. The association between NP/PA and physician visits when NPs/PAs are not working as primary care providers (PCPs) has not been thoroughly studied. A sample of 400 family medicine patients drawn from 1 large multisite practice was studied using multiple logistic regression analysis. NPs/PAs did not function as PCPs during the study period. Patients were defined as outliers if they visited physicians more than 5 times in a year. Patients who visited NPs/PAs in non-retail clinics were significantly more likely to be physician visit outliers. Visits to NPs/PAs in retail clinics were not related to physician visits. NP/PA visits in standard medical office settings complement physician visits when the NPs/PAs were not working as PCPs in this large multisite practice. Health care reform proposals relying on increased use of NPs/PAs may be more cost-efficient if NPs/PAs are located in retail settings or function as PCPs.

Rokicki-Parashar, J., Phadke, A., Brown-Johnson, C., et al. (2021). "Transforming Interprofessional Roles During Virtual Health Care: The Evolving Role of the Medical Assistant in Relationship to National Health Profession Competency Standards." Journal of Primary Care and Community Health **12**: 9. <Go to ISI>://WOS:000635244000001

Introduction: Medical assistants (MAs) were once limited to obtaining vital signs and office work. Now, MAs are foundational to team-based care, interacting with patients, systems, and teams in many ways. The transition to Virtual Health during the COVID- 19 pandemic resulted in a further rapid and unique shift of MA roles and responsibilities. We sought to understand the impact of this shift and to place their new roles in the context of national professional competency standards. Methods: In this qualitative, grounded theory study we conducted semi-structured interviews with 24 MAs at 10 primary care sites at

a major academic medical center on their experiences during the shift from inperson to virtual care. MAs were selected by convenience sample. Coding was done in Dedoose version 8.335. Consensus-based inductive and deductive approaches were used for interview analysis. Identified MA roles were compared to national MA, Institute of Medicine, physician, and nursing professional competency domains. Results: Three main themes emerged: Role Apprehension, Role Expansion, and Adaptability/Professionalism. Nine key roles emerged in the context of virtual visits: direct patient care (pre-visit and physical care), panel management, health systems ambassador, care coordination, patient flow coordination, scribing, quality improvement, and technology support. While some prior MA roles were limited by the virtual care shift, the majority translated directly or expanded in virtual care. Identified roles aligned better with Institute of Medicine, physician, and nursing professional competencies, than current national MA curricula. Conclusions: The transition to Virtual Health decreased MA's direct clinical work and expanded other roles within interprofessional care, notably quality improvement and technology support. Comparison of the current MA roles with national training program competencies identified new leadership and teamwork competencies which could be expanded during MA training to better support MA roles on inter-professional teams.

Rolls, J. et Keahey, D. (2016). "Durability of Expanded Physician Assistant Training Positions Following the End of Health Resources and Services Administration Expansion of Physician Assistant Training Funding." J Physician Assist Educ **27**(3): 101-104.

PURPOSE: The purpose of this study was to assess the number of Health Resources and Services Administration Expansion of Physician Assistant Training (EPAT)-funded physician assistant (PA) programs planning to maintain class size at expanded levels after grant funds expire and to report proposed financing methods. The 5-year EPAT grant expired in 2015, and the effect of this funding on creating a durable expansion of PA training seats has not yet been investigated. METHODS: The study used an anonymous, 9-question, Web-based survey sent to the program directors at each of the PA programs that received EPAT funding. Data were analyzed in Excel and using SAS statistical analysis software for both simple percentages and for Fisher's exact test. RESULTS: The survey response rate was 81.48%. Eighty-two percent of responding programs indicated that they planned to maintain all expanded positions. Fourteen percent will revert to their previous student class size, and 4% will maintain a portion of the expanded positions. A majority of the 18 programs (66%) maintaining all EPAT seats will be funded by tuition pass-through, and one program (6%) will increase tuition. There was no statistical association between the program type and the decision to maintain expanded positions (P = .820). CONCLUSIONS: This study demonstrates that the one-time EPAT PA grant funding opportunity created a durable expansion in PA training seats. Future research should focus on the effectiveness of the program in increasing the number of graduates choosing to practice in primary care and the durability of expansion several years after funding expiration.

Ruggiero, L., Riley, B. B., Hernandez, R., et al. (2014). "Medical Assistant Coaching to Support Diabetes Self-Care Among Low-Income Racial/Ethnic Minority Populations: Randomized Controlled Trial." Western Journal of Nursing Research **36**(9): 1052-1073.
<Go to ISI>://WOS:000342626900003

Innovative, culturally tailored strategies are needed to extend diabetes education and support efforts in lower-resourced primary care practices serving racial/ethnic minority groups. A randomized controlled trial (RCT) examined the effect of a diabetes self-care coaching intervention delivered by medical assistants and the joint effect of intervention and ethnicity over time. The randomized repeated-measures design included 270 low-income African American and Hispanic/Latino patients with type 2 diabetes. The 1-year clinic- and telephone-based medical assistant coaching intervention was culturally tailored and guided by theoretical frameworks. A1C was obtained, and a self-care measure was completed at baseline, 6 months, and 12 months. Data were analyzed using mixed-effects models with and without adjustment for covariates. There was a significant overall improvement in mean self-care scores across time, but no intervention effect. Results revealed differences in self-care patterns across racial/ethnic subgroups. No differences were found for A1C levels across time or group.

Scharf, J., Vu-Eickmann, P., Li, J., et al. (2019). "Work-related intervention needs and potential occupational outcomes among medical assistants: A cross-sectional study." International Journal of Environmental Research and Public Health **16**(13): 2260.

Shachar, B., Rubin, S., Kazevman, G., et al. (2022). "A Qualitative Evaluation of Medical Students' Perspectives Regarding Collaboration with Physician Assistants." J Physician Assist Educ **33**(4): 279-283.

INTRODUCTION: Physician assistant (PA) is a burgeoning profession in Canada, with several accredited training programs. Because the scope of practice for PAs in Ontario, as delineated by the province, stipulates that all tasks they perform must be delegated by a supervising physician, it is expected that medical students will increasingly encounter and work alongside PAs in clinical environments. There has been a paucity of research to date investigating how medical students experience this professional relationship. This current study aimed to investigate the attitudes and perspectives that medical students have about working with PAs. METHODS: Medical students from the University of Toronto (n = 11) in various stages of training participated in 3 focus groups. The focus groups used a semi-structured interview guide to explore medical students' general opinions of the profession, their understanding of the interprofessional relationship, and their experiences working with PAs. Qualitative methods with a phenomenological underpinning were used to analyze the focus groups. RESULTS: The findings show that medical students have observed or collaborated with PAs in clinical environments but are generally unaware of the profession's scope of practice and responsibilities. Medical students also viewed PAs as beneficial to patient care and expressed a desire to discover more about the profession through formal education. DISCUSSION: This call for interprofessional education should be heeded by medical faculty to better prepare medical students for future collaboration with PAs.

Shaffer, R. et Zolnik, E. (2014). "The geographic distribution of physician assistants in the US: Clustering analysis and changes from 2001 to 2008." Applied Geography **53**: 323-331.
<Go to ISI>://WOS:000342529700028

Analysis of the geographic distribution of physician assistants (PAs) across the US explores their practice patterns as well as how and why they changed between 2001 and 2008. Cartographic results suggest that PAs are more clustered across the US than medical doctors (MDs) and that their clusters are larger. In addition, the largest low-PA cluster grew noticeably between 2001 and 2008. Statistical results suggest that PAs did not continue to practice in underserved places in 2008 as they had in 2001. An economic explanation is the most plausible for the latter result, but further analyses with disaggregate data is necessary to generalize such results. (C) 2014 Elsevier Ltd. All rights reserved.

