Institut de recherche et documentation en économie de la santé

Électroconvulsivothérapie (ECT)

Variabilité des pratiques et expérience des patients

Bibliographie thématique

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Synthèses & Bibliographies

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Sommaire

Problématique

La sismothérapie ou électroconvulsivothérapie (ECT) - le terme électrochoc doit être abandonné - a été introduite en France dans le traitement des maladies mentales dans les années 40. Les techniques employées initialement produisaient des convulsions motrices impressionnantes, à l'origine d'accidents traumatiques parfois graves. Actuellement, une séance d'ECT doit être réalisée sous anesthésie générale et avec une curarisation pour limiter les effets secondaires. L'utilisation d'une curarisation (par myorelaxants) a pour but de diminuer les convulsions motrices et leurs conséquences traumatiques. L'anesthésie brève (quelques minutes) évite l'angoisse du patient liée à la paralysie des muscles respiratoires engendrée par la curarisation. Le traitement consiste à provoquer une crise comitiale généralisée au moyen d'un courant électrique à administration transcrânienne. Plusieurs séances sont répétées et espacées dans le temps. De nombreux travaux de bonne qualité (études comparatives randomisées) permettent de préciser l'efficacité, les indications actuelles de l'ECT et les modalités de sa réalisation.[1] L'électroconvulsivothérapie (ECT), qui consiste donc à déclencher une crise d'épilepsie sous anesthésie générale, figure parmi les traitements recommandés pour le soin des troubles psychiques sévères ne répondant pas aux prises en charge usuelles, notamment pharmacologiques. Son utilisation est cependant sujette à controverse et associée à des représentations négatives persistantes. La méconnaissance de ses mécanismes d'actions et le manque de travaux documentant l'utilisation de ce traitement à grande échelle y contribuent[2].

Cette bibliographie a pour objectif de rassembler de la littérature scientifique sur la pratique de l'ECT en France comme à l'étranger. Les aspects principalement documentés sont : la variabilité des pratiques, l'expérience des patients et les effets secondaires du traitement. Des éléments sur l'historique de l'ECT, la prise en charge globale, les recommandations et les aspects médicaux figurent en début de bibliographie. Les recherches bibliographies ont été menées sur la période allant de 2000 à janvier 2020 – avec quelques références antérieures pour la partie historique - sur les bases et portails suivants : Base documentaire de l'Irdes, Banque

[1] Sfar (1997). Indications et modalités de l'électroconvulsivothérapie.
[2] Lecarpentier, P., Gandre, C., Coldefy, M., et al. (2022). Recours à l'électroconvulsivothérapie pour les personnes hospitalisées en psychiatrie en France : premier état des lieux national. Les rapports de l'Irdes ; 585.

de données en santé publique (BDSP), Cairn, Medline, Sciencedirect, EMC Consulte et GoogleScholar. Le site de l'Observatoire National d'électroconvulsivothérapie a aussi été consulté.

Cette bibliographie ne prétend pas à l'exhaustivité.

La prise en charge par l'ECT : historique, recommandations, aspects médicaux

LES RECOMMANDATIONS

Anaes (1998). Recommandations pour la pratique clinique : indications et modalités de l'élctroconvulsiothérapie. Paris : Anaes.

ANSM (2006). Bon usage des médicaments dans le traitement des troubles dépressifs et des troubles anxieus de l'adulte : recommandations. Saint-Denis : ANSM.

DGS (2000). Note d'information DGS n° 2000-522 du 16 octobre 2000 relative aux réponses à apporter à la mise en cause du recours à l'électroconvulsivothérapie. Paris : DGS.

HAS (2017). Recommandation de bonne pratique : épisode dépressif caractérisé de l'adulte : prise en charge en soins de premier recours. Prise en charge thérapeutique et suivi. Saint-Denis : HAS.
https://www.has-sante.fr/jcms/c_1739917/fr/episode-depressif-caracterise-de-l-adulte-prise-en-charge-en-premier-recours

Nice (2009). Overwiew : guidance on the use of electroconvulsive therapy. Londres : Nice.
https://www.nice.org.uk/guidance/ta59

- Voir aussi sur le site de la SFAR : https://sfar.org/indications-et-modalites-de-lelectroconvulsivotherapie/

LES REVUES DE LITTERATURE

Aftab, A., VanDercar, A., Alkhachroum, A., et al. (2018). "Nonconvulsive Status Epilepticus After Electroconvulsive Therapy: A Review of Literature." Psychosomatics **59**(1): 36-46.

BACKGROUND: The clinical presentation and risk factors of nonconvulsive status epilepticus (NCSE) in the context of electroconvulsive therapy (ECT) are poorly understood, and guidance regarding diagnosis and management remains scarce. In this article, we identify case reports of ECT-induced NCSE from literature, and discuss the presentation, diagnosis, and management of these cases in the context of what is known about NCSE from the neurology literature. METHODS: A literature search on PubMed for case reports of NCSE after ECT. RESULTS: We identified 13 cases for this review. Diagnosis in all cases was based on clinical features and electroencephalogram (EEG) findings. Clinical presentation was altered mental status or unresponsiveness, with subtle motor phenomena in some cases. All cases had nonspecific risk factors that have been associated with prolonged seizures and convulsions, such as recent discontinuation/reduction of benzodiazepines or anticonvulsants, and concurrent use of antipsychotics and antidepressants. All patients were treated with either benzodiazepines or antiepileptic agents. Outcomes in these post-ECT NCSE cases were generally favorable. DISCUSSION: Although rare, post-ECT NCSE should be kept in mind by physicians when confusion or unresponsiveness develops and continues after ECT; multilead EEG is gold standard for diagnosis. An intravenous (IV) antiepileptic drug (AED) challenge can help clarify the diagnosis. Initial treatment is recommended with IV benzodiazepines, with a repeat dose if necessary. If seizures persist, IV AEDs are warranted. NCSE refractory to this treatment should be treated with a scheduled IV or oral AED. Serial multilead EEGs should be used to monitor resolution of symptoms. CONCLUSION:

NCSE after ECT is a rare but recognizable clinical event. A high clinical suspicion and low threshold for EEG is necessary for prompt diagnosis.

Anderson, E. L. et Reti, I. M. (2009). "ECT in pregnancy: a review of the literature from 1941 to 2007." Psychosom Med **71**(2): 235-242.

OBJECTIVE: To review the literature on the use of electroconvulsive therapy (ECT) during pregnancy and to discuss its risks and benefits for treating severe mental illness during pregnancy. METHOD: PubMed and PsycINFO databases were searched for English or English-translated articles, case reports, letters, chapters, and Web sites providing original contributions and/or summarizing prior data on ECT administration during pregnancy. RESULTS: A total of 339 cases were found. The majority of patients were treated for depression and at least partial remission was reported in 78% of all cases where efficacy data were available. Among the 339 cases reviewed, there were 25 fetal or neonatal complications, but only 11 of these, which included two deaths, were likely related to ECT. There were 20 maternal complications reported and 18 were likely related to ECT. CONCLUSIONS: Although there are limited available data in the literature, it seems that ECT is an effective treatment for severe mental illness during pregnancy and that the risks to fetus and mother are low.

Bertolín Guillén, J. M., Sáez Abad, C., Hernández de Pablo, M. E., et al. (2004). "[Efficacy of electroconvulsive therapy: a systematic review of scientific evidences]." Actas Esp Psiquiatr **32**(3): 153-165.

We carried out a systematic study of bibliographical review of scientific evidence provided by clinical trials that assessed the short, medium and long-term efficacy of electroconvulsive therapy (ECT) from 1965 until June 2003. The studies with the following features have been excluded: a) those in which ECT is not the aim of the research; b) those that do not compare ECT with another different treatment; c) those in which the aim of the research is not to evaluate the efficacy of ECT, and d) those in which the studies are not randomized clinical trials. We have used the biomedical databases Medline, Psyclit, IME and Cochrane. On applying the corresponding search strategies on every bibliographical repertory, a total amount of 916 studies were found, which were reduced to 62 after having applied the specified exclusion criteria. The scientific evidence obtained, which compare the efficacy of ECT exclusively in depression, schizophrenia, mania and Parkinson disease, are systematized.

Borisovskaya, A., Bryson, W. C., Buchholz, J., et al. (2016). "Electroconvulsive therapy for depression in Parkinson's disease: systematic review of evidence and recommendations." Neurodegener Dis Manag **6**(2): 161-176.

AIM: We performed a systematic review of evidence regarding treatment of depression in Parkinson's disease (PD) utilizing electroconvulsive therapy. METHODS: The search led to the inclusion of 43 articles, mainly case reports or case series, with the largest number of patients totaling 19. RESULTS: The analysis included 116 patients with depression and PD; depression improved in 93.1%. Where motor symptoms' severity was reported, 83% of patients improved. Cognition did not worsen in the majority (94%). Many patients experienced delirium or transient confusion, sometimes necessitating discontinuation of electroconvulsive therapy (ECT). Little is known about maintenance ECT in this population. CONCLUSION: ECT can benefit patients suffering from PD and depression. We recommend an algorithm for treatment of depression in PD, utilizing ECT sooner rather than later.

Challiner, V. et Griffiths, L. (2000). "Electroconvulsive therapy: a review of the literature." J Psychiatr Ment Health Nurs **7**(3): 191-198.

Electroconvulsive therapy (ECT) is a procedure that has been used in the treatment of mental illness for over 60 years. Despite its continued use it remains a controversial treatment, with questions concerning its efficacy being raised not only by mental health professionals, but also service users themselves. The following article reviews the current literature on the administration and effectiveness of ECT, highlighting some of the main points of contention in the debate over its use. In providing a balanced review of the literature, this article aims to serve as an information source for

nurses and other mental health professionals who may be involved in the administration of ECT and care of the patients receiving treatment.

Charlson, F., Siskind, D., Doi, S. A., et al. (2012). "ECT efficacy and treatment course: a systematic review and meta-analysis of twice vs thrice weekly schedules." J Affect Disord **138**(1-2): 1-8.

BACKGROUND: Electroconvulsive therapy (ECT) guidelines, across various regulatory bodies, lack consensus as to the optimal frequency of treatment for individual patients. Some authors postulate that twice weekly ECT may have a similar efficacy to thrice weekly, and may have a lower risk of adverse cognitive outcomes. We did a systematic review and a meta-analysis to assess the strength of associations between ECT frequency and depression scores, duration of treatment, number of ECTs, and remission rates. METHODS: We searched on Medline, EMBASE, CINAHL and the Cochrane Central Register of Controlled Trials (to December 2009), and searched reports to identify comparative studies of frequency of ECT. We did both random-effects (RE) and quality effect (QE) meta-analyses to determine the risk of various outcomes associated with lesser frequency as compared to the thrice weekly frequency. RESULTS: We analysed 8 datasets (7 articles), including 214 subjects. Twice-weekly frequency of ECT was associated with a similar change in depression score (QE model SMD -0.11 [-0.55-0.33] and RE model SMD -0.17 [-0.77-0.43]) as compared to thrice weekly ECT. The number of real ECT's trended towards fewer in the twice weekly group. There was a statistically significant longer duration of treatment with a twice weekly protocol (QE model 6.48 days [4.99-7.97] and RE model 4.78 days [0.74-8.82]). There was a statistically significant greater efficacy for thrice weekly ECT compared to once weekly ECT (QE model SMD 1.25 [-0.62-1.9] and RE model SMD 1.31 [0.6-2.02]). CONCLUSIONS: Twice weekly ECT is associated with similar efficacy to thrice weekly ECT, may require fewer treatments and may be associated with longer treatment duration when compared to thrice weekly. These epidemiological observations support the routine use of twice weekly ECT in acute courses, though choice of frequency should take into account individual patient factors. These observations have implications for resource utilisation e.g. costs of duration of admission vs cost of provision of ECT, as well as issues of access to inpatient beds and anaesthetist time.

Coshal, S., Jones, K., Coverdale, J., et al. (2019). "An Overview of Reviews on the Safety of Electroconvulsive Therapy Administered During Pregnancy." J Psychiatr Pract **25**(1): 2-6.

OBJECTIVE: To inform obstetricians and psychiatrists about the safety of electroconvulsive therapy (ECT) administration during pregnancy and to reconcile conflicting recommendations concerning this treatment. METHODS: A systematically conducted overview was undertaken on the safety of ECT during pregnancy. The Cochrane Library, MEDLINE/PubMed, PsycINFO, and Ovid were independently searched by 2 of the authors from January 2015 to March 2017 using the following search terms: electroconvulsive therapy, ECT, and electroshock combined with pregnancy and reviews. Articles were reviewed and critically appraised using components of the PRISMA and AMSTAR systematic review assessment tools. RESULTS: Of the 9 articles that were identified, 5 publications of varying methodological quality met inclusion criteria and involved a range of 32 to 339 patients. The most common problems that occurred in association with ECT were fetal arrhythmia, fetal bradycardia, premature birth, developmental delay, abdominal pain, uterine contraction, vaginal bleeding, placental abruption, and threatened abortion. The number of fetal deaths in each of the reviews ranged from 2 to 12. The authors of 1 of the 5 reviews recommended that ECT only be used as a last resort, whereas the authors of the other reviews took the stance that the administration of ECT during pregnancy was relatively safe. Differences in recommendations among reviews were in part due to inclusion criteria and how adverse events were attributed to ECT. CONCLUSIONS: Our overview supports the conclusion, which has also been endorsed by the American College of Obstetricians and Gynecologists and the American Psychiatric Association, that administration of ECT during pregnancy is relatively safe. Conclusions about safety, however, will become better established with the availability of more data.

Cretaz, E., Brunoni, A. R. et Lafer, B. (2015). "Magnetic Seizure Therapy for Unipolar and Bipolar Depression: A Systematic Review." Neural Plast **2015**: 521398.

Objective. Magnetic seizure therapy (MST) is a novel, experimental therapeutic intervention, which combines therapeutic aspects of electroconvulsive therapy (ECT) and transcranial magnetic stimulation, in order to achieve the efficacy of the former with the safety of the latter. MST might prove to be a valuable tool in the treatment of mood disorders, such as major depressive disorder (MDD) and bipolar disorder. Our aim is to review current literature on MST. Methods. OVID and MEDLINE databases were used to systematically search for clinical studies on MST. The terms "magnetic seizure therapy," "depression," and "bipolar" were employed. Results. Out of 74 studies, 8 met eligibility criteria. There was considerable variability in the methods employed and samples sizes were small, limiting the generalization of the results. All studies focused on depressive episodes, but few included patients with bipolar disorder. The studies found reported significant antidepressant effects, with remission rates ranging from 30% to 40%. No significant cognitive side effects related to MST were found, with a better cognitive profile when compared to ECT. CONCLUSION: MST was effective in reducing depressive symptoms in mood disorders, with generally less side effects than ECT. No study focused on comparing MST to ECT on bipolar depression specifically.

Daaboul, J. et Amad, A. (2019). "L'électroconvulsivothérapie en psychiatrie et neurologie." Pratique Neurologique - FMC **10**(3): 154-161.
http://www.sciencedirect.com/science/article/pii/S1878776219300676

Résumé L'électroconvulsivothérapie, créée il y a 80 ans par Lucio Bini et Ugo Cerletti, reste aujourd'hui la technique standard d'induction de crises épileptiques à visée thérapeutique. Malgré une stigmatisation entourant sa pratique, il s'agit d'une procédure comportant de très faibles risques et une excellente tolérance. Dans cette revue de la littérature, nous allons discuter de l'utilisation actuelle de l'ECT, les mécanismes d'action supposés et ses indications en neuropsychiatrie. Summary Created 80 years ago by Lucio Bini and Ugo Cerletti, electroconvulsive therapy remains, as of today, the standard technique for inducing epileptic seizure for therapeutic goals. Despite a stigma surrounding its practice, it is actually a very safe procedure with very low risks and an excellent tolerance profile. In this review of the literature, we will discuss the contemporary use of electroconvulsive therapy, its putative mechanisms of action, and its indications in neuropsychiatry.

Domènech, C., Bernardo, M. et Arrufat, F. (2004). "[Electroconvulsive therapy in children and adolescents: a review of the literature]." Med Clin (Barc) **122**(9): 349-354.

It is well-known that electroconvulsive therapy (ECT) is a safe and effective treatment for some mental disorders in adults. However, its use in children and adolescents is still the cause of some fears which may not be justified. The aim of this article is to clarify and to present the state of this question by reviewing the literature about ECT in children and adolescents, with emphasis on efficacy, indications, adverse effects and limitations. Results from studies in this population group show similar safety and efficacy data as those observed in adults. There exists a misinformation about the ECT technique among child psychologists and psychiatrists. Large follow-up studies are needed.

