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Improving the Care Pathway of Patients with Chronic Kidney disease: The Key Role Played by Coordination Nurses and Communication Tools

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Article 43 of the 2014 Social Security Financing Act (Loi de Financement de la Sécurité Sociale) enabled the introduction of regional experiments related to chronic kidney disease care pathways. In 2017, these experiments led to the funding of pilot projects in six regions that aimed to improve the care pathways and autonomy of patients suffering from chronic kidney disease. By adopting a combined qualitative and quantitative approach, this study aims to identify the organisational changes that have ensued from these experiments and assess their impacts. The results highlight the fact that the pilot project have developed interventions that have reinforced the coordination between primary and hospital healthcare professionals. The funding has been specifically allocated to the recruitment of nurses, the implementation of communication tools, and the establishment of multidisciplinary teams. Our quantitative results show that these interventions have improved preparation for replacement therapy and transplantation by reducing the proportion of emergency dialyses and improving access to the kidney transplantation waiting list. The introduction of the "chronic kidney disease" hospital capitation at the end of 2019 has not been sufficient to maintain all the implemented interventions, particularly those dedicated to preparing patients for kidney transplantation, whose positive impacts have been demonstrated. The sustainability of these interventions now depends on the ability of the teams to find additional sources of funding.

hronic kidney disease (CKD) affects between 7% and 9% of the French population between the ages of 35 and 75 (Bongard et al., 2012). This disease is characterised by kidney dysfunction – as the organ no longer correctly

filters the blood in the body – which may require dialysis or kidney transplantation. In 2021, 92,535 patients were treated for end-stage chronic kidney disease, with approximately 55% bring on dialysis and 45% receiving a functional transplant (ABM, 2023). This disease involves major medical and economic challenges. Between 2013 and 2017, the expenses reimbursed by the French Health Insurance System (*Assurance maladie*)

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increased by an average of 2.4% per year, attaining 4.18 billion euros in 2017 (Cour des Comptes, 2020).The disease also raises major public health issues, as, for example, 29% of patients begin dialysis in an emergency, even though a better prior treatment would be to help avoid such situations (Raffray et al., 2021); further issues are raised related to healthcare access, especially given regional disparities. For example, the proportion of offcenter dialyses has been found to vary between 37% and 56% depending on the region (ABM, 2023).

Article 43 of the 2014 Social Security Financing Act (*Loi de Financement de la Sécurité Sociale*) led to the introduction of experiments in six regions¹ selected by the French Ministry of Health, namely, Rhône-Alpes, Alsace, Aquitaine, Languedoc-Roussillon, Pays de la Loire, and the Réunion, with the aim of improving the care pathways and autonomy of patients suffering from renal failure.

The aim of these experiments was to improve the organisation of the care pathway of CKD, not only before the replacement therapy phase, which is a major preventive and referral stage in the patient's care pathway, but also during replacement therapy via transplantation or dialysis. In addition to preventive measures, the strategic



This work is part of a project that aims to assess experiments related to chronic kidney disease care pathways and the implementation of the prevention capitation (EFIRC) in collaboration with Sahar Bayat and Maxime Raffray from the École des hautes études en santé publique (EHESP) and is funded by the General Directorate of Health Care Supply (Direction générale de l'offre des soins, DGOS). This study also benefits from the collaboration of Cécile Couchoud and Mathilde Lassalle from the Agence de la biomédecine (ABM), who provided access to and prepared the data from the Renal and Epidemiology Information Network (REIN register). The IRDES, in collaboration with the ABM, had already published an Atlas de l'insuffisance chronique terminale en France (Le Neindre et al., 2018), which describes the situation prior to the launch of the experiments.