Sherer, E. L. et Allegrante, J. P. (2019). "Physician Assistant Students' Perceptions of Cultural Competence in Providing Care to Diverse Populations." J Physician Assist Educ **30**(3): 135-142.

PURPOSE: To determine physician assistant (PA) students' perceived levels of preparedness to treat patients from culturally diverse backgrounds. METHODS: An online survey with quantitative and qualitative components was distributed to students at 8 PA programs in different geographic locations of the United States. The survey used a modified version of the previously validated Self-Assessment of Perceived Level of Cultural Competence Questionnaire and evaluated PA students' knowledge, skills, encounters, attitudes, awareness, and abilities regarding cultural competence, as well as students' evaluation of these components of their education. Descriptive statistics were generated using SPSS software, and qualitative findings were analyzed for common themes. RESULTS: PA students rated their attitudes, awareness, and abilities about cultural competence as significantly greater than their cultural knowledge, skills, and encounters. Second-year students and racial minority students reported higher personal ratings for levels of cultural competence. Most PA students reported being well prepared (39%) or moderately prepared (46%), compared to those who did not feel at all prepared (15%). Students indicated that specific classes focusing on cultural topics, discussions about cultural issues, and clinical experiences were the most useful for promoting cross-cultural education. CONCLUSION: While PA students perceive cultural competence to be important, they appear to be deficient in the areas of cultural knowledge, skills, and encounters. Integrating cultural competence courses, cultural discussions, and clinical rotations involving diverse patient populations should be encouraged throughout PA training as they may strengthen students' preparedness to provide cross-cultural care.

Sheridan, B., Chien, A. T., Peters, A. S., et al. (2018). "Team-based primary care: The medical assistant perspective." Health Care Manage Rev **43**(2): 115-125.
<Go to ISI>://WOS:000427794000004

Background: Team-based care has the potential to improve primary care quality and efficiency. In this model, medical assistants (MAs) take a more central role in patient care and population health management. MAs' traditionally low status may give them a unique view on changing organizational dynamics and teamwork. However, little empirical work exists on how team-based organizational designs affect the experiences of low-status health care workers like MAs. Purposes: The aim of this study was to describe how team-based primary care affects the experiences of MAs. A secondary aim was to explore variation in these experiences. Methodology/Approach: In late 2014, the authors interviewed 30 MAs from nine primary care practices transitioning to team-based care. Interviews addressed job responsibilities, teamwork, implementation, job satisfaction, and learning. Data were analyzed using a thematic networks approach. Interviews also included closed-ended questions about workload and job satisfaction. Results: Most MAs reported both a higher workload (73%) and a greater job satisfaction (86%) under team-based primary care. Interview data surfaced four mechanisms for these results, which suggested more fulfilling work and greater respect for the MA role: (a) relationships with colleagues, (b) involvement with patients, (c) sense of control, and (d) sense of efficacy. Facilitators and barriers to these positive changes also emerged. Conclusion: Team-based care can provide low-status health care workers with more fulfilling work and strengthen relationships across status lines. The extent of this positive impact may depend on supporting factors at the organization, team, and individual worker levels. Practice Implications: To maximize the benefits of team-based care, primary care leaders should recognize the larger role that MAs play under this model and support them as increasingly valuable team members. Contingent on organizational conditions, practices may find MAs who are willing to manage the increased workload that often accompanies team-based care.

Shultz, C. G. et Holmstrom, H. L. (2015). "The use of medical scribes in health care settings: a systematic review and future directions." J Am Board Fam Med **28**(3): 371-381.
https://www.jabfm.org/content/jabfp/28/3/371.full.pdf

BACKGROUND: Electronic health records (EHRs) hold promise to improve productivity, quality, and outcomes; however, using EHRs can be cumbersome, disruptive to workflow, and off-putting to patients and clinicians. One proposed solution to this problem is the use of medical scribes. The purpose of this systematic review is to summarize the literature investigating the effect of medical scribes on health care productivity, quality, and outcomes. Implications for future research are discussed. METHODS: A keyword search of the Cochrane Library, OvidSP Medline database, and Embase database from January 2000 through September 2014 was performed using the terms scribe or scribes in the title or abstract. To ensure no potentially eligible articles were missed, a second search was done using Google Scholar. English-language, peer-reviewed studies assessing the effect of medical scribes on health care productivity, quality, and outcomes were retained. Identified studies were assessed and the findings reported. RESULTS: Five studies were identified. Three studies assessed scribe use in an emergency department, 1 in a cardiology clinic, and 1 in a urology clinic. Two of 3 studies reported scribes had no effect on patient satisfaction; 2 of 2 reported improved clinician satisfaction; 2 of 3 reported an increase in the number of patients; 2 of 2 reported an increase in the number of relative value units per hour; 1 of 1 reported increased revenue; 3 of 4 reported improved time-related efficiencies; and 1 of 1 reported improved patient-clinician interactions. CONCLUSIONS: Available evidence suggests medical scribes may improve clinician satisfaction, productivity, time-related efficiencies, revenue, and patient-clinician interactions. Because the number of studies is small, and because each study suffered important limitations, confidence in the reliability of the evidence is significantly constrained. Given the nascent state of the science, methodologically rigorous and sufficiently powered studies are greatly needed.

Sierra, T., Forbes, J., Mirly, A., et al. (2018). "Key Factors Leading to Program Selection: A Survey of Physician Assistant Program Interviewees." J Physician Assist Educ **29**(1): 43-48.

PURPOSE: The purpose of this study was to determine which factors had the greatest influence on physician assistant (PA) interviewees' decision to choose a PA program to attend. The information in this

article may assist PA programs in making their program more attractive to potential applicants and also may help applicants identify programs that will best fit their needs. METHODS: Applicants who interviewed with a PA program were asked to rate 33 different influential factors when choosing a program to attend. RESULTS: Respondents most highly endorsed quality of faculty and staff, first-time Physician Assistant National Certifying Examination pass rates, and morale of faculty and staff. Results varied by demographics, including marital status, age, and sex of respondent. Results also varied from pre-PA students. CONCLUSIONS: Although there are numerous factors involved in program selection, PA programs may want to focus on the quality and morale of their faculty and staff to help improve the likelihood of attracting and retaining the highest quality applicants.

Skillman, S. M., Dahal, A., Frogner, B. K., et al. (2020). "Frontline Workers' Career Pathways: A Detailed Look at Washington State's Medical Assistant Workforce." Medical Care Research and Review **77**(3): 285-293. <Go to ISI>://WOS:000532406200006

Medical assistants (MAs) are a rapidly growing and increasingly important workforce. High MA turnover, however, is common and employers report applicants frequently do not meet their needs. We collected survey responses from a representative sample of 3,355 of Washington's MAs with certified status (MA-Cs) to understand their demographic, education, and employment backgrounds; job satisfaction; and career plans. Descriptive analyses showed 93.0% were female with a $19.91 mean hourly wage, and while generally satisfied, 56.2% indicated they would seek training or employment in another health care occupation within 5 years, with higher percentages among MA-Cs who felt overwhelmed by their workload and/or not satisfied with promotion opportunities. Regression analyses showed Hispanic, Black, and Asian MA-Cs were more likely than White MA-Cs to express interest in other health care careers. Strategies that strengthen MA career pathways and retain qualified workers should reward both employers and MAs and contribute to a stable and diverse workforce.

Smith, B. J., McCall, T. C., Slaven, E. M., et al. (2019). "PAs are a solution to the growing need for clinicians to treat an aging population." Jaapa-Journal of the American Academy of Physician Assistants **32**(12): 46-49. <Go to ISI>://WOS:000511875000013

Objective: To elucidate the types of patients cared for by physician assistants (PAs), specifically older adults and those with complex medical conditions. Methods: A nationwide survey was sent to PAs asking about their practice demographics, including the complexity of their patients and the types of treatment they provide; 676 responded. Results: Less than 2% of PAs specialize in geriatrics but 92.1% of PAs see patients over age 65 years. Most PAs see patients with conditions associated with aging, including hypertension (85.8%) and osteoarthritis (82.1%) as well as those with three or more comorbidities (54.8%) or who are medically complex (52.8%). Conclusions: Although few PAs work exclusively in geriatrics, most PAs are providing medical care for older adults and patients with complex healthcare needs. PAs should be considered to fill healthcare needs that will continue to exist when caring for this patient population.