Elias, A., Phutane, V. H., Clarke, S., et al. (2018). "Electroconvulsive therapy in the continuation and maintenance treatment of depression: Systematic review and meta-analyses." Aust N Z J Psychiatry **52**(5): 415-424.

OBJECTIVE: Acute course of electroconvulsive therapy is effective in inducing remission from depression, but recurrence rate is unacceptably high following termination of electroconvulsive therapy despite continued pharmacotherapy. Continuation electroconvulsive therapy and maintenance electroconvulsive therapy have been studied for their efficacy in preventing relapse and recurrence of depression. The purpose of this meta-analysis was to examine the efficacy of continuation electroconvulsive therapy and maintenance electroconvulsive therapy in preventing relapse and recurrence of depression in comparison to antidepressant pharmacotherapy alone. METHODS: We searched MEDLINE, Embase, PsycINFO, clinicaltrials.gov and Cochrane register of controlled trials from the database inception to December 2016 without restriction on language or publication status for randomized trials of continuation electroconvulsive therapy and maintenance electroconvulsive therapy. Two independent Cochrane reviewers extracted the data in accordance

with Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines for systematic reviews and meta-analyses. The risk of bias was assessed using four domains of the Cochrane Collaboration Risk of Bias Tool. Outcomes were pooled using random effect model. The primary outcome was relapse or recurrence of depression. RESULTS: Five studies involving 436 patients were included in the meta-analysis. Analysis of the pooled data showed that continuation electroconvulsive therapy and maintenance electroconvulsive therapy, both with pharmacotherapy, were associated with significantly fewer relapses and recurrences than pharmacotherapy alone at 6 months and 1 year after a successful acute course of electroconvulsive therapy (risk ratio = 0.64, 95% confidence interval = [0.41, 0.98], p = 0.04, risk ratio = 0.46, 95% confidence interval = [0.21, 0.98], p = 0.05, respectively). There was insufficient data to perform a meta-analysis of stand-alone continuation electroconvulsive therapy or maintenance electroconvulsive therapy beyond 1 year. CONCLUSION: There are only a few randomized trials of continuation electroconvulsive therapy and maintenance electroconvulsive therapy. The preliminary and limited evidence suggests the modest efficacy of continuation electroconvulsive therapy and maintenance electroconvulsive therapy with concomitant pharmacotherapy in preventing relapse and recurrence of depressive episodes for 1 year after the remission of index episode with the acute course of electroconvulsive therapy.

Fontenelle, L. F., Coutinho, E. S., Lins-Martins, N. M., et al. (2015). "Electroconvulsive therapy for obsessive-compulsive disorder: a systematic review." J Clin Psychiatry **76**(7): 949-957.

OBJECTIVE: Surgical therapies for treatment-refractory obsessive-compulsive disorder (OCD), such as deep brain stimulation or psychosurgery, remain unattainable for many patients. Despite the long-held view that electroconvulsive therapy (ECT) is an ineffective treatment for OCD, there is no systematic review to support or refute this claim, which is the basis of the current review. DATA SOURCES: A systematic search of MEDLINE, Web of Science, Scopus, and LILACS databases was conducted on December 22, 2013, using the terms obsessive-compulsive disorder and electroconvulsive therapy. Reference lists, specific journals, and clinical trial registries were also scrutinized. No date or language limitation was imposed on the search. STUDY SELECTION: After irrelevant and redundant records from the 500 identified titles were excluded, the 50 articles reporting the acute treatment effects of ECT in OCD and related constructs (involving a total of 279 patients) were analyzed for this study. DATA EXTRACTION: The relevant sociodemographic, clinical, and outcome data of individual cases were extracted. Data from individual cases were used to compare the characteristics of responders versus nonresponders to ECT. RESULTS: Most selected records were case reports/series; there were no randomized controlled trials. A positive response was reported in 60.4% of the 265 cases in which individual responses to ECT were available. ECT responders exhibited a significantly later onset of OCD symptoms (P = .003), were more frequently nondepressed (P = .009), more commonly reported being treated with ECT for severe OCD (P = .01), and received a fewer number of ECT sessions (P = .03). ECT responders were also less frequently previously treated with adequate trials of serotonin reuptake inhibitors (P = .05) and cognitive-behavioral therapy (P = .005). CONCLUSIONS: Although 60% of the reported cases reviewed exhibited some form of a positive response to ECT, it cannot be stated that this provides evidence that ECT is indeed effective for OCD.

Fraser, L. M., O'Carroll, R. E. et Ebmeier, K. P. (2008). "The effect of electroconvulsive therapy on autobiographical memory: a systematic review." J ect **24**(1): 10-17.

OBJECTIVES: In the last 20 years, an increasing number of articles have been published about effects of electroconvulsive therapy (ECT) on memory. Here, we review autobiographical memory studies in particular because there have been conflicting reports about the extent and persistence of ECT effects and the period before treatment from which memories are most likely to be affected. METHODS: Five psychological and medical databases (MEDLINE, PubMed, PsychINFO, ScienceDirect, and Web of Knowledge) were searched from 1980 to 2007, yielding 15 studies of ECT and autobiographical memory. RESULTS: Evidence suggests that autobiographical memory impairment does occur as a result of ECT. Objective measures found memory loss to be relatively short term (<6 months posttreatment), whereas subjective accounts reported amnesia to be more persistent (>6 months post-ECT). Electroconvulsive therapy predominantly affects memory of prior personal events that are

near the treatment (within 6 months). Autobiographical memory loss is reduced by using brief pulse ECT rather than sine wave-unilateral positioning of electrodes rather than bilateral-and by titrating electrical current relative to the patient's own seizure threshold. CONCLUSIONS: Further research is required to determine memory loss associated with ECT, controlling for the direct effects of the depressive state.

Gbyl, K. et Videbech, P. (2018). "Electroconvulsive therapy increases brain volume in major depression: a systematic review and meta-analysis." Acta Psychiatr Scand **138**(3): 180-195.

OBJECTIVE: The main purpose of this review was to synthesise evidence on ECT's effects on brain's structure. METHOD: A systematic literature review of longitudinal studies of depressed patients treated with ECT using magnetic resonance imaging (MRI) and meta-analysis of ECT's effect on hippocampal volume. RESULTS: Thirty-two studies with 467 patients and 285 controls were included. The MRI studies did not find any evidence of ECT-related brain damage. All but one of the newer MRI volumetric studies found ECT-induced volume increases in certain brain areas, most consistently in hippocampus. Meta-analysis of effect of ECT on hippocampal volume yielded pooled effect size: g = 0.39 (95% CI = 0.18-0.61) for the right hippocampus and g = 0.31 (95% CI = 0.09-0.53) for the left. The DTI studies point to an ECT-induced increase in the integrity of white matter pathways in the frontal and temporal lobes. The results of correlations between volume increases and treatment efficacy were inconsistent. CONCLUSION: The MRI studies do not support the hypothesis that ECT causes brain damage; on the contrary, the treatment induces volume increases in fronto-limbic areas. Further studies should explore the relationship between these increases and treatment effect and cognitive side effects.

Greenhalgh, J., Knight, C., Hind, D., et al. (2005). "Clinical and cost-effectiveness of electroconvulsive therapy for depressive illness, schizophrenia, catatonia and mania: systematic reviews and economic modelling studies." Health Technol Assess **9**(9): 1-156, iii-iv.

OBJECTIVES: To establish the clinical effectiveness and cost-effectiveness of electroconvulsive therapy (ECT) for depressive illness, schizophrenia, catatonia and mania. DATA SOURCES: Electronic bibliographic databases. The reference lists of relevant articles and health services research-related resources were consulted via the Internet. REVIEW METHODS: Identified studies were examined to ascertain whether they met the inclusion criteria for the review. The study quality of relevant articles was assessed using standard checklists and data were abstracted using standardised forms into a database. Where relevant, results from studies were pooled for meta-analysis. Two economic models were developed primarily based on evidence from the clinical effectiveness analysis and limited quality of life studies. RESULTS: Two good-quality systematic reviews of randomised evidence of the efficacy and safety of ECT in people with depression, schizophrenia, catatonia and mania were identified. Four systematic reviews on non-randomised evidence were also identified, although only one of these could be described as good quality. There was no randomised evidence of the effectiveness of ECT in specific subgroups including older people, children and adolescents, people with catatonia and women with postpartum exacerbations of depression or schizophrenia. The economic modelling results for depression did not demonstrate that any of the scenarios had a clear economic benefit over the others, mainly because of the uncertainty surrounding the clinical effectiveness of the different treatments and the quality of life utility gains. Sensitivity analysis surrounding the cost of ECT and the quality of life utility values had little effect on the overall results. The results of the model for schizophrenia adapted to include ECT suggest that clozapine is a cost-effective treatment compared with ECT. For patients who fail to respond to clozapine, ECT treatment may be preferred to the comparative treatment of haloperidol/chlorpromazine. CONCLUSIONS: Real ECT is probably more effective than sham ECT, but as stimulus parameters have an important influence on efficacy, low-dose unilateral ECT is no more effective than sham ECT. ECT is probably more effective than pharmacotherapy in the short term and limited evidence suggests that ECT is more effective than repetitive transcranial magnetic stimulation. Tricyclic antidepressants (TCAs) may improve the antidepressant effect of ECT during the course of treatment. Continuation pharmacotherapy with TCAs combined with lithium in people who have responded to ECT reduces the rate of relapses. Overall, gains in the efficacy of the intervention depending on the stimulus

parameters of ECT are achieved only at the expense of an increased risk of cognitive side-effects. Limited evidence suggests these effects do not last beyond 6 months, but there is no evidence examining the longer term cognitive effects of ECT. There is little evidence of the long-term efficacy of ECT. ECT either combined with antipsychotic medication or as a monotherapy is not more effective than antipsychotic medication in people with schizophrenia. More research is needed to examine the long-term efficacy of ECT and the effectiveness of post-ECT pharmacotherapy, the short-term and longer term cognitive side-effects of ECT, and the impact of ECT on suicide and all-cause mortality. Further work is needed to examine the information needs of people deciding whether to accept ECT and how their decision-making can be facilitated. More research is also needed on the mechanism of action of ECT. Finally, the quality of reporting of trials in this area would be vastly improved by strict adherence to the Consolidated Standards of Reporting Trials recommendations. Economic analysis may identify areas in which research would be best targeted by identifying parameters where reducing the level of uncertainty would have the most effect in helping to make the decision on whether ECT is a cost-effective treatment.

Hategan, A. et Hirsch, C. H. (2018). "Cerebrovascular Steal Phenomenon and Electroconvulsive Therapy: A Case Report and Review of the Literature." J ect **34**(2): e20-e24.

Electroconvulsive therapy (ECT) is a safe and effective treatment for major depressive disorder, but cerebrovascular and cardiovascular complications, although rare, remain the most concerning. This is particularly notable in those with preexisting cerebrovascular disease, which impacts dynamic cerebral autoregulation. In these patients, the increased blood flow to the seizing portions of the brain induced by ECT potentially can reduce cerebral blood flow to ischemic areas, possibly causing adverse neurological events. The authors describe a patient with chronic cerebral ischemic disease, chronic anemia, and major depressive disorder undergoing ECT to achieve remission. The patient developed recurrent focal neurological deficits after each ECT procedure, with neurological recovery within 48 hours post-ECT. Clinical guidelines may need to be updated for the management of ECT patients with cerebrovascular disease who may be at an increased risk of intraictal and possibly postictal regional ischemia, especially in areas already compromised by a prior stroke and/or by reduced cerebral oxygenation caused by symptomatic anemia at risk of ischemia. Research is needed to assess changes in regional cerebral blood flow during and after ECT in patients with cerebrovascular disease, including small-vessel cerebral ischemia, and to evaluate these changes in relation to the location, intensity, and duration of induced seizure.

Kumar, S., Mulsant, B. H., Liu, A. Y., et al. (2016). "Systematic Review of Cognitive Effects of Electroconvulsive Therapy in Late-Life Depression." Am J Geriatr Psychiatry **24**(7): 547-565.

OBJECTIVE: Late-life depression (LLD) is known to negatively impact cognition even after remission of mood symptoms. Electroconvulsive therapy (ECT) and newer nonconvulsive electrical and magnetic brain stimulation interventions have been shown to have cognitive effects in patients with neuropsychiatric disorders. METHODS: This review systematically assessed the effects of ECT on cognition in LLD. EMBASE, Ovid Medline, and PsycINFO were systematically searched through June 2015. The search was limited to publications from peer-reviewed journals in the English language. RESULTS: A total of 5,154 publications was identified; 318 were reviewed in full text, of which 39 publications related to ECT were included. We focused this review only on ECT because evidence on newer interventions was deemed insufficient for a systematic review. This literature suggests increased rates of interictal and postictal cognitive decline with ECT but no long-term (i.e., 6 months or longer) deleterious effects on cognition. Instead, long-term cognitive outcomes with ECT have been reported as either not changed or improved. This literature favors nondominant unilateral ECT over bilateral ECT for cognition. CONCLUSION: Published literature on brain stimulation interventions in LLD is mainly limited to ECT. This literature suggests that deleterious effects of ECT in LLD are limited and transient, with better cognitive outcomes with unilateral ECT. There is not enough evidence to fully characterize long-term deleterious effects of ECT or effects of newer brain stimulation techniques on cognition in LLD.

Landry, M., Moreno, A., Patry, S., et al. (2020). "Current Practices of Electroconvulsive Therapy in Mental Disorders: A Systematic Review and Meta-Analysis of Short and Long-Term Cognitive Effects." J ect https://journals.lww.com/ectjournal/Fulltext/9000/Current_Practices_of_Electroconvulsive_Therapy_in.99021.aspx

Electroconvulsive therapy (ECT) remains one of the most effective treatments for major depressive disorder, but uncertainties persist regarding the cognitive tests to include in ECT follow-up. The current study is a systematic review and meta-analysis of the most frequent cognitive side effects after ECT. We also discuss the most common cognitive tests in ECT follow-up. We searched studies published from 2000 to 2017 in English and French language in Pubmed, EBM Reviews, EMBASE, and PsycINFO. Standardized cognitive tests were separated into 11 cognitive domains. Comparisons between cognitive measures included pre-ECT baseline with post-ECT measures at 3 times: PO1, immediately post-ECT (within 24 hours after last ECT); PO2, short term (1–28 days); and PO3, long term (more than 1 month). A total of 91 studies were included, with an aggregated sample of 3762 individuals. We found no significant changes in global cognition with Mini-Mental State Examination at PO1. Hedges g revealed small to medium effect sizes at PO2, with individuals presenting a decrease in autobiographical memory, verbal fluency, and verbal memory. Verbal fluency problems showed an inverse correlation with age, with younger adults showing greater deficits. At PO3, there is an improvement on almost all cognitive domains, including verbal fluency and verbal memory. There is a lack of standardization in the choice of cognitive tests and optimal cognitive timing. The Mini-Mental State Examination is the most common screening test used in ECT, but its clinical utility is extremely limited to track post-ECT cognitive changes. Cognitive assessment for ECT purposes should include autobiographical memory, verbal fluency, and verbal memory.

Leiknes, K. A., Cooke, M. J., Jarosch-von Schweder, L., et al. (2015). "Electroconvulsive therapy during pregnancy: a systematic review of case studies." Arch Womens Ment Health **18**(1): 1-39.

This study aims to explore practice, use, and risk of electroconvulsive therapy (ECT) in pregnancy. A systematic search was undertaken in the databases Medline, Embase, PsycINFO, SveMed and CINAHL (EBSCO). Only primary data-based studies reporting ECT undertaken during pregnancy were included. Two reviewers independently checked study titles and abstracts according to inclusion criteria and extracted detailed use, practice, and adverse effects data from full text retrieved articles. Studies and extracted data were sorted according to before and after year 1970, due to changes in ECT administration over time. A total of 67 case reports were included and studies from all continents represented. Altogether, 169 pregnant women were identified, treated during pregnancy with a mean number of 9.4 ECTs, at mean age of 29 years. Most women received ECT during the 2nd trimester and many were Para I. Main diagnostic indication in years 1970 to 2013 was Depression/Bipolar disorder (including psychotic depression). Missing data on fetus/child was 12 %. ECT parameter report was often sparse. Both bilateral and unilateral electrode placement was used and thiopental was the main anesthetic agent. Adverse events such as fetal heart rate reduction, uterine contractions, and premature labor (born between 29 and 37 gestation weeks) were reported for nearly one third (29 %). The overall child mortality rate was 7.1 %. Lethal outcomes for the fetus and/or baby had diverse associations. ECT during pregnancy is advised considered only as last resort treatment under very stringent diagnostic and clinical indications. Updated international guidelines are urgently needed.

Lesage, A., Lemasson, M., Medina, K., et al. (2016). "The Prevalence of Electroconvulsive Therapy Use Since 1973: A Meta-analysis." J ect **32**(4): 236-242.