2 UALITATIVE METHOD

The aim of the qualitative survey was to provide information about the content of the projects and highlight their similarities and specificities in terms of interventions undertaken in the regions to determine whether there were shared organisational approaches. A secondary objective was to identify the factors that either facilitate or impede the generalisation of the results of the implemented schemes. The strategy adopted initially consisted of a documentary review per project, which was based on screening campaigns, monitoring reports from the Regional Health Agencies (RHAs), and any other pertinent documents that provided information about the interventions undertaken. Then, semidirective interviews via video conferences were conducted with the RHA advisers

referrals of the experiments focused on the development of renal transplantation and off-center dialysis. The promotion of off-center dialysis involves facilitating the greater use of peritoneal dialysis, autonomous haemodialysis (self-dialysis), and haemodialysis in a medicalised unit, in contrast with in center haemodialysis². These approaches are justified by their efficiency with respect to the healthcare system, which results in both a better quality of life and lower costs. Renal transplantation results in a longer life expectancy and avoids the constraints of dialysis, such as frequent visits to facilities and fatigue. The costs of post transplantation follow-up are also reduced, with an average annual expense per patient of 13,942 euros, which is 4.5 times less expensive than that of a patient on dialysis (62,140 euros) according to 2017 data (Cour des Comptes, 2020).

Using a combined qualitative and quantitative approach, the aim of this study is to identify the organisational changes implemented as a result of the Article 43 experiments and assess their impact (see the "Context" inset). Owing to the absence of uniform schemes in different regions and the diversity of interventions undertaken by the latter, a qualitawho were responsible for monitoring the experiments, as well as project leaders or their regional representatives, from five hospitals, seven university hospitals, three facilities that specialise in nephrology and dialysis, a patient association, two networks specialising in the treatment of chronic kidney disease, a Regional Union of Healthcare Professionals (URPS), and an association specialising in this disease. The interviews involved key actors, including a patient expert, six hospital executives, and various healthcare professionals, such as seven nurses specialising in coordination, a dietician, eleven nephrologists, and a public healthcare doctor. In total, 23 semidirective interviews were conducted, including five with RHA representatives and 18 with project leaders.

tive approach was initially adopted to document the principal characteristics (content, context, and implementation) of the pilot projects. This approach enabled the shared or specific characteristics of the projects to be synthesised on a national scale, thereby regrouping similar interventions according to shared organisational arrangements for quantitative evaluation. The aim was also to determine the extent to which these organisational approaches can be reproduced, even generalised, by identifying the levers and obstacles associated with their implementation (see the "Qualitative Method" inset). The quantitative approach subsequently made it possible to assess the impact of the Article 43 experiments on results indicators on the basis of goals established for each of the pilot projects, i.e., prevention, preparation for replacement therapy via dialysis or transplantation, registration on the transplantation waiting list, and referral to off-center dialysis. The quantitative impact was identified via a comparison of changes



These regions used to be comprised of 22 regions in mainland France before the Law 2015-29 of 16 January 2015 relating to the boundaries of regions.

In accordance with Decree no. 2015-881 of 17 July relating to the experiments aimed at improving the treatment of persons suffering from chronic renal failure.

in trends in the outcome indicators between the experimental (treated) regions and the control (untreated) regions before and after 2017. The data were taken from the Renal and Epidemiology Information Network (*Réseau Épidémiologique et d'Information en Néphrologie*, called the REIN register), covering the period between 2010 and 2019, i.e., until the implementation of the "chronic kidney disease" capitation in healthcare facilities throughout France at the end of 2019 (see the "Data and Quantitative Methodology" inset).

Funding for pilot projects according to the different stages of the disease

The pilot projects, which are largely based on the recommendations of the French National Authority for Health (Haute Autorité de Santé, HAS), focused on two distinct segments (Augé et al., 2024). The first segment, which was called "prereplacement therapy", targeted patients whose disease ranged from stage 3B³ (early) renal failure to the replacement therapy phase. This segment was divided into two subsegments. The first of these, which was described as "prevention" or 1A, aimed to preserve, delay, or even avoid the transition to replacement therapy for patients in stage 3B. The second subsegment, 1B, prepared patients in stages 4 or 5 of the disease for replacement therapy if they were not yet undergoing such treatment. The second segment, "replacement therapy", concerned prevalent patients⁴ in the replacement therapy