Smith, N. E., Kozikowski, A. et Hooker, R. S. (2020). "Physician Assistants Employed by the Federal Government." Mil Med **185**(5-6): e649-e655.

OBJECTIVE: Physician assistants (PAs) are health professionals who have received advance medical training and are licensed to diagnose illness, develop and manage treatment plans, prescribe medications, and serve as principal health care provider. Although the U.S. federal government is the largest single employer of PAs, at the same time little is known about them across the wide array of diverse settings and agencies. The objective of this project was to determine the census of PAs in federal employment, their location, and personal characteristics. This included approximating the number of uniformed PAs. Taking stock of a unique labor force sets the stage for more granular analyses of how and where PAs are utilized and are deployed. METHODS: No one central database identifies all federally employed PAs. To undertake this project, three sources were examined. Data were derived from the U.S. Office of Personnel Management and the National Commission on Certification of Physician Assistants. Uniformed PA numbers were the result of networking with senior chiefs in the military services and the U.S. Public Health Service. The data were collolated and summarized for comparison and discussion. RESULTS: As of 2018, approximately 5,200 PAs were dispersed in most branches and agencies of the government that provide health care services, including the Departments of Defense, Veterans Affairs,

Health and Human Services, Justice, and Homeland Security. Federally employed PAs are civil servants or hold a commission in the uniformed services (ie, Army, Navy, Air Force, Coast Guard, and Public Health Service). Most PAs are in clinical roles, although a few hundred are in management positions. Approximately 81% of civilian PAs have had less than 15 years of federal employment. CONCLUSION: The diverse utilization and deployment of PAs validate the importance of the role they serve as medical professionals in the federal government. From 2008 to 2019, PA employment in the federal government grew by approximately 50% supporting the forecast that substantial national PA growth is on track.

Solomon, D. H., Bitton, A., Fraenkel, L., et al. (2014). "Roles of nurse practitioners and physician assistants in rheumatology practices in the US." Arthritis Care Res (Hoboken) **66**(7): 1108-1113. https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/acr.22255?download=true

OBJECTIVE: A recent workforce study of rheumatology in the US suggests that during the next several decades, the demand for rheumatology services will outstrip the supply of rheumatologists. Midlevel providers such as nurse practitioners and physician assistants may be able to alleviate projected shortages. METHODS: We administered a nationwide survey of midlevel providers during 2012. Invitations with the survey were sent with one followup reminder. The survey contained questions regarding demographics, training, level of practice independence, responsibilities, drug prescribing, use of objective outcome measures, and knowledge and use of treat-to-target (TTT) strategies. RESULTS: The invitation was sent to 482 eligible midlevel providers via e-mail and 90 via US mail. We received a total of 174 responses (30%). The mean age was 46 years and 83% were women. Nearly 75% had ≤10 years of experience and 53% had received formal training in rheumatology. Almost two-thirds reported having their own panel of patients. The top 3 practice responsibilities described were performing patient education (99%), adjusting medication doses (98%), and conducting physical examinations (97%). More than 90% felt very or somewhat comfortable diagnosing rheumatoid arthritis (RA) and a similar percentage prescribed disease-modifying antirheumatic drugs. Three-quarters reported using disease activity measures for RA and 56% reported that their practices used TTT strategies. CONCLUSION: Most respondents reported that they had substantial patient care responsibilities, used disease activity measures for RA, and incorporated TTT in their practice. These data suggest midlevel providers may help to reduce shortages in the rheumatology workforce and conform with recommendations to employ TTT strategies in RA treatment.

Solomon, D. H., Fraenkel, L., Lu, B., et al. (2015). "Comparison of Care Provided in Practices With Nurse Practitioners and Physician Assistants Versus Subspecialist Physicians Only: A Cohort Study of Rheumatoid Arthritis." Arthritis Care Res (Hoboken) **67**(12): 1664-1670. https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/acr.22643?download=true

OBJECTIVE: The Affordable Care Act proposes wider use of nurse practitioners (NPs) and physician assistants (PAs), but little is known about outcomes of care provided by them in medical specialties. We compared the outcomes of care for patients with rheumatoid arthritis (RA) seen in practices with NPs or PAs and rheumatologists versus practices with rheumatologists only. METHODS: We enrolled 7 rheumatology practices in the US (4 with NPs or PAs and 3 without). RA disease activity (categorized as in remission, low, moderate, or high, using standardized measures) was abstracted from medical records from the most recent 2 years. We performed a repeated-measures analysis using generalized linear regression to compare disease activity for visits to practices with NPs or PAs versus rheumatologist-only practices, adjusting for disease duration, serologic status, RA treatments, and disease activity measures. RESULTS: Records from 301 patients, representing 1,982 visits, were reviewed. The patients' mean age was 61 years and 77% were female. In the primary adjusted analysis, patients seen in practices with NPs or PAs were less likely to have higher disease activity (odds ratio 0.32, 95% confidence interval 0.17-0.60; P = 0.004) than those seen in rheumatologist-only practices. However, there were no differences in the change in disease activity. CONCLUSION: Patients seen in practices with NPs or PAs had lower RA disease activity over 2 years compared to those seen in rheumatologist-only practices; no differences were observed in the change in disease activity between visits either within or between the different types of provider practice.

Stange, K. (2014). "How does provider supply and regulation influence health care markets? Evidence from nurse practitioners and physician assistants." J Health Econ **33**: 1-27.

Nurse practitioners (NPs) and physician assistants (PAs) now outnumber family practice doctors in the United States and are the principal providers of primary care to many communities. Recent growth of these professions has occurred amidst considerable cross-state variation in their regulation, with some states permitting autonomous practice and others mandating extensive physician oversight. I find that expanded NP and PA supply has had minimal impact on the office-based healthcare market overall, but utilization has been modestly more responsive to supply increases in states permitting greater autonomy. Results suggest the importance of laws impacting the division of labor, not just its quantity.

Streeter, R. A., Zangaro, G. A. et Chattopadhyay, A. (2017). "Perspectives: Using Results from HRSA's Health Workforce Simulation Model to Examine the Geography of Primary Care." Health Serv Res **52 Suppl 1**(Suppl 1): 481-507.
https://onlinelibrary.wiley.com/doi/10.1111/1475-6773.12663

OBJECTIVE: Inform health planning and policy discussions by describing Health Resources and Services Administration's (HRSA's) Health Workforce Simulation Model (HWSM) and examining the HWSM's 2025 supply and demand projections for primary care physicians, nurse practitioners (NPs), and physician assistants (PAs). DATA SOURCES: HRSA's recently published projections for primary care providers derive from an integrated microsimulation model that estimates health workforce supply and demand at national, regional, and state levels. PRINCIPAL FINDINGS: Thirty-seven states are projected to have shortages of primary care physicians in 2025, and nine states are projected to have shortages of both primary care physicians and PAs. While no state is projected to have a 2025 shortage of primary care NPs, many states are expected to have only a small surplus. CONCLUSIONS: Primary care physician shortages are projected for all parts of the United States, while primary care PA shortages are generally confined to Midwestern and Southern states. No state is projected to have shortages of all three provider types. Projected shortages must be considered in the context of baseline assumptions regarding current supply, demand, provider-service ratios, and other factors. Still, these findings suggest geographies with possible primary care workforce shortages in 2025 and offer opportunities for targeting efforts to enhance workforce flexibility.