OBJECTIVES: A formal meta-analysis of the use of electroconvulsive therapy (ECT) has never been conducted before in literature reviews or syntheses. Such a study would be hampered by heterogeneity and potential reporting biases. However, it would provide a single comparable measure to allow an analysis of statistical key dimensions such as trends across time and psychiatric resources available. It would also help planners and decision makers to set standards and benchmarks for national and regional guidelines for quality assurance and research in health services. METHODS: We surveyed different databases for relevant studies, limited from 1973 to October 2013. Data were extracted independently by 4 reviewers. The articles retrieved were peerreviewed studies (data-based

studies or surveys) presenting ECT population rates (annual patient rates calculated from the general population) or number of patients receiving ECT during or after 1973 and attending a psychiatric establishment (either hospitals or approved ECT delivery centers for inpatients and outpatients in well-defined geographic areas). RESULTS: This meta-analysis includes a total of 18 studies from 12 countries. A composite event rate of 16.9/100,000 inhabitants emerged, characterized by high heterogeneity. Across the countries assessed, the prevalence of ECT was higher in older studies. CONCLUSIONS: By its prevalence, ECT remains rare to exceptional as a specialist treatment for mental disorders. Heterogeneity across regions or countries could best be explained by insufficient standardization of ECT procedures and practices. Linked health databases and audits could help strengthen the effectiveness of ECT in relation to primary outcomes such as suicide and help determine the gap in ECT provision, if any.

Lima, N. N., Nascimento, V. B., Peixoto, J. A., et al. (2013). "Electroconvulsive therapy use in adolescents: a systematic review." Ann Gen Psychiatry **12**(1): 17.

BACKGROUND: Considered as a moment of psychological vulnerability, adolescence is remarkably a risky period for the development of psychopathologies, when the choice of the correct therapeutic approach is crucial for achieving remission. One of the researched therapies in this case is electroconvulsive therapy (ECT). The present study reviews the recent and classical aspects regarding ECT use in adolescents. METHODS: Systematic review, performed in November 2012, conformed to the PRISMA statement. RESULTS: From the 212 retrieved articles, only 39 were included in the final sample. The reviewed studies bring indications of ECT use in adolescents, evaluate the efficiency of this therapy regarding remission, and explore the potential risks and complications of the procedure. CONCLUSIONS: ECT use in adolescents is considered a highly efficient option for treating several psychiatric disorders, achieving high remission rates, and presenting few and relatively benign adverse effects. Risks can be mitigated by the correct use of the technique and are considered minimal when compared to the efficiency of ECT in treating psychopathologies.

Livingston, R., Wu, C., Mu, K., et al. (2018). "Regulation of Electroconvulsive Therapy: A Systematic Review of US State Laws." J ect **34**(1): 60-68.

OBJECTIVES: The goal of this study was to systematically review current US state laws on electroconvulsive therapy (ECT) in order to provide a comprehensive resource to educate practitioners, potential patients, and lawmakers. METHODS: Individual state legislative Web sites were searched by 2 independent authors using the following search terms: "electroconvulsive therapy," "convulsive therapy," "electroconvulsant therapy," "electroshock therapy," and "shock therapy" from March 2017 to May 2017. All sections of state law pertaining to ECT were reviewed, and pertinent data regarding consent, age restrictions, treatment limitations, required reporting, defined qualified professionals, fees, and other information were extracted. RESULTS: State regulation on ECT widely varied from none to stringent requirements. There were 6 states without any laws pertaining to ECT. California, Illinois, Massachusetts, Missouri, New York, South Dakota, Tennessee, and Texas were noted to be the most regulatory on ECT. CONCLUSIONS: There are no US national laws on ECT leaving individual state governments to regulate treatment. Whereas some states have detailed restrictions on use, other states have no regulation at all. This variation applies to multiple areas of ECT practice, including who can receive ECT, who can provide informed consent, who can prescribe or perform ECT, and what administrative requirements (eg, fees, reporting) must be met by ECT practitioners. Knowledge of these state laws will help providers not only to be aware of their own state's regulations, but also to have a general awareness of what other states mandate for better patient care and utilization of ECT.

McClintock, S. M., Brandon, A. R., Husain, M. M., et al. (2011). "A systematic review of the combined use of electroconvulsive therapy and psychotherapy for depression." J ect **27**(3): 236-243.

OBJECTIVE: Electroconvulsive therapy (ECT) is one of the most effective treatments for severe major depressive disorder. However, after acute-phase treatment and initial remission, relapse rates are significant. Strategies to prolong remission include continuation phase ECT, pharmacotherapy,

psychotherapy, or their combinations. This systematic review synthesizes extant data regarding the combined use of psychotherapy with ECT for the treatment of patients with severe major depressive disorder and offers the hypothesis that augmenting ECT with depression-specific psychotherapy represents a promising strategy for future investigation. METHODS: The authors performed 2 independent searches in PsychInfo (1806-2009) and MEDLINE (1948-2009) using combinations of the following search terms: Electroconvulsive Therapy (including ECT, ECT therapy, electroshock therapy, EST, and shock therapy) and Psychotherapy (including cognitive behavioral, interpersonal, group, psychodynamic, psychoanalytic, individual, eclectic, and supportive). We included in this review a total of 6 articles (English language) that mentioned ECT and psychotherapy in the abstract and provided a case report, series, or clinical trial. We examined the articles for data related to ECT and psychotherapy treatment characteristics, cohort characteristics, and therapeutic outcome. RESULTS: Although research over the past 7 decades documenting the combined use of ECT and psychotherapy is limited, the available evidence suggests that testing this combination has promise and may confer additional, positive functional outcomes. CONCLUSIONS: Significant methodological variability in ECT and psychotherapy procedures, heterogeneous patient cohorts, and inconsistent outcome measures prevent strong conclusions; however, existing research supports the need for future investigations of combined ECT and psychotherapy in well-designed, controlled clinical studies. Depression-specific psychotherapy approaches may need special adaptations in view of the cognitive effects of ECT.

Niu, Y., Ye, D., You, Y., et al. (2020). "Prophylactic cognitive enhancers for improvement of cognitive function in patients undergoing electroconvulsive therapy: A systematic review and meta-analysis." Medicine (Baltimore) **99**(11): e19527.

OBJECTIVE: Cognitive enhancers, including cholinesterase inhibitors and memantine, are used to treat dementia, but their effect for reducing post-electroconvulsive therapy (post-ECT) cognitive side effects is unclear. We conducted a systematic review and meta-analysis to assess the effectiveness of cognitive enhancers in the prevention of cognitive side effects due to ECT. METHODS: We identified relevant studies by searching electronic databases (e.g., PubMed, EMBASE, Web of Science, Cochrane Library). Only studies published up to October 2019 comparing cognitive enhancer vs placebo for cognitive function after ECT were included. The primary outcome extracted from the studies was cognitive function score. RESULTS: Five studies with 202 patients were included in this study. The cognitive enhancer group (CEG) had a significantly higher cognitive function score. Moreover, sensitivity analysis showed that no individual study had a significant impact on the overall results. CONCLUSIONS: This meta-analysis revealed that cognitive enhancers might improve cognitive function and reduce ECT-induced cognitive side effects. Nevertheless, more high-quality randomized controlled trials (RCTs) with long-term follow-up are still needed to make the final conclusion.

Pagnin, D., de Queiroz, V., Pini, S., et al. (2004). "Efficacy of ECT in depression: a meta-analytic review." J ect **20**(1): 13-20.

This study analyzed the efficacy of electroconvulsive therapy (ECT) in depression by means a meta-analytic review of randomized controlled trials that compared ECT with simulated ECT or placebo or antidepressant drugs and by a complementary meta-analytic review of nonrandomized controlled trials that compared ECT with antidepressants drugs. The review revealed a significant superiority of ECT in all comparisons: ECT versus simulated ECT, ECT versus placebo, ECT versus antidepressants in general, ECT versus TCAs and ECT versus MAOIs. The nonrandomized controlled trials also revealed a significant statistical difference in favor of ECT when confronted with antidepressants drugs. Data analyzed suggest that ECT is a valid therapeutic tool for treatment of depression, including severe and resistant forms.

Peroski, M. S., Chu, M. M., Doddi, S. R., et al. (2019). "The Safety of Electroconvulsive Therapy in Patients With Implanted Deep Brain Stimulators: A Review of the Literature and Case Report." J ect **35**(2): 84-90.

Currently there is no consensus statement about the safety of electroconvulsive therapy in patients who have implanted electrodes for deep brain stimulation. We present a summary of the existing literature on this topic, consisting of 21 cases, and then report a case performed at the University of

Maryland Medical Center. Notably, with appropriate safety precautions and careful patient selection, there were no adverse events reported in the literature that were related to the presence of the deep brain stimulation device in any of the cases. Based on our review of the literature and the case we present, we have found no evidence so far to indicate that electroconvulsive therapy in patients with an implanted deep brain stimulator is unsafe.

Petrides, G., Tobias, K. G., Kellner, C. H., et al. (2011). "Continuation and maintenance electroconvulsive therapy for mood disorders: review of the literature." Neuropsychobiology **64**(3): 129-140.

BACKGROUND: Electroconvulsive therapy (ECT) is a highly effective treatment for mood disorders. Continuation ECT (C-ECT) and maintenance ECT (M-ECT) are required for many patients suffering from severe and recurrent forms of mood disorders. This is a review of the literature regarding C- and M-ECT. METHODS: We conducted a computerized search using the words continuation ECT, maintenance ECT, depression, mania, bipolar disorder and mood disorders. We report on all articles published in the English language from 1998 to 2009. RESULTS: We identified 32 reports. There were 24 case reports and retrospective reviews on 284 patients. Two of these reports included comparison groups, and 1 had a prospective follow-up in a subset of subjects. There were 6 prospective naturalistic studies and 2 randomized controlled trials. CONCLUSIONS: C-ECT and M-ECT are valuable treatment modalities to prevent relapse and recurrence of mood disorders in patients who have responded to an index course of ECT. C-ECT and M-ECT are underused and insufficiently studied despite positive clinical experience of more than 70 years. Studies which are currently under way should allow more definitive recommendations regarding the choice, frequency and duration of C-ECT and M-ECT following acute ECT.

Porta-Casteràs, D., Cano, M., Camprodon, J. A., et al. (2020). "A multimetric systematic review of fMRI findings in patients with MDD receiving ECT." Prog Neuropsychopharmacol Biol Psychiatry: 110178.

BACKGROUND: Electroconvulsive therapy (ECT) is considered the most effective treatment for major depressive disorder (MDD). In recent years, the pursuit of the neurobiological mechanisms of ECT action has generated a significant amount of functional magnetic resonance imaging (fMRI) research. OBJECTIVE: In this systematic review, we integrated all fMRI research in patients with MDD receiving ECT and, importantly, evaluated the level of convergence and replicability across multiple fMRI metrics. RESULTS: While according to most studies changes in patients with MDD after ECT appear to be widely distributed across the brain, our multimetric review revealed specific changes involving functional connectivity increases in the superior and middle frontal gyri as the most replicated and across-modality convergent findings. Although this modulation of prefrontal connectivity was associated to ECT outcome, we also identified fMRI measurements of the subgenual anterior cingulate cortex as the fMRI signals most significantly linked to clinical response. CONCLUSION: We identified specific prefrontal and cingulate territories which activity and connectivity with other brain regions is modulated by ECT, critically accounting for its mechanism of action.

Quentin, S., Michel, V., Daniel, M. L., et al. (2010). "Intérêt de l'électroconvulsivothérapie (ECT) chez les sujets âgés souffrant d'une pathologie démentielle : une revue de la littérature." NPG : NEUROLOGIE, PSYCHIATRIE, GERIATRIE **10**(59): 204-214.

Cette revue traite de la pratique de l'électroconvulsivothérapie (ECT) chez les sujets âgés souffrant de pathologie démentielle. L'ECT est un traitement sûr et efficace chez le sujet âgé dément avec épisode dépressif majeur et/ou trouble du comportement. Elle s'avère plus efficace et sûre que la pharmacothérapie. Les effets indésirables somatiques ne sont pas plus nombreux que chez les sujets adultes jeunes et les troubles cognitifs ne sont pas aggravés. Ces résultats restent cependant à confirmer par des études contrôlées et randomisées dans cette population de patients jusqu'à ce jour inexistantes.[résumé d'éditeur]

Quiles, C., Bosc, E. et Verdoux, H. (2013). "Altérations cognitives et plaintes mnésiques lors d'un traitement par électroconvulsivothérapie : revue de la littérature." Annales Médico-psychologiques, revue psychiatrique **171**(5): 285-294.

http://www.sciencedirect.com/science/article/pii/S0003448713000978

Résumé L'électroconvulsivothérapie (ECT) est susceptible d'entraîner des altérations mnésiques, repérables à l'aide de tests neuropsychologiques « objectifs » et à l'origine de plaintes mnésiques « subjectives » rapportées par les sujets. Les études disponibles mettent en évidence des altérations mnésiques « objectives » à la suite d'un traitement par ECT variables selon les tests neuropsychologiques utilisés et la période d'évaluation par rapport aux séances ECT. Les méthodes d'évaluation des plaintes mnésiques « subjectives » et leurs résultats divergent également selon les études. L'objectif de cette revue de la littérature est de synthétiser les données disponibles concernant les altérations mnésiques « objectives » ainsi que les plaintes mnésiques « subjectives » rapportées à la suite d'un traitement par ECT et d'observer les relations entre ces deux types d'altérations mnésiques. Cette revue systématique de la littérature a permis de retenir 29 articles publiés de 1970 à 2012. Les seules altérations cognitives « objectives » persistantes à long terme après un traitement par ECT sont des altérations mnésiques rétrogrades autobiographiques. Les plaintes mnésiques concordent avec les altérations mnésiques objectives lorsqu'elles sont évaluées globalement, mais diffèrent lorsque les outils de mesure des plaintes subjectives utilisés demandent une évaluation plus spécifique.

Quiles, C., Dewitte, A., Thomas, P., et al. (2020). "Électroconvulsivothérapie en association avec des traitements pharmacologiques psychotropes et non psychotropes : revue de la littérature et recommandations pratiques." L'Encéphale **46**(4): 283-292.
http://www.sciencedirect.com/science/article/pii/S0013700620300294

Résumé Contexte La pratique de l'électroconvulsivothérapie (ECT) est de plus en plus codifiée (recommandations portant sur les indications, contre-indications, modalités de réalisation, locaux adaptés, réglementations pour l'anesthésie). Pour autant, elle manque encore de textes de référence et de protocoles consensuels, notamment concernant l'utilisation concomitante de traitements, psychotropes ou non. Il n'existe à notre connaissance à ce jour en France pas de revue synthétique, ni de recommandations concernant la conduite à tenir à propos des traitements médicamenteux lors de l'initiation d'un traitement par ECT, alors que plusieurs spécificités pharmacologiques doivent être prises en compte. Cet article propose de préciser pour chaque classe pharmacologique possiblement associée à un traitement par ECT, les interactions et points de vigilance à prendre en compte. Méthode Une revue de la littérature a été réalisée pour tous les articles publiés avant janvier 2019 référencés dans la base de données Pub Med, associant une recherche avec les Medical Subject Headings « Electroconvulsive Therapy » et chacune des classes pharmacologiques : « Cardiovascular Agents » « Bronchodilator Agents » « Bronchoconstrictor Agents » « Theophylline » « Anticoagulants » « Hypoglycemic Agents » « Insulin » « Potassium » « Benzodiazepines » « Valproic Acid » « Carbamazepine » « Lamotrigine » « Lithium » « Antidepressive Agents » « Antipsychotic Agents ». Résultats Après lecture des titres, puis résumés et articles entiers, puis recherche d'articles complémentaires dans les références, 50 articles toutes classes pharmacologiques confondues ont été retenus. Un tableau synthétique rappelant les principaux risques et proposant une conduite à tenir a été réalisé. Discussion Il est indispensable de tenir compte de la spécificité et des différents mécanismes physiologiques en jeu lors du soin ECT pour ajuster les traitements pharmacologiques associés. La prescription est à revoir pour chaque molécule lorsqu'une cure d'ECT est initiée.

Rasmussen, K. G. (2009). "Sham electroconvulsive therapy studies in depressive illness: a review of the literature and consideration of the placebo phenomenon in electroconvulsive therapy practice." J ect **25**(1): 54-59.

The gold standard for the establishment of therapeutic efficacy is the randomized placebo-controlled trial. In the case of electroconvulsive therapy (ECT), there is an older literature of a dozen so-called "sham ECT" trials. When cited, these trials are typically referred to as unequivocally demonstrating the superiority of ECT over sham ECT. However, there is an intriguingly high sham ECT response rate in some of the studies, and there is also some information regarding ECT response of depressive subtypes that informs the modern ECT practitioner. In this report, the sham ECT literature is reviewed in detail, and the author discusses possible mechanisms by which sham-treated patients improved.