${\mathcal D}$ ata and quantitative method

The data used were taken from the Renal and Epidemiology Information Network (REIN register) to establish indicators at the departmental level that occurred between 2010 and 2019. To assess the impact of the experiments. difference-in-differences approach, а which exploits the quasi-experimental framework of these experiments, was adopted. Synthetic difference-in-differences methods were also used to consider the effect of selecting projects on a more local level. Bias was particularly present in the indicators of prevention, preparation for replacement therapy, and referral to off-center dialysis, for which interventions were implemented locally, at the departmental level, after the selection of the projects. However, access to the transplantation waiting list was developed at the regional level, that is, at the level of the launching of the experiments by the transplantation centers, in coordination with other centers in each region that were participating in the experiments. The general approach was intended to treat, as the impact was not measured directly on the beneficiaries, who we were unable to identify in the data, but rather on the population of the treated group at the regional level. The groups of regions treated according to the stages of the disease and the goals were established at the departmental level among the experimental regions using a qualitative approach (see map

phase who were treated with dialysis or transplantation. This involved assessing the possibility of resorting to transplantation or dialysis at home for patients on dialysis. Patients who had undergone functional transplantation were monitored in accordance with follow-up, corresponding with good practices.

According to the framework of these experiments, the Regional Health Agencies (RHAs) launched a call for applications to healthcare professionals, care facilities, medical-social facilities, etc., in the regions concerned. Various projects were proposed for the different stages of the disease and selected to benefit from funding to ensure their success. In total, 19 pilot projects were funded by the RHAs for the experiments – for a total amount of approximately below). The control group corresponded to the départements of the other French regions, excluding the overseas départements and regions and the Île de France region on mainland France due to their particularities. The impact was measured by comparing the trends of the outcome variables between the treated and control regions before and after the implementation of the experiments as of 2017 and until 2019. The outcome indicators, which were defined nationally before the start of the experiments, were linked with the projects' goals. Prevention was measured by the incidence rate of stage 5 chronic kidney disease in the total population; preparation for replacement therapy (dialysis or renal transplantation) was measured by the proportion of emergency dialyses; registration on the transplantation waiting list was compared with the cumulative incidence rate of registration on the transplantation waiting list after twelve months and the proportion of patients on dialysis registered on the waiting list (divided between those younger than 60 years and those aged 60 to 75 for the last two indicators); and referral to off-center dialysis was compared with the proportion of off-center dialyses. The off-center indicators included peritoneal dialysis, self-care haemodialysis (self-dialysis, home haemodialysis, on a training programme), and haemodialysis in a medicalised dialysis unit.

5 million euros between 2017 and 2021 –, ranging from 10,000 euros of funding for the lowest sum to more than 800,000 euros for the highest amount over the entire period. Another project funded by an experimental RHA with the same objectives over the same period was added to the analysis, even though it was not officially included in the experiments.

The projects were implemented by five hospitals, seven university hospitals, three specialised nephrology and dialysis facilities, two networks, an association dedicated to chronic kidney disease, a patient association, and a Regional Union of Healthcare Professionals (Union Régionale des Professionels de Santé, URPS). The interventions relating to prevention, preparation for replace-

³ The stages of chronic kidney disease are determined on the basis of the estimated glomerular filtration rate (GFR) and the presence of renal failure markers. Stage 3 represents moderate chronic kidney disease (CKD). It is divided into two stages: (i) stage 3A with a GFR that reads between 45 and 59 ml/min/1.73 m², and (ii) stage 3B with a GFR that reads between 30 and 44 ml/min/1.73 m². Stage 4 represents a severe CKD in which the GFR reads between 15 and 29 ml/min/1.73 m². Stage 5 represents endstage CKD in which the GFR is lower than 15 ml/min/1.73 m² (HAS, 2012).

⁴ Incident patients were considered new patients with chronic kidney disease treated over the year, while prevalent patients comprised all the patients with chronic kidney disease treated during the year in question.

ment therapy via dialysis, and referral to off-center dialysis were developed locally (on the departmental scale) following the selection of the projects, whereas the interventions concerning registration on the transplantation waiting list were implemented on a regional level – at which the experiments were launched – by the transplantation centers in coordination with the other centers in each experimental region (see map).