Taylor, K. A., McQuilkin, D. et Hughes, R. G. (2019). "Medical Scribe Impact on Patient and Provider Experience." Mil Med **184**(9-10): 388-393.

INTRODUCTION: The electronic health record (EHR) has created additional administrative burdens on providers to perform data entry while trying to engage with the patient during the health care visit. Providers have become frustrated and distracted with the documentation requirements which further hindered connectivity, and communication with the patient. The utilization of medical scribes in the outpatient clinical setting was a strategy shown to enhance patient and provider interaction, decrease clinician's administrative tasks, and promote satisfaction among providers and patients. This was an innovative quality improvement pilot project to improve the patient and provider experience using scribes in an outpatient setting. MATERIALS AND METHODS: Two providers, to include one Family Medicine doctor and one Internal Medicine physician, and four hospital corpsmen participated in this pilot project. The four hospital corpsmen received a 2-week training of the fundamentals of the EHR and their role as scribes prior to the start of the project. Two corpsmen were designated for each provider and worked with their provider throughout the 12-week project period. The two primary aspects evaluated during the implementation of the scribes were the patient experience, and provider experience. Navy Medicine and the University of South Carolina Institutional Review Boards (IRB) considered this project exempt from full IRB review. RESULTS: The experience questionnaire results indicated a slight mean decrease, but did not negatively impact patient satisfaction or overall patient experience. The local Medical Treatment Facility patient satisfaction, obtained through the Interactive Customer Evaluation, and the Joint Outpatient Experience Survey, indicated that there was no decrease in patient satisfaction or overall experience during the project period. The providers' experience improved with an average 50% decrease in time spent after hours documenting in the EHR, enhanced engagement with patient, staff, and ancillary team members, and improved work life balance. Additional findings of improved clinic efficiencies, completion of notes for both providers and positive qualitative comments from the scribes were identified. CONCLUSION: In multiple settings, documentation requirements burden providers. The consideration of scribes could foster work life balance, retention, and wellness. The patient

and provider experience was strengthened through the utilization of medical scribes, so future research centered on the provider and patient experience could be beneficial to organizations. Further study of the scribe's experience, especially considering the positive comments from the hospital corpsmen that participated as scribes during the project, could provide beneficial outcomes. Navy Medicine is advancing every opportunity to strengthen clinical and operational readiness, health and partnerships to provide the highest quality care and promote wellness for our patients. This type of quality improvement initiative could positively support readiness, quality and wellness for our organization, providers, and patients.

Taylor, M. T., Wayne Taylor, D., Burrows, K., et al. (2013). "Qualitative study of employment of physician assistants by physicians: benefits and barriers in the Ontario health care system." Can Fam Physician **59**(11): e507-513.

OBJECTIVE: To explore the experiences and perceptions of Ontario physician assistant (PA) employers about the barriers to and benefits of hiring PAs. DESIGN: A qualitative design using semistructured interviews. SETTING: Rural and urban eastern and southwestern Ontario. PARTICIPANTS: Seven family physicians and 7 other specialists. METHODS: The 14 physicians participated in semistructured interviews, which were audiorecorded and transcribed verbatim. An iterative approach using immersion and crystallization was employed for analysis. MAIN FINDINGS: Physician-specific benefits to hiring PAs included increased flexibility, the opportunity to expand practice, the ability to focus more time on complex patients, overall reduction in work hours and stress, and an opportunity for professional fellowship. Physicians who hired PAs without government financial support said PAs were affordable as long as they were able to retain them. Barriers to hiring PAs included uncertainty about funding, the initial need for intensive supervision and training, and a lack of clarity around delegation of acts. CONCLUSION: Physicians are motivated to hire PAs to help deal with long wait times and long hours, but few are expecting to increase their income by taking on PAs. Governments, medical colleges, educators, and regulators must address the perceived barriers to PA hiring in order to expand and optimize this profession.

Thom, D. H., Hessler, D., Willard-Grace, R., et al. (2015). "Health Coaching by Medical Assistants Improves Patients' Chronic Care Experience." American Journal of Managed Care **21**(10): 685-691.
<Go to ISI>://WOS:000362950100003

Objectives: We sought to test the hypothesis that training medical assistants to provide health coaching would improve patients' experience of care received and overall satisfaction with their clinic. Study Design: Randomized controlled trial. Methods: Low-income English-or Spanish-speaking patients aged 18 to 75 years with poorly controlled type 2 diabetes, hypertension, and/or hyperlipidemia were randomized to receive either a health coach or usual care for 12 months. Patient care experience was measured using the Patient Assessment of Chronic Illness Care (PACIC) scale at baseline and at 12 months. Patient overall satisfaction with the clinic was assessed with a single item asking if they would recommend the clinic to a friend or family member. PACIC and satisfaction scores were compared between study arms using generalized estimating equations to account for clustering at the clinician level. Results: PACIC scores were available from baseline and at 12 months on 366 (76%) of the 441 patients randomized. At baseline, patients receiving health coaching were similar to those in the usual care group with respect to demographic and other characteristics, including mean PACIC scores (3.00 vs 3.06) and the percent who would "definitely recommend" their clinic (73% and 73%, respectively). At 12 months, coached patients had a significantly higher mean PACIC score (3.82 vs 3.13; P < .001) and were more likely to report they would definitely recommend their clinic (85% vs 73%; P = .002). Conclusions: Using medical assistants trained in health coaching significantly improved the quality of care that low-income patients with poorly controlled chronic disease reported receiving from their healthcare team.

Timmons, E. J. (2017). "The effects of expanded nurse practitioner and physician assistant scope of practice on the cost of Medicaid patient care." J Prim Care Community Health **121**(2): 189-196.

The provision of health care to low-income Americans remains an ongoing policy challenge. In this paper, I examine how important changes to occupational licensing laws for nurse practitioners and physician assistants have affected cost and intensity of health care for Medicaid patients. The results suggest that allowing physician assistants to prescribe controlled substances is associated with a

substantial (more than 11%) reduction in the dollar amount of outpatient claims per Medicaid recipient. I find little evidence that expanded scope of practice has affected proxies for care intensity such as total claims and total care days. Relaxing occupational licensing requirements by broadening the scope of practice for healthcare providers may represent a low-cost alternative to providing quality care to America's poor.

Tipirneni, R., Rhodes, K. V., Hayward, R. A., et al. (2016). "Primary care appointment availability and nonphysician providers one year after Medicaid expansion." Am J Manag Care **22**(6): 427-431.

OBJECTIVES: With insurance enrollment greater than expected under the Affordable Care Act, uncertainty about the availability and timeliness of healthcare services for newly insured individuals has increased. We examined primary care appointment availability and wait times for new Medicaid and privately insured patients before and after Medicaid expansion in Michigan. STUDY DESIGN: Simulated patient ("secret shopper") study. METHODS: Extended follow-up of a previously reported simulated patient ("secret shopper") study assessing accessibility of routine new patient appointments in a stratified proportionate random sample of Michigan primary care practices before versus 4, 8, and 12 months after Medicaid expansion. RESULTS: During the study period, approximately 600,000 adults enrolled in Michigan's Medicaid expansion program, representing 57% of the previously uninsured nonelderly adult population. One year after expansion, we found that appointment availability remained increased by 6 percentage points for new Medicaid patients (95% CI, 1.6-11.1) and decreased by 2 percentage points for new privately insured patients (95% CI, -0.5 to -3.8). Over the same period, the proportion of appointments scheduled with nonphysician providers (nurse practitioners or physician assistants) increased from 8% to 21% of Medicaid appointments (95% CI, 5.6-20.2) and from 11% to 19% of private-insurance appointments (95% CI, 1.3-14.1). Median wait times remained stable for new Medicaid patients and increased slightly for new privately insured patients, both remaining within 2 weeks. CONCLUSIONS: During the first year following Medicaid expansion in Michigan, appointment availability for new Medicaid patients increased, a greater proportion of appointments could be obtained with nonphysician providers, and wait times remained within 2 weeks.