Rasmussen, K. G. (2015). "Do patients with personality disorders respond differentially to electroconvulsive therapy? A review of the literature and consideration of conceptual issues." J ect **31**(1): 6-12.

Personality disorders are common among depressed patients. While there is considerable research demonstrating that such patients may respond less optimally to antidepressant medications, there is a relative dearth of research on the outcomes of depressed personality-disordered patients treated with electroconvulsive therapy (ECT). In this review, the author summarizes the available reports and concludes that there is reasonably robust evidence that patients with borderline personality disorder experience lesser antidepressant responses to ECT acutely and probably higher post-ECT relapse rates than depressed patients with other or no personality disorders. Some of the complex issues involved in selecting and treating such patients are discussed, and recommendations are provided for clinical practice and future research.

Read, J. et Bentall, R. (2010). "The effectiveness of electroconvulsive therapy: a literature review." Epidemiol Psichiatr Soc **19**(4): 333-347.

AIM: To review the literature on the efficacy of electroconvulsive therapy [ECT], with a particular focus on depression, its primary target group. METHODS: PsycINFO, Medline, previous reviews and meta-analyses were searched in an attempt to identify all studies comparing ECT with simulated-ECT [SECT]. RESULTS: These placebo controlled studies show minimal support for effectiveness with either depression or 'schizophrenia' during the course of treatment (i.e., only for some patients, on some measures, sometimes perceived only by psychiatrists but not by other raters), and no evidence, for either diagnostic group, of any benefits beyond the treatment period. There are no placebo-controlled studies evaluating the hypothesis that ECT prevents suicide, and no robust evidence from other kinds of studies to support the hypothesis. CONCLUSIONS: Given the strong evidence (summarised here) of persistent and, for some, permanent brain dysfunction, primarily evidenced in the form of retrograde and anterograde amnesia, and the evidence of a slight but significant increased risk of death, the cost-benefit analysis for ECT is so poor that its use cannot be scientifically justified.

Rose, D., Fleischmann, P., Wykes, T., et al. (2003). "Patients' perspectives on electroconvulsive therapy: systematic review." Bmj **326**(7403): 1363.

OBJECTIVE: To ascertain patients' views on the benefits of and possible memory loss from electroconvulsive therapy. DESIGN: Descriptive systematic review. DATA SOURCES: Psychinfo, Medline, Web of Science, and Social Science Citation Index databases, and bibliographies. STUDY SELECTION: Articles with patients' views after treatment with electroconvulsive therapy. DATA EXTRACTION: 26 studies carried out by clinicians and nine reports of work undertaken by patients or with the collaboration of patients were identified; 16 studies investigated the perceived benefit of electroconvulsive therapy and seven met criteria for investigating memory loss. DATA SYNTHESIS: The studies showed heterogeneity. The methods used were associated with levels of perceived benefit. At least one third of patients reported persistent memory loss. CONCLUSIONS: The current statement for patients from the Royal College of Psychiatrists that over 80% of patients are satisfied with electroconvulsive therapy and that memory loss is not clinically important is unfounded.

Semkovska, M. et McLoughlin, D. M. (2010). "Objective cognitive performance associated with electroconvulsive therapy for depression: a systematic review and meta-analysis." Biol Psychiatry **68**(6): 568-577.

BACKGROUND: Electroconvulsive therapy (ECT) is the most acutely effective treatment for depression, but is limited by cognitive side effects. However, research on their persistence, severity, and pattern is inconsistent. We aimed to quantify ECT-associated cognitive changes, specify their pattern, and determine progression. METHODS: MEDLINE, EMBASE, PsycArticles, PsychINFO, PsychLIT, and reference lists were systematically searched through January 2009. We included all independent, within-subjects design studies of depressed patients receiving ECT where cognition was assessed using standardized tests. Main outcome was change in performance after ECT relative to pretreatment

scores with respect to delay between finishing ECT and cognitive testing. We explored potential moderators' influence, e.g., electrode placement, stimulus waveform. RESULTS: Twenty-four cognitive variables (84 studies, 2981 patients) were meta-analyzed. No standardized retrograde amnesia tests were identified. Significant decreases in cognitive performance were observed 0 to 3 days after ECT in 72% of variables: effect sizes (ES) ranging from -1.10 (95% confidence interval [CI], -1.53 to -.67) to -.21 (95% CI, -.40 to .01). Four to 15 days post-ECT, all but one CI included zero or showed positive ES. No negative ES were observed after 15 days, with 57% of variables showing positive ES, ranging from .35 (95% CI, .07-.63) to .75 (95% CI, .43-1.08). Moderators did not influence cognitive outcomes after 3 days post-ECT. CONCLUSIONS: Cognitive abnormalities associated with ECT are mainly limited to the first 3 days posttreatment. Pretreatment functioning levels are subsequently recovered. After 15 days, processing speed, working memory, anterograde memory, and some aspects of executive function improve beyond baseline levels.

Sinclair, D. J., Zhao, S., Qi, F., et al. (2019). "Electroconvulsive therapy for treatment-resistant schizophrenia." Cochrane Database Syst Rev **3**(3): Cd011847.

BACKGROUND: Electroconvulsive therapy (ECT) involves the induction of a seizure by the administration of an electrical stimulus via electrodes usually placed bilaterally on the scalp and was introduced as a treatment for schizophrenia in 1938. However, ECT is a controversial treatment with concerns about long-term side effects such a memory loss. Therefore, it is important to determine its clinical efficacy and safety for people with schizophrenia who are not responding to their treatment. OBJECTIVES: Our primary objective was to assess the effects (benefits and harms) of ECT for people with treatment-resistant schizophrenia.Our secondary objectives were to determine whether ECT produces a differential response in people: who are treated with unilateral compared to bilateral ECT; who have had a long (more than 12 sessions) or a short course of ECT; who are given continuation or maintenance ECT; who are diagnosed with well-defined treatment-resistant schizophrenia as opposed to less rigorously defined treatment-resistant schizophrenia (who would be expected to have a greater affective component to their illness). SEARCH METHODS: We searched the Cochrane Schizophrenia Group's Study-Based Register of Trials including clinical trial registries on 9 September 2015 and 4 August 2017. There were no limitations on language, date, document type, or publication status for the inclusion of records in the register. We also inspected references of all the included records to identify further relevant studies. SELECTION CRITERIA: Randomised controlled trials investigating the effects of ECT in people with treatment-resistant schizophrenia. DATA COLLECTION AND ANALYSIS: Two review authors independently extracted data. For binary outcomes, we calculated the risk ratio (RR) and its 95% confidence intervals (CIs), on an intention-to-treat basis. For continuous data, we estimated the mean difference (MD) between the groups and its 95% CIs. We employed the fixed-effect model for all analyses. We assessed risk of bias for the included studies and created 'Summary of findings' tables using the GRADE framework. MAIN RESULTS: We included 15 studies involving 1285 participants (1264 completers with an average age of 18 to 46 years) with treatment-resistant schizophrenia. We rated most studies (14/15, 93.3%) as at high risk of bias due to issues related to the blinding of participants and personnel. Our main outcomes of interest were: (i) clinically important response to treatment; (ii) clinically important change in cognitive functioning; (iii) leaving the study early; (iv) clinically important change in general mental state; (v) clinically important change in general functioning; (vi) number hospitalised; and (vii) death. No trial reported data on death.The included trials reported useable data for four comparisons: ECT plus standard care compared with sham-ECT added to standard care; ECT plus standard care compared with antipsychotic added to standard care; ECT plus standard care compared with standard care; and ECT alone compared with antipsychotic alone.For the comparison ECT plus standard care versus sham-ECT plus standard care, only average endpoint BPRS (Brief Psychiatric Rating Scale) scores from one study were available for mental state; no clear difference between groups was observed (short term; MD 3.60, 95% CI -3.69 to 10.89; participants = 25; studies = 1; very low-quality evidence). One study reported data for service use, measured as number readmitted; there was a clear difference favouring the ECT group (short term; RR 0.29, 95% CI 0.10 to 0.85; participants = 25; studies = 1; low-quality evidence).When ECT plus standard care was compared with antipsychotics (clozapine) plus standard care, data from one study showed no clear difference for clinically important response to treatment (medium term; RR 1.23, 95% CI 0.95 to 1.58; participants = 162; studies = 1; low-quality evidence). Clinically important change in mental state

data were not available, but average endpoint BPRS scores were reported. A positive effect for the ECT group was found (short-term BPRS; MD -5.20, 95% CI -7.93 to -2.47; participants = 162; studies = 1; very low-quality evidence).When ECT plus standard care was compared with standard care, more participants in the ECT group had a clinically important response (medium term; RR 2.06, 95% CI 1.75 to 2.42; participants = 819; studies = 9; moderate-quality evidence). Data on clinically important change in cognitive functioning were not available, but data for memory deterioration were reported. Results showed that adding ECT to standard care may increase the risk of memory deterioration (short term; RR 27.00, 95% CI 1.67 to 437.68; participants = 72; studies = 1; very low-quality evidence). There were no clear differences between groups in satisfaction and acceptability of treatment, measured as leaving the study early (medium term; RR 1.18, 95% CI 0.38 to 3.63; participants = 354; studies = 3; very low-quality evidence). Only average endpoint scale scores were available for mental state (BPRS) and general functioning (Global Assessment of Functioning). There were clear differences in scores, favouring ECT group for mental state (medium term; MD -11.18, 95% CI -12.61 to -9.76; participants = 345; studies = 2; low-quality evidence) and general functioning (medium term; MD 10.66, 95% CI 6.98 to 14.34; participants = 97; studies = 2; very low-quality evidence). For the comparison ECT alone versus antipsychotics (flupenthixol) alone, only average endpoint scale scores were available for mental state and general functioning. Mental state scores were similar between groups (medium-term BPRS; MD -0.93, 95% CI -6.95 to 5.09; participants = 30; studies = 1; very low-quality evidence); general functioning scores were also similar between groups (medium-term Global Assessment of Functioning; MD -0.66, 95% CI -3.60 to 2.28; participants = 30; studies = 1; very low-quality evidence). AUTHORS' CONCLUSIONS: Moderate-quality evidence indicates that relative to standard care, ECT has a positive effect on medium-term clinical response for people with treatment-resistant schizophrenia. However, there is no clear and convincing advantage or disadvantage for adding ECT to standard care for other outcomes. The available evidence was also too weak to indicate whether adding ECT to standard care is superior or inferior to adding sham-ECT or other antipsychotics to standard care, and there was insufficient evidence to support or refute the use of ECT alone. More good-quality evidence is needed before firm conclusions can be made.

Song, G. M., Tian, X., Shuai, T., et al. (2015). "Treatment of Adults With Treatment-Resistant Depression: Electroconvulsive Therapy Plus Antidepressant or Electroconvulsive Therapy Alone? Evidence From an Indirect Comparison Meta-Analysis." Medicine (Baltimore) **94**(26): e1052.

Electroconvulsive therapy (ECT) and antidepressant are the effective treatment alternatives for patients with treatment-resistant depression (TRD); however, the effects and safety of the ECT plus antidepressant relative to ECT alone remain controversial. We decide to assess the potential of ECT plus antidepressant compared with ECT alone by undertaking an indirect comparison meta-analysis. Databases from PubMed, ISI Web of Science, CENTRAL, Clinicaltrials.gov, EMBASE, CBM (China Biomediccal Literatures Database), and CNKI (China National Knowledge Infrastructure) were searched for relevant studies through November 21, 2014. Literature was screened, data were extracted and methodological quality of the eligible trial was assessed by 2 independent reviewers accordingly. Then, head-to-head and indirect comparison meta-analyses were carried out.A total of 17 studies which including 13 studies regarding ECT plus antidepressant versus antidepressant alone and 4 studies concerning ECT versus antidepressant alone containing a total of 1098 patients were incorporated into this meta-analysis. The head-to-head comparison suggested that response rate can be improved in the ECT plus antidepressant (RR, 1.82; 95% CI, 1.55-2.14) and ECT alone group (RR, 2.24, 95% CI, 1.51-3.33) compared with antidepressant alone, respectively; adverse complications including memory deterioration and somatization were not significantly increased except incidence of memory deterioration in ECT plus antidepressant in the 4th weeks after treatment (RR, 0.09, 95% CI, 0.02-0.49). Indirect comparison meta-analysis showed that no significant differences were detected in response rate and memory deterioration between ECT plus antidepressant and ECT alone. However, ECT plus antidepressant increased the incidence of memory deterioration relative to ECT alone.With present evidence, the regime of ECT plus antidepressant should not be preferentially recommended to treat the patients with TRD relative to ECT alone.

Thirthalli, J., Prasad, M. K. et Gangadhar, B. N. (2012). "Electroconvulsive therapy (ECT) in bipolar disorder: A narrative review of literature." Asian J Psychiatr **5**(1): 11-17.

In many countries including India electroconvulsive therapy (ECT) is frequently used to treat different phases of bipolar disorder. The response to ECT is impressive in mania, depression and in mixed affective states. Preliminary evidence also suggests benefit from maintenance ECT in bipolar disorder. However, most of the literature on efficacy and adverse effects comes from case series, retrospective reports and open trials - controlled trials have been few and far between. Official guidelines recommend the use of ECT only when there is a dire emergency or when all other options have been exhausted. Concurrent use of lithium and antiepileptic drugs along with ECT is common in clinical practice. While such practice appears to be largely safe, one should be mindful about dose of lithium and possible interference of antiepileptic drugs with efficacy of ECT. The use of suprathreshold bilateral ECT and bifrontal placement of electrodes may confer some advantage over other methods.

Tsujii, T., Uchida, T., Suzuki, T., et al. (2019). "Factors Associated With Delirium Following Electroconvulsive Therapy: A Systematic Review." J ect **35**(4): 279-287.

OBJECTIVES: Delirium following electroconvulsive therapy (ECT) has been a clinical challenge, which, however, has not been investigated through a systematic literature review. The objective of this study was to systematically synthesize available evidence regarding factors associated with post-ECT delirium. METHODS: We conducted a systematic literature search for any type of original investigations that reported risk factors of post-ECT delirium, using PubMed. RESULTS: The literature search identified 43 relevant articles. One study found an association between catatonic feature and increased risk of postictal delirium. Five studies reported that the presence of cerebrovascular disease, Parkinson disease, or dementia was related to higher incidence of post-ECT delirium. Incidence of post-ECT course delirium was increased with bitemporal stimulation (3 studies). One study showed that ultrabrief pulse ECT reduced reorientation time following seizure compared with brief pulse ECT. High stimulus intensity resulted in more prolonged reorientation time after ECT than lower stimulus intensity (2 studies). Longer seizure length was significantly associated with post-ECT delirium in 1 study. Eight studies that examined postictal delirium in association with medications used, including lithium, did not show any consistent finding in their relationships. Four studies showed decreased incidence of postictal delirium in those receiving dexmedetomidine. CONCLUSIONS: Limited evidence suggests that catatonic feature, cerebrovascular disease, Parkinson disease, dementia, bitemporal electrode placement, high stimulus intensity, or longer seizure length are associated with an increased risk of post-ECT delirium. Moreover, dexmedetomidine and ultrabrief pulse ECT seem to have preventive effects of post-ECT delirium.

van Schaik, A. M., Comijs, H. C., Sonnenberg, C. M., et al. (2012). "Efficacy and safety of continuation and maintenance electroconvulsive therapy in depressed elderly patients: a systematic review." Am J Geriatr Psychiatry **20**(1): 5-17.

BACKGROUND: Electroconvulsive therapy (ECT) is the most efficacious treatment in severely depressed elderly patients. Relapse and recurrence of geriatric depression after recovery is an important clinical issue, which requires vigorous and safe treatment in the long term. Continuation or maintenance ECT (M-ECT) may play an important role in this respect. METHODS: In this systematic search, we evaluate the efficacy and safety of M-ECT in preventing depressive relapse in patients age 55 or older. Computer databases were searched for relevant literature published from 1966 until August 2010 with additional references. RESULTS: Twenty-two studies met the search criteria including three randomized clinical trials. M-ECT was studied in nine studies exclusively in the elderly patients. CONCLUSIONS: Research on this clinically important topic is sparse. On the basis of available literature, M-ECT is probably as effective as continuation medication in severely depressed elderly patients after a successful course of ECT and is generally well tolerated. To date, methodologically sound studies, which take into account important issues in geriatric depression like cognition, comorbidity, and clinical parameters, are lacking.

Versiani, M., Cheniaux, E. et Landeira-Fernandez, J. (2011). "Efficacy and safety of electroconvulsive therapy in the treatment of bipolar disorder: a systematic review." J ect **27**(2): 153-164.