The image below shows the principal interventions and main actors of the projects in the framework of the CKD care pathway. This study will present for each stage of the disease (i) the projects implemented by highlighting their aims and the principal and shared characteristics of these new organisational methods and (ii) their global impact on the outcome indicators in association with the goals defined for each stage of the disease.

Various screening and prevention interventions

The treatment of stage 3B of the disease aims to preserve renal function and delay – even avoid – resorting to

replacement therapy treatment. To achieve this goal, various interventions were undertaken by the experimenters, ranging from screening and information provided to the general public to the involvement of healthcare professionals, particularly general practitioners (GPs). Screening campaigns, along with information days, were held in public spaces such as shopping centres, and information tools for raising awareness among healthcare professionals and patients, such as leaflets on nephroprotection, e-learning, flyers, and other visual media, were created and diffused. A project extended screening to pharmacists by using creatinine measurement tools. They gathered data - blood pressure, urine test strips, and a creatinine assay with a glomerular filtration rate (GFR) test (which assesses kidney function) - in an information system and transmitted the data via secure messaging to a coordination nurse. Depending on the stage of chronic kidney disease, the nurse referred the patients to the appropriate healthcare professional, i.e., a GP or a nephrologist. Links were also established with medical testing laboratories, particularly to be able to discuss direct referral to a specialist by including a specific uniform message to the doctor and patient in the creatinine test report and the GFR test report of the diagnosed patients. One project used a score of the risk of evolution of chronic kidney disease, namely, the kidney failure risk equation (KFRE), to predict the risk of chronic kidney disease requiring dialysis or a transplant for patients. At the same time, an interoperability platform was also set up as part of this project to centralise the patients' biological results, thereby facilitating their reading (in the form of a curve) and monitoring. In addition to screening and information interventions, treatments focused on therapeutic education and multidisciplinary concertation meetings. In another project, collaboration between GPs and nephrologists was initiated, particularly via telephone meetings, to facilitate the sharing of expertise. For most of the projects, the treatments at this stage were supported by the recruitment of nurses whose job was to ensure patient monitoring and coordinate care with the nephrologists and nutritionists, in addition to the aforementioned healthcare professionals. However, despite the diversity of the interventions undertaken, no preferred organisational model emerged.



Scope: Metropolitan France. Note: The indicator relating to referral to off-center dialysis was measured in the regions with projects focusing on the preparation for dialysis, give the low number of projects that have specifically developed this approach. Realisation : IRDES.

The experiments had no significant effect on the incidence of end-stage renal disease (ESRD).

In terms of prevention, the experiments reduced the incidence rate of ESRD by 4.5 per million inhabitants; however, this reduction was not statistically significant (see Table, p. 6 - Model 2). This is largely explained by the slow progression of the kidney disease and the late identification of these patients into the Renal and Epidemiology Information Network (REIN) register when they start replacement therapy via dialysis or transplantation. It takes time and data collected over the long term to be able to truly assess the global impact of these interventions



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on the evolution of kidney disease. Importantly, the diversity of interventions did not result in a single and sustainable organisational model. It is often difficult to raise awareness among GPs and patients about the early stage of the disease. Patients often underestimate the gravity and silent nature of the disease, and despite its high rate of prevalence, GPs see the disease as relatively rare. Furthermore, the collaboration between GPs and hospital specialists remains relatively unstructured, as attested by the lack of communication and difficulty of collaboration between GPs and nephrologists, even though this aspect is crucial for optimal treatment (Diamantidis et al., 2011). However, it is essential to emphasise the promising aspects noted by the actors with respect to the coordinated interventions developed with the medical testing laboratories; a specific evaluation of their benefits for the treatment of patients is needed.