Twombly, L. A., Rizzolo, D., Chen, R., et al. (2019). "Factors That Influence Job Choice at the Time of Graduation for Physician Assistant Students." J Physician Assist Educ **30**(1): 34-40.

Research and data analysis show that there is a shortage of primary care providers throughout the United States. Physician assistants (PAs) play an important role in health care delivery; however, the percentage of PAs practicing in primary care has dramatically decreased in the past 15 years. The purpose of this study was to identify potential factors that influence PA students' first job choice following graduation from a PA program to determine whether they have a relationship to the choosing of primary care. The 2016 End of Program Survey data were analyzed using a multinominal logistic regression to determine what factors influenced PA students' selections of primary care as their first job choice: individual factors, program factors, and external factors. Of the 3038 subjects, 269 (8.9%) accepted a job in primary care, 847 (27.9%) accepted a specialty job, and 1922 (63.3%) did not accept a job. When comparing no job accepted versus primary care job choice, marital status and racial/ethnic differences influenced first job choice. Financial factors were also found to be significant predictors. In the second model, comparing specialty versus primary care job choice, marital status influenced first job choice along with financial factors. In addition, one program variable (moderate clinical rotation experience) was found to be statistically significant in the model of specialty versus primary care job choice. Financial factors were found to be the greatest predictor in first job choice. Focusing on policy to help reduce student debt and increase reimbursement rates could help increase the number of students choosing primary care.

Ulrich, C. M., Zhou, Q. P., Hanlon, A., et al. (2014). "The impact of ethics and work-related factors on nurse practitioners' and physician assistants' views on quality of primary healthcare in the United States." Appl Nurs Res **27**(3): 152-156.
https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/acr.22643?download=true

PURPOSE: Nurse practitioners (NPs) and physician assistants (PAs) provide primary care services for many American patients. Ethical knowledge is foundational to resolving challenging practice issues, yet little is

known about the importance of ethics and work-related factors in the delivery of quality care. The aim of this study was to quantitatively assess whether the quality of the care that practitioners deliver is influenced by ethics and work-related factors. METHODS: This paper is a secondary data analysis of a cross-sectional self-administered mailed survey of 1,371 primary care NPs and PAs randomly selected from primary care and primary care subspecialties in the United States. RESULTS: Ethics preparedness and confidence were significantly associated with perceived quality of care ($p<0.01$) as were work-related characteristics such as percentage of patients with Medicare and Medicaid, patient demands, physician collegiality, and practice autonomy ($p<0.01$). Forty-four percent of the variance in quality of care was explained by these factors. CONCLUSIONS: Investing in ethics education and addressing restrictive practice environments may improve collaborative practice, teamwork, and quality of care.

Valentin, V. L. et Najmabadi, S. (2021). "Cross-sectional analysis of US scope of practice laws and employed physician assistants." BMJ Open **11**(5): e043972.
https://bmjopen.bmj.com/content/bmjopen/11/5/e043972.full.pdf

OBJECTIVE: This study examined if the variation in physician assistant (PA) state scope of practice (SOP) laws across states are associated with number of employed PAs, PA demographics and PA/population ratio per state. The hypothesis was that less restrictive SOP laws will increase the demand for PAs and the number of PAs in a state. DESIGN: Retrospective cross-sectional analysis at three time points: 1998, 2008, 2017. SETTING: Fifty states and the District of Columbia. PARTICIPANTS: Employed PAs in 1998, 2008, 2017. METHODS: SOP laws were categorised as permissive, average and restrictive. Three national datasets were combined to allow for descriptive analysis of employed PAs by year and SOP categories. We used linear predictive models to generate and compare PA/population ratio least square means by SOP categories for each year. Models were adjusted for percent female PA and PAs mean age. RESULTS: There was a median PA/population ratio of 23 per 100 000 population in 1998 and 33 in 2017. A heterogeneous expansion of SOP laws was seen with 17 states defined as super expanders while 15 were never adopters. In 2017, comparing restrictive to permissive states showed that in adjusted models permissive SOP laws were associated with 11.7 (p .03) increase in ratio of employed PAs per 100 000 population, demonstrating that states with permissive SOP laws have an increased PA density. CONCLUSIONS: There has been steady growth in the mean PA/population ratio since the turn of the century. At the same time, PA SOP laws in the USA have expanded, with just 10 states remaining in the restrictive category. Permissive SOP laws are associated with an increase in the ratio of employed PAs per state population. As states work to meet the projected physician need, SOP expansion may be an important policy consideration to increase the PA workforce.

Valentin, V. L., Najmabadi, S., Jones, J., et al. (2020). "State Scope of Practice Laws: An Analysis of Physician Assistant Programs and Graduates." J Physician Assist Educ **31**(4): 179-184.

PURPOSE: The purpose of this study was to understand the association between physician assistant (PA) state scope of practice (SOP) laws and (1) PA program growth and (2) PA graduate demographics. METHODS: Scope of practice laws were categorized as ideal, average, and restrictive. Descriptive statistics by year and SOP categories were determined for the number of states, population density, PA programs, and PA graduate number, gender, race, and mean age. The Mann-Whitney U test was used to analyze demographic data by SOP categories. Adjusted risk ratios were generated for the number of PA programs and SOP categories. RESULTS: The number of PA programs is not associated with ideal SOP states. As of 2017, only 10 states have restrictive SOP laws. A minority of PA students now graduate from states with restrictive SOP laws. CONCLUSION: There is heterogeneity in PA SOP laws throughout the United States but only a minority of PA graduates now come from restrictive SOP states. This study provides foundational information prior to the implementation of optimal team practice.

Vilendrer, S., Amano, A., Johnson, C. B., et al. (2022). "A qualitative assessment of medical assistant professional aspirations and their alignment with career ladders across three institutions." Bmc Primary Care **23**(1): 11.
<Go to ISI>://WOS:000796511100001

Background Growing demand for medical assistants (MAs) in team-based primary care has led health systems to explore career ladders based on expanded MA responsibilities as a solution to improve MA recruitment and retention. However, the practical implementation of career ladders remains a challenge

for many health systems. In this study, we aim to understand MA career aspirations and their alignment with available advancement opportunities. Methods Semi-structured focus groups were conducted August to December 2019 in primary care clinics based in three health systems in California and Utah. MA perspectives of career aspirations and their alignment with existing career ladders were discussed, recorded, and qualitatively analyzed. Results Ten focus groups conducted with 59 participants revealed three major themes: mixed perceptions of expanded MA roles with concern over increased responsibility without commensurate increase in pay; divergent career aspirations among MAs not addressed by existing career ladders; and career ladder implementation challenges including opaque advancement requirements and lack of consistency across practice settings. Conclusion MAs held positive perceptions of career ladders in theory, yet recommended a number of improvements to their practical implementation across three institutions including improving clarity and consistency around requirements for advancement and matching compensation to job responsibilities. The emergence of two distinct clusters of MA professional needs and desires suggests an opportunity to further optimize career ladders to provide tailored support to MAs in order to strengthen the healthcare workforce and talent pipeline.