OBJECTIVES: : To evaluate the efficacy and safety of electroconvulsive therapy (ECT) in bipolar disorder (BPD). METHODS: : Clinical trials on the treatment of BPD with ECT were systematically reviewed. A comprehensive search of MEDLINE, PsycINFO, and ISI Web of Science databases was conducted in March 2010. RESULTS: : A total of 51 articles met our selection criteria. Only 3 controlled or comparative prospective trials addressed the treatment of mania with ECT. In these studies, which had small samples, ECT was superior to simulated ECT, lithium, or the combination of lithium and haloperidol. We did not find any controlled or comparative prospective trial on the efficacy of ECT in bipolar depression. In the 4 retrospective studies that compared ECT with antidepressants, no difference was observed between them. In 9 of 10 trials that compared bipolar with unipolar depressed patients, ECT was equally efficacious for both groups of patients. Of the 6 studies of patients with BPD that performed a comparison between pre-ECT versus post-ECT, only 1 study showed a worsening in cognition after the treatment. CONCLUSIONS: : There are no studies with adequate methodology on the treatment of BPD with ECT. The lack of scientific evidence contrasts with broad anecdotal clinical experience that suggests that ECT is an important tool in the treatment of BPD, especially in more severe or refractory cases. The marked stigma associated with ECT and the lack of large financial support may account for the paucity of ECT research.

Wang, W., Pu, C., Jiang, J., et al. (2015). "Efficacy and safety of treating patients with refractory schizophrenia with antipsychotic medication and adjunctive electroconvulsive therapy: a systematic review and meta-analysis." Shanghai Arch Psychiatry **27**(4): 206-219.

BACKGROUND: The efficacy and safety of the combined treatment of refractory schizophrenia with antipsychotic medications and electroconvulsive therapy (ECT) remain uncertain. AIMS: Conduct systematic review and meta-analysis of available literature in English and Chinese about ECT in the treatment of refractory schizophrenia. METHODS: English and Chinese databases were searched for studies published prior to May 20, 2015 regarding the efficacy and safety of the combined treatment of refractory schizophrenia with antipsychotic medications and ECT. Two researchers selected and evaluated studies independently using pre-defined criteria. Review Manager 5.3 software was used for data analysis. RESULTS: A total of 22 randomized control studies, 18 of which were conducted in mainland China, were included in the analysis. Meta-analysis of data from 18 of the 22 studies with a pooled sample of 1394 individuals found that compared to treatment with antipsychotic medications alone, combined treatment with antipsychotic medications and ECT had significantly higher rates of achieving study-specific criteria of 'clinical improvement' (RR=1.25, 95%CI=1.14-1.37). Based on the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) criteria, the quality of evidence for this assessment of efficacy was 'moderate'. However, the proportion of participants who experienced headache during the treatment was significantly higher in the combined treatment group (RR=9.10, 95%CI=3.97-20.86, based on a pooled sample of 517 from 8 studies) and the proportion who experienced memory impairment was also higher in the combined treatment group (RR=6.48, 95%CI=3.54-11.87, based on a pooled sample of 577 from 7 studies). The quality of evidence about these adverse events was rated as 'very low'. CONCLUSIONS: There are very few high quality randomized controlled clinical trials about the combination of antipsychotic medications and ECT in the treatment of refractory schizophrenia. This meta-analysis found that the combination of antipsychotic medications and ECT could improve psychiatric symptoms in patients with refractory schizophrenia, but the incomplete methodological information provided for most of the studies, publication bias (favoring studies with better outcomes in the combined treatment group), and the low quality of evidence about adverse outcomes, cognitive impairment, and overall functioning raise questions about the validity of the results.

Warren, M. B., Elder, S. et Litchfield, N. P. (2018). "Electroconvulsive Therapy for Depression Comorbid With Myasthenia Gravis: A Case Report and Review of the Literature." J ect **34**(1): 50-54.

OBJECTIVES: Myasthenia gravis (MG) is a rare but well-described autoimmune disease, which is sometimes comorbid with psychiatric illness. There have been several case reports describing the use of electroconvulsive therapy (ECT) for the treatment of core psychopathology in the context of MG. We sought to review the available published data on ECT in MG and add another case example to the literature. METHODS: We performed a PubMed search for relevant articles or case reports in English

describing ECT in MG and summarized findings. RESULTS: We identified 7 published cases meeting our inclusion criteria in varying detail with different psychiatric presentations and different anesthetic and ECT technique approaches. In addition, we add our own case. CONCLUSIONS: Based on the literature and our own clinical experience, ECT seems to be a safe option for the treatment of core psychopathology with comorbid MG as long as appropriate precautions are in place, particularly when choosing an anesthetic approach.

ÉTUDES DE L'IRDES

Lecarpentier, P., Gandre, C., Coldefy, M., et al. (2022). "Recours à l'électroconvulsivothérapie en France : des premières données nationales qui soulignent des disparités importantes." Questions d'économie de la santé (Irdes)(267): 8p.
https://www.irdes.fr/recherche/questions-d-economie-de-la-sante/267-le-recours-a-l-electroconvulsivotherapie-en-france.pdf

L'électroconvulsivothérapie (ECT) consiste à déclencher une crise d'épilepsie sous anesthésie générale. Elle figure parmi les traitements recommandés pour le soin des troubles psychiques sévères ne répondant pas aux prises en charge usuelles, notamment pharmacologiques. Associée à des représentations négatives, ses mécanismes d'action restent en partie méconnus et les travaux documentant son utilisation à grande échelle font défaut. Cette recherche décrit le recours à l'ECT en France métropolitaine en 2019 et en identifie les principaux facteurs associés à partir des données d'activité hospitalière de l'Agence technique de l'information sur l'hospitalisation (ATIH) – qui comportent depuis 2017 un recueil des actes d'ECT visant l'exhaustivité. Selon ces données, l'ECT a concerné 3 705 personnes pour 44 668 actes en 2019 en France, constituant ainsi un soin hyper-spécialisé peu prescrit. Un peu plus d'1 % des adultes hospitalisés au moins une journée à temps plein en psychiatrie sont concernés, qui sont plus âgés, plus souvent de sexe féminin et ont des diagnostics de troubles plus sévères et complexes que les autres personnes hospitalisées selon les mêmes modalités. Ces caractéristiques cliniques sont en cohérence avec les recommandations de bonnes pratiques.

Lecarpentier, P., Gandre, C., Coldefy, M., et al. (2022). Recours à l'électroconvulsivothérapie pour les personnes hospitalisées en psychiatrie en France : premier état des lieux national. Les rapports de l'Irdes ; 585. Paris : Irdes**:** 56p.
https://www.irdes.fr/recherche/2022/rapport-585-recours-a-l-electroconvulsivotherapie-pour-les-personnes-hospitalisees-en-psychiatrie-en-france.html

L'Electroconvulsivothérapie (ECT), qui consiste à déclencher une crise d'épilepsie sous anesthésie générale, figure parmi les traitements recommandés pour le soin des troubles psychiques sévères ne répondant pas aux prises en charge usuelles, notamment pharmacologiques. Son utilisation est cependant sujette à controverse et associée à des représentations négatives persistantes. La méconnaissance de ses mécanismes d'actions et le manque de travaux documentant l'utilisation de ce traitement à grande échelle y contribuent. Dans ce contexte, cette recherche vise à décrire le recours à l'ECT pour les personnes hospitalisées en psychiatrie en France et à en identifier les principaux facteurs associés. Cette recherche mobilise les données d'activité hospitalière de l'Agence technique de l'information sur l'hospitalisation (ATIH) - qui comportent depuis 2017 un recueil des actes d'ECT visant l'exhaustivité - pour l'ensemble des personnes majeures hospitalisées au moins une journée à temps plein en psychiatrie générale en France métropolitaine en 2019. Dans un premier temps, une analyse descriptive du recours à l'ECT et de ses variations entre établissements de suivi psychiatrique principal a été réalisée à partir de ces données. Sur la base d'un cadre conceptuel issu de la littérature internationale sur les variations de pratiques médicales, une régression logistique multi-niveaux a ensuite été réalisée pour identifier les facteurs significativement associés au recours à l'ECT - qu'il s'agisse de caractéristiques des patients, des établissements de suivi psychiatrique principal ou de leur territoire d'implantation - en utilisant les individus hospitalisés au moins une journée à temps plein en psychiatrie mais n'ayant pas reçu d'ECT comme population de référence.

Lecarpentier, P., Gandré, C., Coldefy, M., et al. (2022). "Use of electroconvulsive therapy for individuals receiving inpatient psychiatric care on a nationwide scale in France: Variations linked to health care supply." Brain Stimul **15**(1): 201-210.

> BACKGROUND: A comprehensive understanding of variations in the use of electroconvulsive therapy (ECT) among health care providers in charge of ECT referrals is lacking. OBJECTIVE: Our objectives were to document ECT use and its variations on a nationwide scale in France and to identify the factors that were significantly associated with these variations. METHODS: Administrative health claims data on hospitalization were used to perform a descriptive analysis of ECT use for adult patients receiving inpatient psychiatric care in mainland France in 2019 and its variations across hospitals in charge of ECT referrals. Based on a conceptual framework drawn from the literature on medical practice variations, a multilevel logistic regression was then conducted to identify patients, hospitals and contextual characteristics that were significantly associated with ECT treatment using non-ECT-treated patients receiving inpatient psychiatric care as the reference population. RESULTS: Patients receiving ECT (n = 3288) were older, more frequently female and had more severe diagnoses than other patients seen in inpatient care (n = 295,678). Significant variations were observed in the rate of ECT use across hospitals (n = 468), with a coefficient of variation largely above one. In the multivariable analysis, ECT treatment was associated with patient characteristics (which accounted for 6% of the variations) but also with characteristics of the hospitals and their environments (44% of the variations), including the type of hospital and its distance to the closest facility providing ECT. CONCLUSIONS: Variations in ECT use were strongly linked to health care supply characteristics, which raises questions about access to quality mental health care.

ÉTUDES FRANÇAISES

Amad, A., Magnat, M., Quilès, C., et al. (2020). "[Evolution of electro-convulsive therapy activity in France since the beginning of the COVID-19 pandemic]." Encephale **46**(3s): S40-s42.

> The recent COVID-19 pandemic has led to major organisational changes in health care settings, especially in psychiatric hospitals. We conducted a national online survey to assess the evolution of electroconvulsive therapy (ECT) in the different centres practicing this treatment. 65 responses from all over France were analysed. More than 90 % of the centres practising ECT experienced a decrease in their activity. Half of the centres experienced a total cessation of activity and 25 % of the centres experienced a decrease of more than half of their usual activity. Post-pandemic COVID-19 psychiatric care is expected to be difficult. It is essential not to add to this difficulty the complications, often serious, that will be associated with delaying or stopping the practice of ECT. It will also be necessary to remain vigilant with regard to the specific neuropsychiatric consequences that will follow the pandemic.

Anceau, A., Gaudre-Wattinne, E., Deal, C., et al. (2020). "Traitement de la dépression par électroconvulsivothérapie – Données PMSI 2018." Revue d'Épidémiologie et de Santé Publique **68**: S71-S72. http://www.sciencedirect.com/science/article/pii/S0398762020303138

> Introduction La dépression est une maladie fréquente dont la prévalence vie-entière peut atteindre 20 %. Les femmes sont environ deux fois plus touchées que les hommes. L'électroconvulsivothérapie (ECT) est une technique éprouvée, pour traiter notamment la dépression résistante aux traitements pharmacologiques. L'ECT est effectuée dans des centres spécifiques disposant d'un plateau technique adapté à la réalisation des séances et à la surveillance des patients. Néanmoins, la pratique de l'ECT en France dans le cadre de la dépression est aujourd'hui insuffisamment documentée. Cette étude a donc été mise en place pour décrire l'usage de l'ECT dans cette indication. Les objectifs sont notamment d'estimer le nombre de patients souffrant de dépression traités par ECT, d'analyser la prise en charge de la dépression par ECT, et d'estimer le coût de ce traitement en France. Méthodologie L'étude consiste en une analyse transversale de la base médico-administrative PMSI, qui recueille l'ensemble

de l'activité des établissements de santé du secteur MCO, SSR, HAD et Rim-P (PSY). L'ensemble des séjours comportant un acte d'ECT (code CCAM : AZRP001) ont été extraits des bases MCO et Rim-P 2018 et deux groupes de séjours ont été distingués : – séjours liés à un diagnostic (principal, relié ou associé) de dépression unipolaire (codes CIM-10 correspondants) ; – tout séjour avec un acte d'ECT, incluant ceux non reliés à un diagnostic, et à l'exception des séjours liés à un diagnostic autre que la dépression unipolaire. Une analyse descriptive du second groupe (nombre de patients, nombre de séjours, durée, coût) a été effectuée. L'analyse des coûts a été réalisée par catégorie de durée de séjour : 1/ambulatoire, 2/de courte durée. La valorisation des séjours MCO a été réalisée selon la perspective Assurance maladie (tarifs de remboursement T2A). Résultats L'analyse des données du PMSI 2018 a permis d'obtenir les résultats suivants : – 2281 patients français ont eu au moins une séance d'ECT pour traiter un épisode dépressif ; – 25 348 séances d'ECT ont été réalisées ; – le nombre moyen de séances par cure était de 10,4±7,5 ; – le coût moyen d'un séjour MCO pour une séance d'ECT était de 620±134 ; – le coût moyen d'une cure d'ECT par patient s'élevait à 7154±5853 ; – une cartographie montrant une disparité géographique du taux de patients ayant eu au moins une séance d'ECT. Conclusion Cette étude a été réalisée à partir d'une base de données exhaustive, assurant une forte représentativité des résultats. Néanmoins, la base PMSI comporte des limites. En particulier, le codage des séances d'ECT en lien avec la dépression ainsi que le chaînage approximatif entre les bases PMSI MCO et Rim-P peuvent amener à une estimation approximative de la population de l'étude. De plus, la valorisation des séjours Rim-P n'a pas été possible en raison de son mode de financement. Enfin, les soins ambulatoires (consultations en milieu médical libéral, transports) et les coûts indirects (arrêts de travail) ne sont pas disponibles dans les bases PMSI.

Bellivier, F., Delavest, M., Coulomb, S., et al. (2014). "Prise en charge thérapeutique des patients présentant un trouble bipolaire en France et en Europe : étude multinationale longitudinale WAVE-bd." L'Encéphale **40**(5): 392-400.
http://www.sciencedirect.com/science/article/pii/S0013700614001717

Résumé Le trouble bipolaire est une pathologie complexe dont les modalités de prise en charge médicamenteuse et non médicamenteuse font appel à un arsenal thérapeutique complexe. En dépit de l'existence de guidelines encadrant l'utilisation de cet arsenal, les pratiques restent très hétérogènes. Dans cet article, nous présenterons la comparaison de la prise en charge médicamenteuse du trouble bipolaire en France et en Europe à partir des données de l'étude observationnelle WAVE-bd. Au cours de cette étude internationale, multicentrique et non interventionnelle, 2507 patients atteints de trouble bipolaire I ou II ont été inclus à travers 8 pays européens, dont 480 en France. Le recueil des données était rétrospectif (3–12 mois) mais comprenait également un suivi prospectif (9–15 mois), pour une durée totale de l'étude variant de 12 à 27 mois. Concernant l'utilisation des ressources de soins, nos résultats montrent que les patients français consultent plus fréquemment un psychiatre ou un psychologue, tandis que les patients des autres pays européens ont davantage recours au médecin généraliste ou à un service d'urgence. Les patients français reçoivent moins de lithium et d'antipsychotiques atypiques, mais sont plus souvent traités par antidépresseurs ou par benzodiazépines que les patients des autres pays européens, toutes phases thymiques confondues. Cette même analyse, par polarité des épisodes, confirme ces données.

Bellivier, F., Delavest, M., Coulomb, S., et al. (2014). "[Therapeutic management of bipolar disorder in France and Europe: a multinational longitudinal study (WAVE-bd)]." Encephale **40**(5): 392-400.