Coordination by a multidisciplinary team of preparations for replacement therapy via dialysis or transplantation

Following the diagnosis of chronic kidney disease at stages 4 and 5, patients are at a crucial point, i.e., choosing between transplantation, dialysis, or conservative treatment. The latter relieves symptoms, preserves renal function, and accompanies patients in the final stage. Thus, a multidisciplinary team placed under the responsibility of the nephrologist was responsible for treating patients. This team was coordinated by state-registered nurses, or more specifically, care pathways or coordination nurses, in accordance with the recommendations of the French National Authority for Health (HAS). Nurses played a key role in this process and monitored patients' treatment, even before replacement therapy started. They told them about the various kinds of treatment available and organised therapeutic patient education

The care pathways of patients with chronic kidney disease, actors, and principal interventions implemented in the experiments, and outcome indicators retained



(TPE) programmes. After carrying out an educational diagnosis, these programmes, which were also developed during the preventive phase, addressed several essential themes, such as renal function, drug therapies, types of replacement therapy (their prerequisites, advantages, and eventual side effects), and many other subjects. These educational therapy sessions were conducted alongside nephrology consultations. The close

Difference-in-difference estimation (DID) and synthetic difference-in-differences (SDID) estimation of the impact of the experimented organisational methods on outcome indicators

Dependent Variables	Rate of incidence of ESRD (pmh)	Proportion of emergency dialyses (pp)	Proportion of off-center dialyses (pp)	Cumulative incidence rate of access to the transplantation waiting list (pp)			Proportion of prevalent patients on dialysis registered on the waiting list (pp)		
	Incident patients*	Incident patients	Incident patients	Incident patients			Incident patients		
				< 60 years	60–75 years	All ages	< 60 years	60–75 years	All ages
Model 1- DiD									
Average treatment effect	-1.803	-6.069***	-1.059	9.547***	4.415***	4.898***	2.872***	5.039***	4.131***
Standard deviation	(3.312)	(1.334)	(1.248)	(1.959)	(1.144)	(1.051)	(0.809)	(0.638)	(0.565)
Model 2 - SDID									
Average treatment effect	-4.519	-3.707*	0.170	7.431**	2.889	3.489*	1.738	2.802***	2.220***
Standard deviation	(4.781)	(2.186)	(1.579)	(3.388)	(2.140)	(1.923)	(1.351)	(0.945)	(0.795)

* Incident patients are considered new patients with chronic kidney disease treated over the year, while prevalent patients comprise all the patients with chronic kidney disease treated during the year in question.

Caption: * p<0.1, ** p<0.05, *** p<0.01; pmh: per million inhabitants; pp: percentage point.

Note: Model 1 presents the average treatment effect on the entire post-treatment period using the difference-in-differences method. Model 2 presents the results of the average treatment effect over the entire post-treatment period using the synthetic difference-in- differences method, with * p <.1, ** p <.05, *** p <.01. Model 2 accounts for the selection bias at the start of the experiments, which is particularly present in the indicators of prevention, preparation for replacement therapy, and referral to off-center dialysis, and which is linked to the interventions relating to these goals taken on the local level (departmental). The posttreatment period began in 2017 and ended in 2019.

Scope: REIN population. Source: The Renal and Epidemiology Information Network (REIN register) 2010–2019.

interaction with the nurses enabled the patients to gain a better understanding of their care pathways while facilitating coordination with other professionals, such as dieticians, psychologists, and social assistants, even though the latter was found to feature less often in the interviews.

The replacement therapy phase concerns patients on dialysis or those who have received transplants⁵. Patients under dialysis may be referred to offcenter dialysis or registered on the transplantation waiting list. While interventions for preparation for replacement therapy were developed locally, projects concerning registration on the national transplantation waiting list were implemented at the regional level. The funding was used to recruit dedicated staff, such as coordination nurses or secretaries, as well as to implement communication tools and establish information exchange platforms during the experiments. These interventions were intended to benefit patients who were already on dialysis, as well as patients who had not yet begun

dialysis, thereby facilitating early registration on the national transplantation waiting list. The transplantation facilities played an essential role in these projects, closely collaborating with the hospitals and facilities specialising in nephrology and dialysis in the regions concerned. To optimise the assessments of the applicants for transplantation, certain projects arranged multidisciplinary meetings between nephrologists from the transplantation facilities and consultant nephrologists treating fragile or complex patients. These meetings decided on the suitability of the pretransplantation screening or, on the contrary, on the eventual side effects of transplantation.