Waddimba, A. C., Scribani, M., Krupa, N., et al. (2016). "Frequency of satisfaction and dissatisfaction with practice among rural-based, group-employed physicians and non-physician practitioners." BMC Health Serv Res **16**(1): 613. https://bmchealthservres.biomedcentral.com/counter/pdf/10.1186/s12913-016-1777-8.pdf

BACKGROUND: Widespread dissatisfaction among United States (U.S.) clinicians could endanger ongoing reforms. Practitioners in rural/underserved areas withstand stressors that are unique to or accentuated in those settings. Medical professionals employed by integrating delivery systems are often distressed by the cacophony of organizational change(s) that such consolidation portends. We investigated the factors associated with dis/satisfaction with rural practice among doctors/non-physician practitioners employed by an integrated healthcare delivery network serving 9 counties of upstate New York, during a time of organizational transition. METHODS: We linked administrative data about practice units with cross-sectional data from a self-administered multi-dimensional questionnaire that contained practitioner demographics plus valid scales assessing autonomy/relatedness needs, risk aversion, tolerance for uncertainty/ambiguity, meaningfulness of patient care, and workload. We targeted medical professionals on the institutional payroll for inclusion. We excluded those who retired, resigned or were fired during the study launch, plus members of the advisory board and research team. Fixed-effects beta regressions were performed to test univariate associations between each factor and the percent of time a provider was dis/satisfied. Factors that manifested significant fixed effects were entered into multivariate, inflated beta regression models of the proportion of time that practitioners were dis/satisfied, incorporating clustering by practice unit as a random effect. RESULTS: Of the 473 eligible participants. 308 (65.1 %) completed the questionnaire. 59.1 % of respondents were doctoral-level; 40.9 % mid-level practitioners. Practitioners with heavier workloads and/or greater uncertainty intolerance were less likely to enjoy top-quintile satisfaction; those deriving greater meaning from practice were more likely. Higher meaningfulness and gratified relational needs increased one's likelihood of being in the lowest quintile of dissatisfaction; heavier workload and greater intolerance of uncertainty reduced that likelihood. Practitioner demographics and most practice unit characteristics did not manifest any independent effect. CONCLUSIONS: Mutable factors, such as workload, work meaningfulness, relational needs, uncertainty/ambiguity tolerance, and risk-taking attitudes displayed the strongest association with practitioner satisfaction/dissatisfaction, independent of demographics and practice unit characteristics. Organizational efforts should be dedicated to a redesign of group-employment models, including more equitable division of clinical labor, building supportive peer networks, and uncertainty/risk tolerance coaching, to improve the quality of work life among rural practitioners.

Walker, K., Johnson, M., Dunlop, W., et al. (2018). "Feasibility evaluation of a pilot scribe-training program in an Australian emergency department." Australian Health Review **42**(2): 210-217.
<Go to ISI>://WOS:000429302000013

Objective. Medical scribes have an emerging and expanding role in health, particularly in Emergency Medicine in the US. Scribes assist physicians with documentation and clerical tasks at the bedside while the physician consults with his or her patient. Scribes increase medical productivity. The aim of the present study was to examine the feasibility of a pilot hospital-administered scribe-training program in

Australia and to evaluate the ability of an American training course (Medical Scribe Training Systems) to prepare trainee scribes for clinical training in an emergency department in Australia. Methods. The present study was a pilot, prospective, observational cohort study from September 2015 to February 2016 at Cabrini Emergency Department, Melbourne. Scribe trainees were enrolled in the pre-work course and then trained clinically. Feasibility of training scribes and limited efficacy testing of the course was undertaken. Results. The course was acceptable to users and demand for training exists. There were many implementation tasks and issues experienced and resources were required to prepare the site for scribe implementation. Ten trainees were enrolled for preclinical training. Six candidates undertook clinical training, five achieved competency (required seven to 16 clinical shifts after the preclinical course). The training course was helpful and provided a good introduction to the scribe role. The course required adaptation to a non-US setting and the specific hospital setting. In addition, it needed more detail in some common emergency department topics. Conclusion. Training scribes at a hospital in Australia is feasible. The US training course used can assist with preclinical training. Course modification is required.

White, R., Keahey, D., Luck, M., et al. (2021). "Primary care workforce paradox: A physician shortage and a PA and NP surplus." Jaapa **34**(10): 39-42.

OBJECTIVE: Primary care workforce projections continue to predict significant physician shortages. An oversupply of primary care physician assistants (PAs) and NPs also is predicted. This paradox calls into question the assumptions that underlie workforce projection models, which likely underestimate the primary care contributions of PAs and NPs. METHODS: Federally qualified health center data from the 2016-2019 Uniform Data System were used to calculate the number of clinic visits per full-time equivalent (FTE) physician, PA, and NP. Visits per FTE were compared across provider type to determine provider-specific productivity ratios. RESULTS: The combined PA and NP productivity ratio increased relative to physicians in each year, ranging from 0.85 in 2016 to 0.88 in 2019. Clinic visits per FTE for PAs and family physicians were nearly equivalent. CONCLUSIONS: Primary care workforce projection models should be reexamined to more accurately capture the productivity of PAs and NPs.

Wiler, J. L. et Ginde, A. A. (2015). "State laws governing physician assistant practice in the United States and the impact on emergency medicine." J Emerg Med **48**(2): e49-58.
https://www.jem-journal.com/article/S0736-4679(14)01070-1/fulltext

BACKGROUND: Midlevel providers, including physician assistants (PA), have been recommended by some to fill the current inadequate supply of providers nationally, including in emergency medicine. OBJECTIVE: PA practice is governed by state law. We described the differences in qualifications, scope of practice, prescriptive authority, and physician supervision required by individual states for PA practice and describe the impact this may have on emergency medicine. METHODS: A cross-sectional analysis of United States laws governing PA practice by abstraction from each state's public website. State characteristics were collected from the American Academy of Physician Assistants and United States Census websites and dichotomized by median values. RESULTS: Only six states (12%), all of which were larger-population states, required physician review of medical records within 1 week of a PA-only patient encounter. However, one state (Virginia) explicitly required onsite physician presence for PA practice in the emergency department. All states allowed PAs to assist in invasive procedures, but 13 (25%) restricted independent performance. Restriction of this practice was more likely in states with a higher population (38%), lower rural proportion (40%), and lower number of PAs per population (40%). Eleven (22%) states restricted performance of sedation or general anesthesia. An expanded scope of practice for disaster situations was allowed by 24 (47%) states and was more likely in larger population states (62%). All but two states (Florida and Kentucky) allowed PA prescribing of schedule III-V medications, and 37 (73%) allowed prescribing of schedule II medications. CONCLUSIONS: Laws governing PA practice in emergency departments differ by state, but generally allow for a broad scope of practice and limited direct supervision. Smaller, rural states were less likely to have tighter restrictions or oversight.

Willis, J. et Cawley, J. F. (2021). "The effect of team-based care practice on productivity for family physicians." Jaapa **34**(9): 42-44.
https://aao-hnsfjournals.onlinelibrary.wiley.com/doi/10.1177/01945998211040408

About 60% of family physician practices employ PAs and/or NPs but gaps exist in the knowledge of the clinical effects on physician-PA and physician-NP teams. This review summarizes and comments on the significance of a recent report from the American Board of Family Medicine that compares the scope of practice of family physicians for family physicians practicing with either a PA, NP, or both.

Wilson, D. et Fenn, P. (2022). "Utilization of pharmacists in physician assistant didactic curricula in the United States." Curr Pharm Teach Learn **14**(2): 153-158.

INTRODUCTION: The primary objective was to describe the percentage of physician assistant (PA) programs who utilize pharmacists to lecture on pharmacology/pharmacotherapeutics content. Secondary objectives were to describe the percentage of pharmacology/pharmacotherapeutics lectures pharmacists deliver, the percentage of programs who employ a full-time pharmacist to coordinate the Pharmacology/Pharmacotherapeutics courses, and the inclusion of pharmacists in other courses in the curricula. METHODS: This was a prospective, cross-sectional, cohort survey. All PA programs listed on the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) website with an available email address for the Director of Pre-Clinical Education/Didactic Education, Academic Coordinator, or Chair/Director were recruited for the study. A link to an online survey was distributed to each program. The survey collected data on program characteristics as well as utilization of pharmacists in the curriculum. Descriptive statistics were used for all analyses. RESULTS: Of the 187 programs receiving the survey, 66 completed the survey (35%). Eighty-three percent of programs reported that pharmacists were utilized to deliver pharmacology/pharmacotherapeutics content. For those programs who utilize pharmacists, 80% reported pharmacists teach more than 75% of the lectures. Twenty-three (35%) programs reported having a full-time pharmacist on faculty to coordinate these courses. Almost half of respondents also commented that pharmacists were involved in other courses in the curriculum. CONCLUSIONS: More than 80% of programs responding to the survey utilize pharmacists to deliver pharmacology/pharmacotherapeutics content. Studying the utilization of pharmacists and their impact in other health sciences curricula is warranted.