BACKGROUND: Bipolar disorder is a complex disease which requires multiple healthcare resources and complex medical care programs including pharmacological and non pharmacological treatment. If mood stabilizers remain the corner stone for bipolar disorder treatment, the development of atypical antipsychotics and their use as mood stabilizers has significantly modified therapeutic care. At the present time, psychiatrists have a large variety of psychotropic drugs for bipolar disorder: mood stabilizers, atypical antipsychotics, antidepressants, anxiolytics… However, despite the publication of guidelines on pharmacological treatment, with a high degree of consensus, everyday clinical practices remain heterogeneous. Moreover, there are few longitudinal studies to describe therapeutic management of bipolar disorder, whatever the phase of the disease is. Indeed, most of the studies are carried out on a specific phase of the disease or treatment. And there is no study comparing French

and European practices. OBJECTIVES: In this paper, we aim to present the comparison of the management of pharmacological treatments of bipolar disorder between France and Europe, using the data of the observational Wide AmbispectiVE study of the clinical management and burden of bipolar disorder (WAVE-bd study). METHODS: The WAVE-bd study is a multinational, multicentre and non-interventional cohort study of patients diagnosed with BD type I or type II, according to DSM IV-TR criteria, in any phase of the disorder, who have experienced at least one mood event during the 12 months before enrolment. In total, 2507 patients have been included across 8 countries of Europe (480 in France). Data collection was retrospective (from 3 to 12 months), but also prospective (from 9 to 15 months) for a total study length of 12 to 27 months. Main outcome measures were the healthcare resource use and pharmacological treatments. RESULTS: Our results show differences in the therapeutic management of bipolar disorder between France and other European countries. Regarding healthcare resource use, our results show that French patients consult more frequently a psychiatrist or a psychologist and less frequently a general practitioner or the emergency ward in comparison with patients from other European countries. In the whole European population, including France, atypical antipsychotics are widely used. Only 25% of the patients receive lithium and more than 50% of the patients receive antidepressants, while their use in bipolar disorder remains controversial. Most of the patients receive polymedication. Considering all phases of the disease pooled, less lithium and less atypical antipsychotics are prescribed to French patients, whereas they receive more antidepressants and more benzodiazepines than patients from other European countries. On the over hand, prescription of anticonvulsants and electroconvulsive therapy are equal. Moreover, data analyses by polarity of the episodes globally confirm these trends. There are a few exceptions: mixed states, in which lithium is twice more prescribed in France in comparison to other countries; depressive states, in which antidepressants are even more prescribed in other countries than in France; and less prescription of anticonvulsants in manic, mixed and euthymic phases in France. CONCLUSION: The WAVE-bd study is the first observational study conducted on a large sample of bipolar I and II patients that compares therapeutic management between France and other European countries. The differences observed in therapeutic care across the different phases of the disease show that treatments differ depending on the countries studied, but also according to the preventive or curative phases, polarity of the bipolar disorder, comorbidities, impact of guidelines, and care organization. Although French patients have been treated by less lithium and less atypical antipsychotics than other European patients, they receive more antidepressants and more benzodiazepines. Finally, patients generally receive polymedication and the diversity in prescriptions shows how bipolar disorder is a complex disorder.

Bellocq, A. S., Perbet, S., Colomb, S., et al. (2011). "Anesthésie pour électroconvulsivothérapie : résultats d'une enquête dans les CHU." Annales Françaises d'Anesthésie et de Réanimation **30**(10): 722-725.
http://www.sciencedirect.com/science/article/pii/S0750765811002000

Résumé Objectif Évaluer la prise en charge anesthésique des patients qui bénéficient d'une électroconvulsivothérapie (ECT) au sein des centres hospitaliers universitaires (CHU). Type d'étude Enquête nationale dans les CHU par internet. Matériels et méthodes Un courriel a été adressé aux chefs de service d'anesthésie-réanimation des CHU de France métropolitaine afin qu'ils identifient un praticien référent par centre, auquel un questionnaire informatisé a ensuite été transmis. Les questions posées portaient sur le volume et l'organisation de l'activité, la prise en charge pré-, per- et post-anesthésique des patients bénéficiant d'une ECT. Résultats Sur les 33 sites réalisant des ECT, 28 (85 %) ont répondu. La consultation d'anesthésie était systématique au moins 48heures avant le début du traitement, mais la visite pré-anesthésique n'était effectuée que dans 32 % des centres. Un électrocardiogramme systématique était réalisé chez 89 % des patients. Dans quatre centres (25 %), la curarisation n'était pas systématique. Le propofol était l'hypnotique le plus utilisé (82 %), devant l'étomidate (11 %) et le thiopental (7 %). Dans deux CHU, les praticiens déclaraient ne pas utiliser de protection buccale. Le psychiatre n'était présent que dans 71 % des cas. L'électroencéphalogramme continu n'était enregistré que dans 45 % des centres. Conclusion Les recommandations, bien qu'anciennes, restent d'actualité et pourraient être mises à jour. Elles ne sont pas toujours suivies par les équipes. La formation médicale continue doit être encouragée pour une meilleure connaissance de tous les facteurs interférant entre l'anesthésie et l'ECT.

Bellocq, A. S., Perbet, S., Colomb, S., et al. (2011). "[Survey on anaesthetic practices for electroconvulsivotherapy in French university hospitals]." Ann Fr Anesth Reanim **30**(10): 722-725.

OBJECTIVES: To evaluate the anaesthetic management of electroconvulsive therapy (ECT) in French university hospitals. STUDY DESIGN: National survey in university hospitals by mail. MATERIALS AND METHODS: An email was sent to heads of department of anaesthesiology in French university hospitals to identify a referent practitioner, which we then sent a computerized quiz. The questions were about the volume and organization of the activity, pre-, per- and post-anaesthetic management of patients undergoing ECT. RESULTS: Of the 33 sites performing ECT, 28 (85%) responded. The anaesthesia consultation was systematic at least 48 hours before the start of treatment but the preanaesthetic visit was performed in 32% of the centers. A routine electrocardiogram was performed in 89% of patients. In four centers (25%), neuromuscular blockade was not systematic. Propofol was the agent most widely used (82%) and etomidate and thiopental in 11% and 7% respectively. In two centers, practitioners did not report using oral protection. The psychiatrist was present in 71% of cases. The electroencephalogram was continuously recorded in 45% of the centers. CONCLUSION: The recommendations remain valid while old and may be updated. They are not always followed by the teams. Continuing medical education should be promoted to a better understanding of the factors interfering between anesthesia and ECT.

Benadhira, R. et Télès, A. (2001). "[Current status of electroconvulsive therapy in adult psychiatric care in France]." Encephale **27**(2): 129-136.

A survey into the practice of electroconvulsive therapy between November 1996 and November 1997 in all the French Psychiatric Public Hospital Services is set out here. Of the 815 questionnaires sent by mail, the authors mention that 48% replied. Among the 391 State Hospital Services which responded, 51% declared having practiced ECT during that period of time. A detailed analysis is supplied regarding the apparatus type, maintainance ECT, anaesthesic used, electrode-positioning, medical indication and side effects. The results are presented, then discussed one by one before being compared with those of a similar study made ten years ago. We can already point out to a significant decline in ECT from the 64% who affirmed having practiced it in 1986 to the 51% the authors found in their survey. This undeniable fact has however to be counterweighed against the marked increase in maintainance ECT (40% against 11% with $p < 0.001$) and the qualitative improvement of the practical application of that therapy if one has to judge from the modernisation of the apparatus as well as the move towards better security conditions. A tentative evaluation of the impact of the guidelines described in the French Government November 1996 circular is also made. Last but not least, the proper equipment for practising ECT seems to be sadly lacking in many of the Psychiatric Wards. This brings further to the fore the debate, so common in France, regarding the equal distribution of the availability of all medical care to each and every citizen wherever he may be living.

Berkovitch, L., Gauthier, C. et Gaillard, R. (2017). "Des techniques de neurostimulation à l'immuno-psychiatrie." Bulletin de l'Académie Nationale de Médecine **201**(4): 833-844.
http://www.sciencedirect.com/science/article/pii/S0001407919304650

RÉSUMÉ L'électroconvulsivothérapie est une thérapeutique psychiatrique découverte avant l'ère de la psychopharmacologie. Bien que son image ait longtemps été négative, cette thérapeutique est l'une des plus efficaces, tant en termes de rapidité d'action que de taux de réponse et de maintien de celle-ci. Elle fait l'objet de nombreux travaux de recherche, à l'origine de nouvelles techniques de neurostimulation ou neuromodulation plus sélectives. Parallèlement, les liens entre immunologie et psychiatrie ont été consacrés par une autre thérapie de choc, la malariathérapie. L'essor de l'immuno-psychiatrie conduit à de nouvelles hypothèses physiopathologiques et de nouvelles pistes thérapeutiques plus sélectives pour les maladies mentales.

Bozdog, B. et Université de Franche-Comté. Besançon, F. R. A. (2011). Efficacité de l'électroconvulsivothérapie dans les états dépressifs majeurs : étude clinique rétrospective au CHU Besançon entre 2000 et 2010. Besançon : Université de France Comté.

Capdevielle, D., Ritchie, K., Villebrun, D., et al. (2009). "Durées d'hospitalisation des patients souffrant de schizophrénie : facteurs cliniques de variations et leurs conséquences." L'Encéphale **35**(1): 90-96.
http://www.sciencedirect.com/science/article/pii/S0013700608002091

Résumé Au cours des dernières années, la plupart des pays industrialisés ont mis en place, pour les patients souffrant de schizophrénie, des programmes de désinstitutionalisation s'accompagnant d'une baisse importante du nombre de lits en intrahospitalier, les soins s'orientant vers des prises en charge en extrahospitalier. Mais cette réduction des durées d'hospitalisation a de nombreuses répercussions qui sont encore mal connues. Les hospitalisations au cours d'une année seraient plus nombreuses mais la question qui est de savoir si le nombre total de jour d'hospitalisation sur une année a été modifié reste non résolue. Par ailleurs, de nombreux facteurs liés aux patients et aux traitements sont impliqués dans les variations de la durée de séjour. Ces facteurs sont actuellement peu pris en compte dans les prises en charge des patients. Enfin, les répercussions de ces diminutions des durées de séjours sont encore discutées. La plupart des auteurs vont dans le sens d'une amélioration de la qualité de vie avec une meilleure réinsertion socioprofessionnelle mais soulignent l'importance d'être vigilant sur le risque suicidaire et la nécessité d'un accompagnement soutenu en extrahospitalier.

Carretier, E., Blanchet, C., Moro, M. R., et al. (2020). "Scoping review des stratégies de prise en charge du trouble dépressif caractérisé comorbide d'une anorexie mentale à l'adolescence." L'Encéphale.
http://www.sciencedirect.com/science/article/pii/S0013700620301615

Résumé Introduction L'anorexie mentale est associée à de fréquentes comorbidités psychiatriques et représente la pathologie psychiatrique ayant le plus fort taux de létalité suicidaire. Le trouble dépressif caractérisé sévère et la mélancolie sont des présentations particulières dans l'anorexie mentale pouvant engager le pronostic vital devant le risque de suicide élevé, d'aphagie, voire de syndrome de refus global. L'objectif est de réaliser une revue des études explorant les stratégies de prise en charge du trouble dépressif caractérisé sévère à la phase aiguë d'une anorexie mentale chez l'adolescent. Méthode Nous avons réalisé une scoping review à partir des moteurs de recherche Pubmed et Web of Science. Il s'agit d'une recherche systématique des articles portant sur les traitements du trouble dépressif sévère intriqués à une anorexie mentale à l'adolescence, publiés entre 2005–2019. Résultats Huit articles ont été inclus. Concernant les traitements psychiatriques, quatre recherches concernaient la prescription d'antidépresseurs, un case report décrivait un traitement par électroconvulsivothérapie et une étude concernait l'intérêt de la luminothérapie. Deux études évaluaient l'intérêt de la renutrition, mais ne retrouvaient pas d'association directe significative entre le gain pondéral et l'amélioration des symptômes dépressifs. Discussion Il existe un impératif à identifier rapidement les dépressions sévères chez les adolescents souffrant d'anorexie mentale afin de proposer, conjointement à la renutrition, un traitement plus intensif des symptômes dépressifs. Nous recommandons une action thérapeutique multidisciplinaire et coordonnée dès le début de la prise en charge. Les approches interdisciplinaires et transdisciplinaires proposent des perspectives intéressantes à développer.

Charpeaud, T., Genty, J. B., Destouches, S., et al. (2017). "Prise en charge des troubles dépressifs résistants : recommandations françaises formalisées par des experts de l'AFPBN et de la fondation FondaMental." L'Encéphale **43**(4, Supplement): S1-S24.
http://www.sciencedirect.com/science/article/pii/S0013700617301550

Résumé Les recommandations formalisées par des experts (RFE) reposent sur une méthodologie qui se veut pertinente et complémentaire aux recommandations standards basées sur les preuves. Elles visent à proposer des stratégies thérapeutiques appropriées à partir d'un large consensus d'experts, pour des situations cliniques dont le niveau de preuve scientifique est soit absent, soit insuffisant. Ces recommandations d'experts issues d'un partenariat entre l'Association française de psychiatrie biologique et de neuropsychopharmacologie (AFPBN) et la fondation FondaMental portent ici sur les troubles dépressifs résistants. Elles ont été élaborées à partir des réponses de 36 experts invités à compléter un large questionnaire comprenant 118 questions. Les questions ainsi posées aux experts ont permis de couvrir différents champs allant de l'évaluation de la résistance thérapeutique et des situations cliniques à haut risque de résistance, aux stratégies thérapeutiquesà privilégier, ordonnées

en fonction des lignes précédentes de traitements. Certaines populations/situationscliniques spécifiques incluant notamment les personnes âgées et la présence de comorbidités psychiatriques (troubles anxieux, trouble obsessionnel compulsif, trouble de stress posttraumatique, troubles de la personnalité et addictions) ont également fait l'objet de questions spécifiques. Ces recommandations d'experts seveulent didactiques, afin de faciliter et guider au mieux la décision thérapeutique du clinicien confronté à la problématique des troubles dépressifs résistants et de leur prise en charge dans sa pratique quotidienne.

Comme des fous (2019). Electrochocs, consentement et désinformation. https://commedesfous.com/electrochocs-consentement-et-desinformation/

David, S., Emmanuel, P. et Marc, A. (2012). L'électroconvulsivothérapie. De l'historique à la pratique clinique : principes et applications, Solal

Début 2011, le club rTMS et psychiatrie a intégré l'Association Française de Psychiatrie Biologique et Neuropsychopharmacologie (AFPBN). C'est désormais sous la dénomination de Stimulation Transcrânienne En Psychiatrie (STEP) que notre dynamique se poursuit dans des projets éditoriaux, des formations pratiques et des collaborations scientifiques internationales. Parce que le champ des thérapeutiques biologiques non médicamenteuses comprend plusieurs techniques différentes qui se rapprochent en de nombreux points, la section STEP de L'AFPBN élargit dorénavant ses centres d'intérêt à l'ensemble des techniques de stimulations cérébrales transcrâniennes utilisées en psychiatrie : repetitive Transcranial Magnetic Stimulation (rTMS), Electroconvulsivothérapie (ECT), transcanial Direct Current Stimulation (tDCS) et Magnetic Seizure Therapy (MST). Dans cette dynamique, nous avons choisi de consacrer ce second ouvrage au thème de l'électroconvulsivothérapie après celui qui avait fait une synthèse des connaissances sur la rTMS en Psychiatrie (Editions Solal, 2009). En effet, depuis les recommandations pour la pratique de l'ECT de l'HAS, peu de mises à jour des connaissances en langue française ont été publiées dans ce domaine alors que, pour reprendre l'aphorisme du Professeur Henri Loo, cette 'vieille thérapeutique du futur' demeure en pleine évolution. Cet ouvrage est composé de quatre parties : 'De la naissance de l'ECT à la situation actuelle', traite de l'historique de la technique, de son utilisation à travers le monde et des aspects éthiques et réglementaires. La deuxième partie, 'Effets de l'ECT : de la cellule à l'homme', aborde sous différents aspects les connaissances actuelles sur les mécanismes d'action supposés de la technique. 'Place actuelle des ECT dans les pathologies psychiatriques et la stratégie de soins' offre aux lecteurs une revue exhaustive de l'efficacité de la technique dans les situations habituelles et dans les indications spécifiques. Enfin, la quatrième partie 'La technique ECT' apporte une synthèse des bonnes pratiques cliniques de l'ECT pour les acteurs pluriprofessionnels intervenant dans la prise en charge des patients bénéficiant de cette thérapeutique. Nous avons souhaité concevoir un ouvrage complet et pratique, destiné à un public large : les médecins psychiatres et internes en psychiatrie soucieux de s'informer sur les avancées les plus récentes dans ce champ de la discipline, les praticiens de l'ECT (médecins psychiatres et anesthésistes, internes en psychiatrie, infirmières et aides-soignant) à la recherche d'un ouvrage de référence en langue française, mais également aux chercheurs en neurosciences. [résumé d'éditeur]

Dhote, J., Kipman, A. et Gasnier, M. (2020). "Catatonie maligne compliquant une démence à corps de Lewy traitée par électro-convulsivo-thérapie : à propos d'un cas." L'Encéphale **46**(2): 155-157. http://www.sciencedirect.com/science/article/pii/S0013700619302726

Résumé La catatonie maligne est un syndrome potentiellement fatal, le plus souvent associé aux troubles de l'humeur ou à la schizophrénie mais pouvant également se développer dans les troubles autistiques, les démences, ainsi que dans des affections médicales générales. Nous présentons le cas d'un patient de 72 ans hospitalisé pour un épisode dépressif majeur caractérisé ayant présenté dans notre service un épisode de catatonie maligne ayant nécessité une prise en charge en unité de soins intensifs. Le syndrome catatonique a été rapidement résolutif après mise en place d'une cure d'électro-convulsivo-thérapie (ECT) permettant la mise à distance du risque vital et la disparition des symptômes dépressifs. Des examens complémentaires ont permis de diagnostiquer dans un second temps une Démence à Corps de Lewy ayant probablement favorisé, dans le contexte de la prescription

d'halopéridol, l'apparition de la catatonie. Ce cas clinique illustre la nécessité d'un dépistage précoce des troubles neurodégénératifs chez les patients hospitalisés en psychiatrie, et l'importance d'une prise en charge rapide des symptômes catatoniques, notamment par ECT. Malignant catatonia is a life-threatening syndrome, associated mostly with psychiatric diseases but also with neurological and neurodegenerative syndromes. We report the case of a 72-year-old patient, hospitalized for a major depressive episode with delusional symptoms, who presented a malignant catatonia. The patient had been transferred to an intensive care unit and treated with electroconvulsive therapy (ECT) leading to a rapid disappearance of the catatonic syndrome associated with a remission of the depressive symptoms. Complementary investigations helped us to secondarily diagnose a Lewy Body Dementia, which probably caused, associated with a treatment by haloperidol, the onset of catatonia. This case illustrates the need of an early diagnosis of neurodegenerative diseases in psychiatric outpatients and the importance of a quick management of catatonia, including ECT.