A decrease in emergency dialyses and increased access to the transplantation waiting list

In the context of increased access to the transplantation waiting list over the 2010–2019 period (see graph above), the results highlight the fact that the effect of the pilot projects has been to increase access to the transplantation waiting list for incident patients by 4.9 percentage points (pp) and 4.1 percentage points for prevalent patients (see Table - Model 1). An analysis of the different age groups revealed that access was greater for new patients under 60 years of age during the first year than for patients aged between 60 and 75 years (an average increase of 9.5 percentage points for those younger than 60 years compared with 4.4 percentage points for patients aged between 60 and 75 years).

The experiments have helped reduce the need for emergency dialysis. Model 2 in Table accounts for the potential bias at the start of the experiments (see the "Data and Method" inset). This bias is particularly present, as indicated previously, in the indicators of prevention, preparation for replacement therapy, and referral to off-center dialysis, as the related interventions have developed on a local level. By reducing this bias, the results on the proportion of emergency dialyses indicated a reduction of 3.7 pp in the experimental regions compared with the control regions (see Table - Model 2), even if it is relatively statistically significant, in the context of a decrease for the two groups (see Graph,).



⁵ One project leader implemented a project for patients who had received transplants. Hence, this study does not focus on the indicators relating to the care pathways of the transplanted patients.

Results linked to two major coordination levers: The recruitment of nurses and the implementation of communication tools

The experiments mobilised two principal levers to improve the treatment of chronic kidney disease, beginning with the preparation phase for replacement therapy. The first lever focused on communication tools such as shared medical files and information interchange platforms. Among the projects of the eighteen leaders questioned, 44% developed communication tools or information interchange platforms. These tools aimed to facilitate information sharing between healthcare professionals, thereby reducing obstacles to access to transplantation for complex cases.

"They said to themselves: 'They're elderly, so we shouldn't go ahead with the transplants'. I think they had preconceived ideas when they said 'As it is, we don't have enough transplants for those under 50...', because it's two different things — the patients who are over 65 don't have the same transplants as those who are under 50."

Nephrologist

At the same time, information tools were deployed both for healthcare professionals and patients. These tools included information leaflets, therapeutic education sessions, etc., whose aim was to better inform patients and refer them to appropriate care pathways.

The second lever was linked to the recruitment of specialised nurses, secretaires, and clinical research associates to facilitate the coordination of patients' care pathways and, in particular, registration on the national transplantation waiting list. Approximately 72% of the projects used funding to recruit these professionals. This recruitment reflects the literature on the subject, which has demonstrated the beneficial role of nurses in coordinating therapies for patients suffering from CKD (Michel and Or, 2021). Nurses played a crucial role as "navigators" of treatment by monitoring patients, particularly after the diagnosis of chronic kidney disease. They accompanied patients in their choice of the most appropriate type of replacement therapy and consequently freed

up time for the nephrologist, whose early monitoring is associated with a lower risk of death (Bradbury et al., 2007) and a shorter hospital stay at the point when replacement therapy treatment begins (Chan et al., 2007). The interviews highlighted the fact that these tasks may be new in certain facilities; there was complementarity with previous tasks, which led to improvements in the quality of treatment and increased access to treatments.

"These patients used to be treated by the GP and the nephrologist, but these were one-off visits over the year; there was a void between these consultations, but now these patients have a therapeutic project."

Nephrologist

These technological and organisational developments have become a challenge for healthcare professionals and patients. Healthcare professionals have faced substantial changes in their practices. They have had to adapt to new tools and more collaborative approaches to treatment. For example, shared medical decisions have been encouraged, which



The graphs represent the changes in outcome indicators between the treatment and control groups from 2010 to 2019, i.e., before and after the implementation of the experiments in 2017. Graphs of the indicators related to registration on the transplantation waiting list for prevalent patients* younger than 60 and aged 60 to 75 and off-center dialysis are presented in the complete report of this study (Augé et al., 2024). * Incident patients are considered new patients with chronic kidney disease treated over the year, while prevalent patients include all the patients with chronic kid-

ney disease treated during the year in question. **Reading:** The third graph (on the right) highlights a growing trend of registration on the transplantation waiting list for the treated and control groups. While both groups followed a similar trend before the implementation of the experiments, as of 2017, the treatment group had a greater increase in the proportion of prevalent patients on dialysis registered on the transplantation waiting list.