Woodcock, D. V., Pranaat, R., Grath, K. M. C., et al. (2017). The Evolving Role of Medical Scribe: Variation and Implications for Organizational Effectiveness and Safety. Conference on Information Technology and Communications in Health (ITCH), Victoria, CANADA, Ios Press.
<Go to ISI>://WOS:000428192000067

Increasing use of medical scribes is an unintended consequence of electronic health record adoption in the U.S. The role of scribe is not universally defined, leading to variations in scribe training and operations, as well as questions about scribe efficiency, effectiveness, and safety. Studies published since 2009 have primarily focused on the financial aspects of scribe use, but no published studies have taken an organizational view of this phenomenon. This paper describes stakeholder perspectives on scribes working in outpatient settings within an urban tertiary academic medical center. It places factors associated with of scribe systems within an eight-dimension sociotechnical framework for evaluating health information technology, and discusses key aspects of those perspectives.

Xue, Y., Goodwin, J. S., Adhikari, D., et al. (2017). "Trends in Primary Care Provision to Medicare Beneficiaries by Physicians, Nurse Practitioners, or Physician Assistants: 2008-2014." J Prim Care Community Health **8**(4): 256-263.

OBJECTIVES: To document the temporal trends in alternative primary care models in which physicians, nurse practitioners (NPs), or physician assistants (PAs) engaged in care provision to the elderly, and examine the role of these models in serving elders with multiple chronic conditions and those residing in rural and health professional shortage areas (HPSAs). DESIGN: Serial cross-sectional analysis of Medicare claims data for years 2008, 2011, and 2014. SETTING: Primary care outpatient setting. PARTICIPANTS: Medicare fee-for-service beneficiaries who had at least 1 primary care office visit in each study year. The sample size is 2 471 498. MEASUREMENTS: Physician model-Medicare beneficiary's primary care office visits in a year were conducted exclusively by physicians; shared care model-conducted by a group of professionals that included physicians and either NPs or PAs or both; NP/PA model: conducted either by NPs or PAs or both. RESULTS: There was a decrease in the physician model (85.5% to 70.9%) and an increase in the shared care model (11.9% to 23.3%) and NP/PA model (2.7% to 5.9%) from 2008 to 2014. Compared with the physician model, the adjusted odds ratio (AOR) of receiving NP/PA care was 3.97

(95% CI 3.80-4.14) in rural and 1.26 (95% CI 1.23-1.29) in HPSAs; and the AOR of receiving shared care was 1.66 (95% CI 1.61-1.72) and 1.14 (95% CI 1.13-1.15), respectively. Beneficiaries with 3 or more chronic conditions were most likely to received shared care (AOR = 1.67, 95% CI 1.65-1.70). CONCLUSION: The increase in shared care practice signifies a shift toward bolstering capacity of the primary care delivery system to serve elderly populations with growing chronic disease burden and to improve access to care in rural and HPSAs.

Xue, Y., Greener, E., Kannan, V., et al. (2018). "Federally qualified health centers reduce the primary care provider gap in health professional shortage counties." Nurs Outlook **66**(3): 263-272. https://www.nursingoutlook.org/article/S0029-6554(17)30605-X/fulltext

BACKGROUND: Federally qualified health centers (FQHCs) were designed to provide care in medically underserved areas. Substantial and sustained federal funding has accelerated FQHC growth. PURPOSE: To examine temporal trends in primary care provider supply and whether FQHCs have been successful in reducing the gap in provider supply in primary care health professional shortage areas (HPSAs). METHODS: Retrospective cohort study design using national county-level data from 2009 to 2013. Primary care providers included physicians, nurse practitioners, and physician assistants. FINDINGS: Partial-county HPSAs had the highest average provider supply and the greatest increase, followed by non-HPSA counties and whole-county HPSAs. The provider gap was larger in whole-county HPSAs compared with partial-county HPSAs. Counties with one or more FQHC sites had a smaller provider gap than those without FQHC sites. An increase of one FQHC site was statistically significantly associated with a reduction in the annual provider gap. DISCUSSION: FQHCs reduced the gap in primary care provider supply in shortage counties and mitigated uneven distribution of the primary care workforce.

Xun, H., Chen, J., Sun, A. H., et al. (2021). "Public Perceptions of Physician Attire and Professionalism in the US." JAMA Netw Open **4**(7): e2117779. https://jamanetwork.com/journals/jamanetworkopen/articlepdf/2782564/xun_2021_oi_210528_1627056032.88664.pdf

IMPORTANCE: In recent years, casual physician attire (fleece jackets and softshell jackets) has become increasingly popular, but to our knowledge, public perceptions of these garments have not been studied. Furthermore, gender biases may result in differing expectations and perceptions of female and male physicians and may be associated with patient rapport and trust building. OBJECTIVE: To characterize public perceptions of casual physician attire and implicit gender biases in public assessment of physicians' professional attire. DESIGN, SETTING, AND PARTICIPANTS: This survey study used a population-based survey administered via Amazon Mechanical Turk from May to June 2020 among individuals aged 18 years or older who were US residents and for whom English was the primary language. INTERVENTION: Survey featuring photographs of a male or female model wearing various types of physician attire (white coat, business attire, and scrubs). MAIN OUTCOMES AND MEASURES: Respondents' ratings of professionalism, experience, and friendliness of the male and female models in various attire and perceptions of the models' most likely health care profession. Preference scores for various outfits were calculated as the difference between the preference score for an outfit and the mean preference score for the outfit-role pairing. RESULTS: Of 522 surveys completed, 487 were included for analysis; the mean (SD) age of respondents was 36.2 (12.4) years, 260 (53.4%) were female, and 372 (76.4%) were White individuals. Respondents perceived models of health care professionals wearing white coats vs those wearing fleece or softshell jackets as significantly more experienced (mean [SD] experience score: white coat, 4.9 [1.5]; fleece, 3.1 [1.5]; softshell, 3.1 [1.5]; P < .001) and professional (mean [SD] professionalism score: white coat, 4.9 [1.6]; fleece, 3.2 [1.5]; softshell, 3.3 [1.5]; P < .001). A white coat with scrubs attire was most preferred for surgeons (mean [SD] preference index: 1.3 [2.3]), whereas a white coat with business attire was preferred for family physicians and dermatologists (mean [SD] preference indexes, 1.6 [2.3] and 1.2 [2.3], respectively; P < .001). Regardless of outerwear, female models in business attire as inner wear were rated as less professional than male counterparts (mean [SD] professionalism score: male, 65.8 [25.4]; female, 56.2 [20.2]; P < .001). Both the male and the female model were identified by the greater number of respondents as a physician or surgeon; however, the female model vs the male model was mistaken by more respondents as a medical technician (39 [8.0] vs 16 [3.3%]; P < .005), physician assistant (56 [11.5%] vs 11 [2.3%]; P < .001), or nurse (161 [33.1%] vs 133 [27.3%]; P = .050). CONCLUSIONS AND RELEVANCE: In this survey study, survey respondents rated

physicians wearing casual attire as less professional and experienced than those wearing a white coat. Gender biases were found in impressions of professionalism, with female physicians' roles being more frequently misidentified. Understanding disparate public perceptions of physician apparel may inform interventions to address professional role confusion and cumulative career disadvantages for women in medicine.