Dolhem, R. (2008). "Histoire de l'électrostimulation en médecine et en rééducation." Annales de Réadaptation et de Médecine Physique **51**(6): 427-431.
http://www.sciencedirect.com/science/article/pii/S0168605408000779

Résumé Dans l'Antiquité, les poissons torpilles sont déjà utilisés pour leurs propriétés électriques à des fins thérapeutiques (céphalées, goutte). Au xviiie siècle, l'usage de la bouteille de Leyde (Musschenbroek, 1746) et des machines électrostatiques permettent à quelques praticiens de traiter des névralgies, contractures, paralysies… L. Galvani (1737–1798) et A. Volta (1745–1827), décrivant pour l'un l'électricité animale et pour l'autre l'électricité bimétallique et la pile voltaïque, suscitent un renouveau pour les vertus curatives du galvanisme. Au milieu du xixe siècle, Duchenne de Boulogne (1806–1875) perfectionne la technique électrothérapique au moyen d'appareils volta et magnéto-faradiques. Durant la première moitié du xxe siècle, les recherches en électro-neurophysiologie (chronaxie, rhéobase) vont de pair avec celles des électro-radiologistes tels A. d'Arsonval (1851–1940) et ses courants de haute fréquence. À partir des années 1960, les progrès de l'électronique couplés au traitement informatique et la miniaturisation des dispositifs médicaux ouvrent la voie à l'électrostimulation dans ses diverses applications en médecine physique et de réadaptation.

Edel, Y. et Caroli, F. (1987). "Histoire de l'électrochoc : des traitements électriques à la convulsivothérapie en psychiatrie." Bulletin d'histoire de l'électricité.(9): 87-114.
https://www.persee.fr/doc/helec_0758-7171_1987_num_9_1_1012

Fablet-Vergnaux, H., Loirat, J. C. et Vanelle, J. M. (2003). "La place de l'électroconvulsivothérapie dans le traitement des schizophrènes." Annales Médico-psychologiques, revue psychiatrique **161**(8): 603-608.
http://www.sciencedirect.com/science/article/pii/S0003448703001653

Résumé À l'ère des neuroleptiques atypiques, soixante ans après sa découverte, l'électroconvulsivothérapie (ECT) demeure un traitement d'actualité dont les conditions pratiques de réalisation se sont améliorées et les indications affinées. Son efficacité dans le traitement des patients schizophrènes a été l'objet de nombreuses études, souvent anciennes, de méthodologie hétérogène, rendant les données et les résultats difficilement comparables. Il existe, néanmoins, un consensus pour recourir à l'ECT chez les schizophrènes lors des exacerbations délirantes, dans la catatonie, les états schizo-affectifs et en cas de résistance. C'est, le plus souvent, un traitement de seconde intention, après essai d'une ou plusieurs séquences de neuroleptiques, bien conduites. Dans tous les cas, il est fortement conseillé durant la cure d'ECT de maintenir une couverture neuroleptique, avec une molécule conventionnelle ou atypique. Deux modalités thérapeutiques d'ECT sont réalisées : l'ECT curative et l'ECT de maintenance ou d'entretien, comme l'illustre notre pratique au CHU de Nantes.

Fossati, P. (2005). "Électroconvulsivothérapie, utilité dans la dépression sévère du sujet de plus de 65 ans." La Presse Médicale **34**(6): 467-472.
http://www.sciencedirect.com/science/article/pii/S0755498205839478

Fournier, E. (2004). Electrochocs. In : Disctionnaire de la pensée médicale. Paris : Presses universitaires de France

Franchi, J. A. M., Quiles, C., Belzeaux, R., et al. (2015). "Symptômes négatifs de la schizophrénie : de l'électrophysiologie à l'électrothérapie." L'Encéphale **41**(6, Supplement 1): 6S50-56S56. http://www.sciencedirect.com/science/article/pii/S0013700616300112

Résumé Les symptômes négatifs de la schizophrénie constituent la dimension clinique de ce trouble la plus difficile à traiter par les thérapeutiques classiques, qu'elles soient pharmacologiques ou de type remédiation cognitive. Les symptômes négatifs sont reliés à un hypométabolisme des régions préfrontales du cortex. Cet hypométabolisme est associé en électrophysiologie à une modification de la puissance spectrale électroencéphalographique dans la bande alpha en regard des régions préfrontales. La compréhension neurophysiologique des symptômes négatifs a permis d'envisager de nouvelles thérapeutiques : les approches d'électrothérapie permettant une neuromodulation des régions cérébrales impliquées. La stimulation magnétique transcrânienne répétée (rTMS) et la stimulation transcrânienne à courant direct (tDCS) ont été utilisées pour augmenter l'activité corticale au niveau du cortex préfrontal dans la schizophrénie et obtenir une efficacité clinique sur les symptômes négatifs. Trois méta-analyses viennent confirmer l'efficacité de la rTMS dans les symptômes négatifs avec une taille d'effet modérée. Les deux études multicentriques réalisées retrouvent cependant des résultats contradictoires. Deux études randomisées contrôlées sont en faveur d'une efficacité de la tDCS sur les symptômes négatifs. Des études supplémentaires sont nécessaires pour confirmer l'efficacité de la rTMS et de la tDCS sur les symptômes négatifs. Il s'agira d'évaluer les facteurs pronostiques liés à la clinique et aux paramètres de stimulation. Mais il s'agira aussi de tenir compte des paramètres électrophysiologiques du patient pendant la stimulation, en particulier dans la bande alpha. Ces paramètres peuvent influencer l'effet de celle-ci. Une meilleure compréhension des effets électrophysiologiques des techniques d'électrothérapie permettra ainsi de les optimiser.

Gaudeau, V., Royer, J. Y., Morin, S., et al. (2010). "Une structure originale en géronto-psychiatrie : l'exemple du CHS de Blain (Loire-Atlantique, France)." NPG Neurologie - Psychiatrie - Gériatrie **10**(60): 254-259. http://www.sciencedirect.com/science/article/pii/S1627483010000875

Résumé Après un rappel épidémiologique sur les pathologies psychiques du sujet âgé et leur évolution, en France et localement, la structure intersectorielle de géronto-psychiatrie de l'hôpital de Blain est présentée dans ses divers aspects : motifs principaux d'hospitalisation, architecture du bâtiment, composition pluriprofessionnelle de l'équipe, avec un développement sur l'importance d'une collaboration harmonieuse entre psychiatre et gériatre, l'offre de soins proposée (avec les différents types d'entretien), le travail avec la famille et le réseau de soins. Les difficultés d'une telle structure sont abordées, notamment en regard de son caractère intersectoriel, et du fait qu'il s'agit d'une structure d'admission (gestion des places). Les projets de l'unité (espace de luminothérapie) concluent l'article.

Grinsztajn, M. (2019). Chocs. Paris : Grasset

Hanane, Z., Sentissi, O., Olie, J. P., et al. (2013). "Intérêt de l'électroconvulsivothérapie de maintenance dans les troubles de l'humeur." L'Encéphale **39**(5): 367-373.

L'électroconvulsivothérapie de maintenance (ECT-M) peut être indiquée chez les patients atteints de trouble dépressif majeur dans le cadre de trouble bipolaire ou de trouble schizoaffectif traités avec succès par une cure d'ECT, et qui résistent aux traitements de maintenance par psychotropes ou qui ne les tolèrent pas. Nous avons évalué dans le cadre d'une étude rétrospective la réponse aux ECT-M chez 25 patients avec un diagnostic de troubles dépressifs de l'humeur ou de troubles schizoaffectifs selon les critères du DSM IV-TR et qui ont bénéficié d'un traitement par ECT-M pendant une durée d'au moins six mois. L'évaluation de l'efficacité thérapeutique des ECT-M s'est basée sur l'évolution des scores de la Brief Psychiatric Rating Scale (BPRS) et de la Global Assessment of Functionning (GAF) avant et après ECT-M, ainsi que du nombre de jours d'hospitalisation 12 mois avant la cure et sur une durée médiane d'ECT-M de 13 mois. Nous avons évalué les symptômes cognitifs par les scores de Mini Mental Score Examination (MMSE) réalisés au cours de l'épisode aigu et après la dernière séance

d'ECT-M. Notre étude a mis en évidence une amélioration significative des scores de la GAF après au moins six mois d'ECT-M (34,8+12,6 vs 65,6+10,8 ; p<0,05) de même que les symptômes psychiatriques (BPRS : 79,3+12,4 vs 43,4+10,2 ; p<0,05). Nous observons une légère augmentation du score moyen du MMSE après ECT-M, mais celle-ci demeure statistiquement non significative (moyenne : 24,2+2,4 vs 26,2+2,4 ; p=0,2). Concernant la durée moyenne d'hospitalisation, les résultats obtenus montrent une diminution statistiquement significative du nombre médian de jours d'hospitalisation (72 [59-93,50] jours avant ECT-M vs 43 [25-76] jours depuis la première ECT-M, p=0,017). L'ECT-M a permis une amélioration significative des symptômes psychiatriques et du fonctionnement global de nos patients avec une diminution du nombre de jours d'hospitalisation. Cependant, notre échantillon reste de petite taille et des études prospectives avec un nombre plus important de patients et l'évaluation du traitement par ECT-M seul comparé à un traitement associant ECT-M-chimiothérapie seraient intéressantes.[résumé d'éditeur]

Heim, A. (2019). La découverte de l'électroconvulsivothérapie, sa technique, ses indications et son image au travers de son histoire.
https://ihmcs.fr/La-decouverte-de-l.html

Holtzmann, J., Polosan, M., Baro, P., et al. (2007). "ECT : de la neuroplasticité aux mécanismes d'action." L'Encéphale **33**(4, Part 1): 572-578.
http://www.sciencedirect.com/science/article/pii/S0013700607920552

Résumé L'ECT reste l'un des traitements les plus efficaces pour soigner la dépression. Bien qu'elle soit utilisée depuis plus de 60 ans, les mécanismes d'action sous-tendant son effet antidépresseur sont toujours mal connus. Pour certains antidépresseurs médicamenteux, l'hypothèse de la participation de phénomènes de neuroplasticité comme la neurogenèse a été posée comme moyen d'action. Qu'en est-il pour l'ECT ? Différentes études en spectroscopie par résonance magnétique nucléaire chez l'homme et le rat ont permis de montrer qu'il existe au cours du traitement par ECT des changements métaboliques qui sont en faveur de la participation de phénomènes neuroplastiques : augmentation du N-acétyl-aspartate (marqueur neuronal), et de la choline (marqueur du turn-over membranaire). L'ECT augmente également la neurogenèse particulièrement dans le gyrus dentelé de l'hippocampe chez l'animal, et ce de façon renforcée dans des modèles de dépression. D'autre part, l'ECT augmente l'expression de BDNF, un facteur de croissance neuronal. L'étude comparée de l'induction par différents antidépresseurs de la synthèse des différents ARNm de BDNF permet de penser que l'ECT induit cette augmentation par des voies de signalisation intracellulaires différentes de celles des morts cellulaires excitotoxiques ou des autres traitements antidépresseurs. Il existe donc bien des phénomènes de neuroplasticité au cours de l'ECT, en lien avec son effet antidépresseur. Mais leur fonction dans cet effet reste encore à déterminer.

Jaafari, N., Sharov, I., Lafay, N., et al. (2008). "L'ECT peut-elle être utilisée chez les patients souffrant d'une démence avec dépression ? Au sujet de trois cas suivis sur un an." NPG Neurologie - Psychiatrie - Gériatrie **8**(44): 42-48.
http://www.sciencedirect.com/science/article/pii/S162748300800010X

Résumé La dépression chez le sujet âgé est très fréquente, responsable d'un taux de suicide élevé. Elle peut être associée soit avec des troubles cognitifs transitoires et réversibles, soit avec une démence, responsable alors de troubles du comportement et agitation. Le traitement dit « d'épreuve » par les antidépresseurs peut être inefficace dans 30 à 40 % des cas à cause des formes pharmacorésistantes. Nous rapportons trois cas de dépression pharmacorésistante chez des personnes âgées souffrant d'une démence, bien améliorés par l'électroconvulsivothérapie.

Lavaud, P., Mauras, T. et Cléry-Melin, P. (2014). "Établissements de soins privés en psychiatrie, entre innovations et contrainte." Annales Médico-psychologiques, revue psychiatrique **172**(9): 756-760.
http://www.sciencedirect.com/science/article/pii/S0003448714003059

Résumé Les établissements de soins privés en psychiatrie restent en France des acteurs de soins méconnus. Pour autant, le service rendu n'est pas négligeable et participe à la réponse d'une

demande de soins toujours croissante. De plus, soumis plus tôt que les établissements publics à des normes d'accréditation et par nature à un contrôle des dépenses, ils représentent des zones expérimentales pour l'ensemble des établissements de santé. La décentralisation croissante de la santé, notamment par la création des Agences Régionales de Santé, oblige à repenser l'organisation autour du parcours de soin qui vient basculer les anciennes organisations. De nouveaux partenariats émergent dans lesquels les établissements privés représentent des acteurs de première ligne. Loin de l'image de paisibles maisons de santé, ces structures font pour certaines le pari de l'innovation tout en jouant le jeu de la collaboration avec le public, les rendant attractifs au plus grand nombre.

Le Bihan, P., Esfandi, D., Pagès, C., et al. (2009). "Les unités de soins intensifs psychiatriques (USIP) : expériences françaises et internationales." Médecine & Droit **2009**(98): 138-145.
http://www.sciencedirect.com/science/article/pii/S1246739109000992

Résumé Les Unités de Soins Intensifs Psychiatriques (USIP) proposent un cadre contenant pour des patients présentant des troubles majeurs du comportement ne pouvant être pris en charge dans des conditions satisfaisantes dans les services de psychiatrie générale. La provenance des patients est intersectorielle, correspondant à une aire géographique, un territoire de santé ou dépendant d'une convention entre établissements hospitaliers. La durée de séjour devrait être limitée dans le temps, n'excédant pas deux mois. La présence médicale et soignante est importante et la continuité des soins avec le service d'origine essentielle. Des unités existent notamment à Cadillac, Lyon, Paris, Nice, Eygurande, Montpellier, Pau et Prémontré. Elles apparaissent comme un chaînon manquant dans le dispositif actuel de soins, structures intermédiaires entre services de psychiatrie générale adulte et Unités pour Malades Difficiles (UMD). La création d'une association, l'existence de recommandations et les expériences internationales sont rapportées.

Le Bihan, P., Pagès, C., Naudet, J. B., et al. (2009). "Place des unités de soins intensifs psychiatriques (USIP) dans le dispositif de soins." Annales Médico-psychologiques, revue psychiatrique **167**(2): 143-147.
http://www.sciencedirect.com/science/article/pii/S0003448709000146

Résumé Les unités de soins intensifs psychiatriques (USIP) sont de création récente dans notre pays. Ces unités de soins sécurisées proposent un cadre contenant pour des patients présentant des troubles majeurs du comportement ne pouvant être pris en charge de façon satisfaisante dans les services de psychiatrie générale. La provenance des patients est intersectorielle, correspondant à un territoire de santé ou par convention entre les établissements de soins. La durée de séjour ne devrait pas excéder deux mois. La densité médicale et paramédicale doit être suffisante, avec une continuité des soins avec le service d'origine par des réunions. Des unités existent à Cadillac, Lyon, Paris, Montpellier, Nice, Pau, Prémontré et Eygurande. Elles sont un chaînon manquant dans le dispositif de soins, intermédiaire entre les services de psychiatrie générale et les unités pour malades difficiles. La création d'une association, les expériences à l'étranger et l'existence de recommandations sont soulignées.