Source: Renal and Epidemiology Information Network (REIN register) 2010–2019.

has sometimes led to misgivings, as certain professionals have perceived these changes as being challenging to their expertise.

"All the same, there have been obstacles, for example, when I remarked, 'Yes, it's bound to improve our culture and knowledge, etc.', and the nephrologists reacted defensively by saying, 'Do you truly think we know nothing and that we don't know how to deal with it, that we know nothing about transplantation!'" Nephrologist

The patients experienced difficulties linked to new consultation methods, particularly due to their age, difficulties associated with multiple medical consultations, and the use of new communication technologies.

No significant effect on off-center dialysis referrals due to the difficulty of their implementation

Despite the new organisational arrangements implemented regarding the preparation for replacement therapy, off-center remains limited, and few interventions have been proposed regarding this goal. Several factors have contributed to this situation. The qualitative interviews highlighted the fact that in-facility treatment remains reassuring for patients, above all for those with comorbidities. They also highlight the misgivings of both the patients and their relatives regarding off-center dialysis. This reluctance is sometimes a source of frustration for healthcare professionals, who have observed that the arguments in favour of offcenter dialysis are not always well received by patients. The diversity of the actors involved in these projects also partly explains the poor diffusion of interventions that focus on off-center dialysis. The patients generally begin their dialysis in a reference center, whereas the procedures for off-center dialysis are generally managed by the associations, which do not manage predialysis consultations or the initial hospitalisation of the patients. Furthermore, the transfer to a less intensive facility can often

take several months. Finally, age also seems to influence this trend, as the youngest patients are more likely to opt for off-center dialysis. All these explanations may partly explain the absence of significant effects of the experiments on the proportion of off-center dialyses (see Table).

* * *

This study has enabled the identification of certain organisational changes implemented as part of the Article 43 experiments and has measured the global impact on the care pathways of patients with chronic kidney disease. While the bill initially envisaged financial exemptions to test out a preventive capitation and a modification of dialysis funding, it shifted towards the funding of innovative pilot projects, which modified and rendered more complicated the implementation of a standard national evaluation and limited the possibility of generalising the results. A mixed qualitative and quantitative methodological approach was adopted to consider the specificities of the experimental framework and identify the new organisational methods implemented, as well as their shared characteristics.

With respect to prevention, highly diverse interventions were introduced, although no preferred organisational model emerged. With respect to preparation for replacement therapy and access to transplantation, the projects set forth new forms of organisation that focused on coordination or care pathway nurses who were recruited using the project funding and communication tools, resulting in a decrease in emergency dialyses and an increase in registrations on the transplantation waiting list. However, the implementation of the "chronic kidney disease" capitation in 2019 raised questions about the continuity and cover provided by certain interventions. Some of the projects related to the preparation for replacement therapy currently benefit from the prevention capitation,

which the experiments introduced. In certain teams, the capitation does not cover all of the interventions undertaken during the experiments, particularly at the early stage. The coordination of care pathways and transplantation is anchored in the form of an organisation and seems to be financed by the healthcare establishments themselves; however, this is not guaranteed over the long term. The capitation does not cover the coordination for registration on the transplantation waiting list, whose improvement is a major outcome of the experiments. Last, these experiments did not improve the development of off-center dialysis owing to the lack of projects with this goal and the absence of incentive funding for off-center dialysis initially envisaged.

Nevertheless, the pilot projects for these experiments have offered fresh perspectives and developments such as the recent extension of the prevention capitation to account for the arrival of advanced practice nurses and its extension to other professionals (psychologists, social assistants). With respect to screening and prevention, the links forged with biomedical laboratories and GPs and the improvement of early treatment coordinated by freelance healthcare professionals, particularly at stage 3B of the disease, served as the objects of new interventions in the framework of the Article 51 experiments related to new means of organisation and funding.



FOR FURTHER INFORMATIONS

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