Young, S. G. (2020). "Impact of nonphysician providers on spatial accessibility to primary care in Iowa." BMJ Open **55**(3): 476-485.
https://bmjopen.bmj.com/content/bmjopen/10/6/e035414.full.pdf

OBJECTIVE: To assess the impact of nonphysician providers on measures of spatial access to primary care in Iowa, a state where physician assistants and advanced practice registered nurses are considered primary care providers. DATA SOURCES: 2017 Iowa Health Professions Inventory (Carver College of Medicine), and minor civil division (MCD) level population data for Iowa from the American Community Survey. STUDY DESIGN: We used a constrained optimization model to probabilistically allocate patient populations to nearby (within a 30-minute drive) primary care providers. We compared the results (across 10 000 scenarios) using only primary care physicians with those including nonphysician providers (NPPs). We analyze results by rurality and compare findings with current health professional shortage areas. DATA COLLECTION/EXTRACTION METHODS: Physicians and NPPs practicing in primary care in 2017 were extracted from the Iowa Health Professions Inventory. PRINCIPAL FINDINGS: Considering only primary care physicians, the average unallocated population for primary care was 222 109 (7 percent of Iowa's population). Most of the unallocated population (86 percent) was in rural areas with low population density (< 50/square mile). The addition of NPPs to the primary care workforce reduced unallocated population by 65 percent to 78 252 (2.5 percent of Iowa's population). Despite the majority of NPPs being located in urban areas, most of the improvement in spatial accessibility (78 percent) is associated with sparsely populated rural areas. CONCLUSIONS: The inclusion of nonphysician providers greatly reduces but does not eliminate all areas of inadequate spatial access to primary care.

Zallman, L., Finnegan, K., Roll, D., et al. (2018). "Impact of Medical Scribes in Primary Care on Productivity, Face-to-Face Time, and Patient Comfort." J Am Board Fam Med **31**(4): 612-619.
https://www.jabfm.org/content/jabfp/31/4/612.full.pdf

BACKGROUND: Medical scribes are a clinical innovation increasingly being used in primary care. The impact of scribes in primary care remain unclear. We aimed to examine the impact of medical scribes on productivity, time spent facing the patient during the visit, and patient comfort with scribes in primary care. METHODS: We conducted a prospective observational pre-post study of 5 family and internal medicine-pediatrics physicians and their patients at an urban safety net health clinic. Medical scribes accompanied providers in the examination room and documented the clinical encounter. After an initial phase-in period, we added an additional 20-minute patient slot per 200-minute session. We examined productivity by using electronic medical record data on the number of patients seen and work relative value units (work RVUs) per hour. We directly observed clinical encounters to measure the amount of time providers spent facing patients and other visit components. We queried patient comfort with scribes by using surveys administered after the visit. RESULTS: Work RVUs per hour increased by 10.5% from 2.59 prescribe to 2.86 post-scribe (P < .001). Patients seen per hour increased by 8.8% from 1.82 to 1.98 (P < .001). Work RVUs per patient did not change. After scribe implementation, time spent facing the patient increased by 57% (P < .001) and time spent facing the computer decreased by 27% (P = .003). The proportion of the visit time that was spent face-to-face increased by 39% (P < .001). Most (69%) patients reported feeling very comfortable with the scribe in the room, while the proportion feeling very comfortable with the number of people in the room decreased from 93% to 66% (P < .001). CONCLUSIONS: Although the full implications of medical scribe implementation remain to be seen, this initial study highlights the promising opportunity of medical scribe implementation in primary care.

Zhang, D., Son, H., Shen, Y., et al. (2020). "Assessment of Changes in Rural and Urban Primary Care Workforce in the United States From 2009 to 2017." JAMA Netw Open **3**(10): e2022914.
https://jamanetwork.com/journals/jamanetworkopen/articlepdf/2772305/zhang_2020_oi_200767_1603224441.78338.pdf

IMPORTANCE: Access to primary care clinicians, including primary care physicians and nonphysician clinicians (nurse practitioners and physician assistants) is necessary to improving population health. However, rural-urban trends in primary care access in the US are not well studied. OBJECTIVE: To assess the rural-urban trends in the primary care workforce from 2009 to 2017 across all counties in the US. DESIGN, SETTING, AND PARTICIPANTS: In this cross-sectional study of US counties, county rural-urban status was defined according to the national rural-urban classification scheme for counties used by the National Center for Health Statistics at the Centers for Disease Control and Prevention. Trends in the county-level distribution of primary care clinicians from 2009 to 2017 were examined. Data were analyzed from November 12, 2019, to February 10, 2020. MAIN OUTCOMES AND MEASURES: Density of primary care clinicians measured as the number of primary care physicians, nurse practitioners, and physician assistants per 3500 population in each county. The average annual percentage change (APC) of the means of the density of primary care clinicians over time was calculated, and generalized estimating equations were used to adjust for county-level sociodemographic variables obtained from the American Community Survey. RESULTS: The study included data from 3143 US counties (1167 [37%] urban and 1976 [63%] rural). The number of primary care clinicians per 3500 people increased significantly in rural counties (2009 median density: 2.04; interquartile range [IQR], 1.43-2.76; and 2017 median density: 2.29; IQR, 1.57-3.23; P < .001) and urban counties (2009 median density: 2.26; IQR. 1.52-3.23; and 2017 median density: 2.66; IQR, 1.72-4.02; P < .001). The APC of the mean density of primary care physicians in rural counties was 1.70% (95% CI, 0.84%-2.57%), nurse practitioners was 8.37% (95% CI, 7.11%-9.63%), and physician assistants was 5.14% (95% CI, 3.91%-6.37%); the APC of the mean density of primary care physicians in urban counties was 2.40% (95% CI, 1.19%-3.61%), nurse practitioners was 8.64% (95% CI, 7.72%-9.55%), and physician assistants was 6.42% (95% CI, 5.34%-7.50%). Results from the generalized estimating equations model showed that the density of primary care clinicians in urban counties increased faster than in rural counties (β = 0.04; 95% CI, 0.03 to 0.05; P < .001). CONCLUSIONS AND RELEVANCE: Although the density of primary care clinicians increased in both rural and urban counties during the 2009-2017 period, the increase was more pronounced in urban than in rural counties. Closing rural-urban gaps in access to primary care clinicians may require increasingly intensive efforts targeting rural areas.

Ziemann, M., Erikson, C. et Krips, M. (2021). "The Use of Medical Scribes in Primary Care Settings A Literature Synthesis." Med Care **59**(10): S449-S456.
<Go to ISI>://WOS:000766274100010

Background: Clerical burdens have strained primary care providers already facing a shifting health care landscape and workforce shortages. These pressures may cause burnout and job dissatisfaction, with negative implications for patient care. Medical scribes, who perform real-time electronic health record documentation, have been posited as a solution to relieve clerical burdens, thus improving provider satisfaction and other outcomes. Objective: The purpose of this study is to identify and synthesize the published research on medical scribe utilization in primary care and safety net settings. Research Design: We conducted a review of the literature to identify outcomes studies published between 2010 and 2020 assessing medical scribe utilization in primary care settings. Searches were conducted in PubMed and supplemented by a review of the gray literature. Articles for inclusion were reviewed by the study authors and synthesized based on study characteristics, medical scribe tasks, and reported outcomes. Results: We identified 21 publications for inclusion, including 5 that examined scribes in health care safety net settings. Scribe utilization was consistently reported as being associated with improved productivity and efficiency, provider experience, and documentation quality. Findings for patient experience were mixed. Conclusions: Published studies indicate scribe utilization in primary care may improve productivity, clinic and provider efficiencies, and provider experience without diminishing the patient experience. Further large-scale research is needed to validate the reliability of study findings and assess additional outcomes, including how scribes enhance providers' ability to advance health equity.