Lefaucheur, J. P., André-Obadia, N., Poulet, E., et al. (2011). "Recommandations françaises sur l'utilisation de la stimulation magnétique transcrânienne répétitive (rTMS) : règles de sécurité et indications thérapeutiques." Neurophysiologie Clinique/Clinical Neurophysiology **41**(5): 221-295.
http://www.sciencedirect.com/science/article/pii/S0987705311001456

Résumé Au cours de la dernière décennie, un très grand nombre de travaux de stimulation magnétique transcrânienne (ou transcranial magnetic stimulation, TMS) ont été effectués, comprenant notamment l'élaboration de nouveaux paradigmes de stimulation, l'intégration des données d'imagerie et le couplage de techniques de TMS et d'EEG ou de neuroimagerie. Aussi, devant l'accumulation de ces données difficiles à synthétiser, plusieurs sociétés savantes francophones ont mandaté un groupe d'experts français afin de réaliser une analyse exhaustive de la littérature concernant la TMS. Ce texte de consensus reprend l'ensemble des conclusions de ce groupe d'experts sur les mécanismes d'action, les règles de sécurité et les indications thérapeutiques de la TMS, notamment répétitive (rTMS). Des séances de TMS ont été réalisées chez des milliers de sujets sains ou des patients souffrant de diverses maladies neurologiques ou psychiatriques, permettant une

meilleure évaluation des risques relatifs liés à cette technique. Le nombre d'effets secondaires rapportés est extrêmement faible, la complication la plus sérieuse étant la survenue de crises d'épilepsie. Dans la plupart des crises rapportées, les paramètres de stimulation ne suivaient pas les recommandations précédemment publiées (Wassermann, 1998) [430] et souvent il existait un traitement médicamenteux qui pouvait abaisser le seuil épileptogène. Les recommandations sur la sécurité d'utilisation de la TMS/rTMS ont été récemment actualisées (Rossi et al., 2009) [348], fixant les contre-indications et établissant de nouvelles limites concernant les différents paramètres de stimulation. Concernant les règles de sécurité, les recommandations que nous proposons pour un public francophone sont donc en grande partie fondées sur ce précédent article avec quelques adaptations. La question des indications thérapeutiques de la rTMS n'avait jamais fait en revanche l'objet d'un travail de synthèse. Nous avons abordé les pathologies suivantes : douleurs chroniques, mouvements anormaux, accidents vasculaires cérébraux, épilepsie, acouphènes et pathologies psychiatriques. Il y a déjà pour certaines d'entre elles (douleurs neuropathiques chroniques, épisodes dépressifs majeurs, hallucinations auditives), un niveau de preuves suffisant des études publiées, pour retenir une indication thérapeutique de la rTMS en pratique clinique. Ces indications devraient encore se développer dans les prochaines années et les paramètres de stimulation optimaux à utiliser en fonction de ces indications devraient également se préciser.

Lévy-Rueff, M., Jurgens, A., Lôo, H., et al. (2008). "Place de l'électroconvulsivothérapie de maintenance dans le traitement des schizophrénies résistantes." L'Encéphale **34**(5): 526-533.
http://www.sciencedirect.com/science/article/pii/S0013700607001145

Résumé L'efficacité de l'électroconvulsivothérapie (ECT) chez les sujets schizophrènes a été établie sur les symptômes hallucinatoires, excitatoires et catatoniques mais peu de données existent sur l'effet à long terme des cures de maintenance (ECT-M). Nous avons étudié rétrospectivement, dans une population de 19patients, les indications des ECT-M, leur efficacité sur la symptomatologie et sur la qualité de vie, les conditions de rechutes et les traitements médicamenteux associés. Ces cures sont indiquées lors d'accélération des épisodes aigus en fréquence et en intensité, de résistance, d'inefficacité ou de mauvaise tolérance des traitements médicamenteux, de rechute à l'arrêt des ECT. Tous les patients avaient répondu antérieurement aux ECT en aigu et ont reçu en moyenne 47ECT-M. Tous étaient sous traitement antipsychotique, 30 % recevaient des thymorégulateurs, 10 % des antidépresseurs. Sous ECT-M, on observe une amélioration nette des symptômes thymiques, anxieux, des troubles du comportement alimentaire et un enkystement ou une disparition du délire ainsi qu'une efficacité sur le risque suicidaire. En revanche, l'ECT-M est peu efficace sur la dissociation et les symptômes négatifs. Le temps moyen annuel d'hospitalisation et le temps moyen par hospitalisation ont diminué parallèlement à une amélioration de la qualité de vie. L'ECT-M en adjonction aux antipsychotiques représente donc une réelle opportunité thérapeutique pour les schizophrénies résistantes et il apparaît nécessaire d'en définir plus précisément les modalités et les indications.

Michel, A. et Younès, N. (2019). "Les obstacles à la mise en place d'un traitement par électro-convulsivothérapie en psychiatrie. Une enquête qualitative." L'information psychiatrique **95**(6): 425-430.
https://www.cairn.info/revue-l-information-psychiatrique-2019-6-page-425.htm

Objectifs de l'étude : Déterminer les obstacles en psychiatrie à une cure d'électro-convulsivothérapie (ECT), qui semble être un traitement sous-utilisé en dépit de son efficacité. Matériel et méthode : Ce travail est issu d'une recherche qualitative par observations non participantes et par entretiens semi directifs menés auprès de professionnels. Résultats : Les obstacles provenaient du type d'hospitalisation que nécessite une cure d'ECT, de la peur des séances par les patients et des effets indésirables cognitifs. Les équipes en psychiatrie les contournaient, avant et pendant la cure, en utilisant leur forte conviction dans son efficacité et en convainquant les patients avec plus ou moins de contrainte à donner et maintenir leur accord. Conclusion : Malgré des preuves scientifiques de son efficacité, les équipes en psychiatrie doivent contourner les obstacles de l'ECT qui reste un traitement à part en psychiatrie.

Micoulaud-Franchi, J. A., Quilès, C., Cermolacce, M., et al. (2016). "Électroconvulsivothérapie et niveau de preuve : de la causalité à la relation dose-effet." L'Encéphale **42**(6, Supplement): S51-S59.
http://www.sciencedirect.com/science/article/pii/S0013700617300556

RÉSUMÉ Objectifs Cet article se donne pour objectifs, premièrement de rappeler l'histoire de l'électroconvulsivothérapie (ECT) en psychiatrie et le passage dans ce contexte d'un niveau de preuve clinique fondé sur les descriptions phénoménologiques à la construction d'études contrôlées permettant d'établir un lien de causalité, et deuxièmement d'analyser les conditions d'application de la relation dose-effet en ECT, critère clef de la causalité. Méthodes Une revue de la littérature explorant l'utilisation de l'électricité, de l'ECT et de l'électroencéphalographie (EEG) en psychiatrie a été réalisée. Les publications ont été recensées à partir de la base de données électroniques Pubmed et GoogleScholar. Résultats Le rapport de 1784 rédigé par la commission Royale établit par le Roi Louis XVI pour évaluer les pratiques de Mesmer concernant le magnétisme animal a joué un rôle central dans l'établissement des critères nécessaires pour évaluer le niveau de preuve des thérapeutiques électriques en psychiatrie. Depuis, des études randomisées contrôlées en aveugle ont confirmé l'efficacité des ECT contre des ECT placebos pour la prise en charge des troubles psychiatriques. Une relation dose-effet peut être mise en évidence par l'intermédiaire d'une évaluation de la qualité EEG des crises induites par ECT. Conclusions Des outils de quantification de la qualité EEG des crises sont nécessaires. Une échelle est proposée dans cet article. Des futures études devront être menées pour la valider, mieux établir la relation dose-effet des ECT, et ainsi renforcer la place de l'EEG comme élément central pour la réalisation d'ECT de qualité.

Millet, B. (2009). "[Electrostimulation techniques in treatment for severe depression]." Encephale **35 Suppl 7**: S325-329.

Electroconvulsivotherapy represents a key indication for severe Major Depressive Episode (MDE). However, an hospitalization with a general anaesthesia allowing a seizure induction followed by an almost systematic post-epileptic delirium justifies the development of other brain electrostimulation techniques. Trans-cranial Magnetic Stimulation (TMS) is a technique which offers to transform an electromagnetic field within the brain in an electric one. This therapeutic has been approved in 2008 in the MDE indication by the Food and Drug Administration. However a better knowledge of brain stimulation parameters such as the number of sequences, intensity, frequency, and the brain target, is necessary. Indeed it could enable to get some more homogeneous clinical results which will drive to the use of this technique in daily practice. Neurosurgical procedures represent also a stake for a better treatment of severe chronic and resistant depression. Whereas Vagus Nerve Stimulation (DBS) failed to be developed in France, Deep Brain Stimulation (DBS) is currently under development in this indication with some promising preliminary results.

Mouchet-Mages, S. (2007). "Électroconvulsivothérapie et schizophrénie." L'Encéphale **33**(3, Part 3): S415-S418. http://www.sciencedirect.com/science/article/pii/S0013700607745931

Olano, M. (2016). Panorama des thérapies actuelles. Auxerre, Éditions Sciences Humaines. **283:** 23-23. https://www.cairn.info/magazine-sciences-humaines-2016-7-page-23.htm

Petit, L. M. (2017). Les représentations sociales de l'électroconvulsivothérapue : analyse historique, filmographique et médiatique du traitement.

Plaze, M. et Krebs, M. O. (2013). "[From shock therapies to new neuromodulation techniques]." Soins Psychiatr(286): 30-33.

The first shock therapies date back to 1933 with the Sakel therapy. Electric induction experiments led to electroconvulsive therapy first used by Ugo Cerletti and Lucio Bini in 1938. Today, transcranial magnetic stimulation offers new therapeutic perspectives for the treatment of mental disorders. Similarly, deep brain stimulation techniques have been developed for the treatment of compulsive obsessive disorders and severe and treatment-resistant depression.

Quentin, S., Voyer, M., Daniel, M. L., et al. (2010). "Intérêt de l'électroconvulsivothérapie (ECT) chez les sujets âgés souffrant d'une pathologie démentielle : une revue de la littérature." NPG Neurologie - Psychiatrie - Gériatrie **10**(59): 204-214.

http://www.sciencedirect.com/science/article/pii/S1627483010000590

Résumé Cette revue traite de la pratique de l'électroconvulsivothérapie (ECT) chez les sujets âgés souffrant de pathologie démentielle. L'ECT est un traitement sûr et efficace chez le sujet âgé dément avec épisode dépressif majeur et/ou trouble du comportement. Elle s'avère plus efficace et sûre que la pharmacothérapie. Les effets indésirables somatiques ne sont pas plus nombreux que chez les sujets adultes jeunes et les troubles cognitifs ne sont pas aggravés. Ces résultats restent cependant à confirmer par des études contrôlées et randomisées dans cette population de patients jusqu'à ce jour inexistantes. Summary This article is a review of literature on ECT practice in the elderly suffering from dementia. ECT is a safe and effective treatment in elderly demented with major depression and/or behavioral disorder. It is more effective and safer than drug therapy. Somatic side effects are not more numerous than in young adult subjects and cognitive disorders are not worsened. These results are yet to be confirmed by randomized controlled trials in this patient population.

Quiles, C., Dewitte, A., Thomas, P., et al. (2020). "[Electroconvulsive therapy in combination with psychotropic and non-psychotropic pharmacological treatments: Review of the literature and practical recommendations]." Encephale **46**(4): 283-292.

CONTEXT: Electro-convulsive therapy (ECT) is the most effective treatment for treatment resistant mood disorders and catatonia. ECT also appears to be an effective treatment in combination with clozapine in the context of treatment resistant schizophrenia spectrum disorders. Although increasingly codified (guidelines on indications, contraindications, methods of implementation), the practice of ECT still lacks consensual protocols. The concomitant use of psychotropic and/or non-psychotropic medication is a common situation when ECT treatment is considered. To our knowledge, there is to date no summary of studies or case reports in France, nor any proposal for guidelines concerning the management of medication of the patient to whom ECT sessions are offered. Indeed, several particularities must be considered. This article proposes to specify for each pharmacological class the possible interaction between ECT and medication. A first section of this article will be devoted to non-psychotropic treatments, and a second section to psychotropic treatments. A practical summary table is also provided. METHOD: A review of the literature was conducted including all articles published prior to January 2019 referenced in Pub Med database, combining research with Medical Subject Headings "Electroconvulsive Therapy" and each following pharmacological class: "Cardiovascular Agents" "Bronchodilator Agents" "Bronchoconstrictor Agents" "Theophylline" "Anticoagulants" "Hypoglycemic Agents" "Insulin" "Potassium" "Benzodiazepines" "Valproic Acid" "Carbamazepine" "Lamotrigine" "Lithium" "Antidepressive Agents" "Antipsychotic Agents". RESULTS: After reading the titles, abstracts and whole articles, then searching for additional articles in the references, 50 articles were selected. A summary table summarizing the main risks and proposing a course of action has been produced. DISCUSSION: It is essential to take into account the specificity and the different physiological mechanisms involved in the ECT treatment in order to adjust the associated pharmacological treatments. The prescription for each molecule should be reviewed when ECT treatment is initiated.

Richard, Levy, C. et Remblier (2008). "L'électroconvulsivothérapie aujourd'hui. Dossier." MONITEUR HOSPITALIER(203): 17-25.

L'électroconvulsivothérapie puise ses origines dans la pratique de chocs jadis destinés à traiter les maladies mentales. Découverte dans les années 1930, elle a connu depuis lors un développement significatif. Aujourd'hui codifiée par divers consensus, l'électroconvulsivothérapie est réalisée sous anesthésie générale et curarisation du patient. Elle n'expose plus aux incidents et accidents ayant pu, il y a un demi-siècle, en faire récuser l'usage par les psychiatres. Les indications de l'électroconvulsivothérapie englobent les psychoses et les dépressions résistantes aux traitements conventionnels, mais elle peut être indiquée en première ligne. Son index thérapeutique est favorable à sa mise en oeuvre y compris des patients vulnérables.

Roblin, J. (2015). "Les dépressions du sujet âgé : du diagnostic à la prise en charge." NPG Neurologie - Psychiatrie - Gériatrie **15**(88): 206-218.

http://www.sciencedirect.com/science/article/pii/S1627483014002013

Résumé La dépression est particulièrement fréquente chez le sujet âgé de 65 ans et plus. Pourtant, elle reste sous-diagnostiquée et insuffisamment traitée, avec un délai moyen allongé pour l'instauration d'un traitement. Le taux de rechute d'une dépression chez un sujet âgé et le risque de passage à la chronicité sont élevés. Les états dépressifs d'expression symptomatique atténuée, plus nombreux dans l'avancée en âge, évoluent dans une forte proportion vers une dépression majeure. De multiples facteurs, en particulier les affections somatiques, peuvent aussi modifier l'expression de la dépression du sujet âgé. Ces particularités peuvent mettre en difficulté le clinicien pour diagnostiquer un état dépressif. Pourtant, l'identification précoce de symptômes dépressifs est essentielle, tout comme le repérage des situations à risque de dépression, des facteurs de risque ou aggravant l'évolution. Cela justifie une sensibilisation particulière des praticiens amenés à prendre en charge la population âgée. La dépression gériatrique est associée à une surmortalité et à un risque suicidaire élevé, à une péjoration de la qualité de vie et est à l'origine d'une consommation importante de soins et de coûts croissants. La prise en charge d'un état dépressif gériatrique est multimodale et pluridisciplinaire. Les différentes approches de soins comprennent les soins somatiques, les traitements psychotropes, les techniques de stimulation cérébrale, la psychothérapie et les interventions médicosociales. Certaines situations ou cas complexes justifient une demande d'avis psychiatrique : sévérité de l'épisode, troubles cognitifs associés, polypathologie et risque iatrogénique important, chimiorésistance.

Samalin, L., Guillaume, S., Courtet, P., et al. (2015). "Recommandations Formalisées d'Experts de l'Association Française de Psychiatrie Biologique et Neuropsychopharmacologie sur le dépistage et prise en charge du trouble bipolaire : mise à jour 2014." L'Encéphale **41**(1): 93-102.
http://www.sciencedirect.com/science/article/pii/S0013700614002802

Résumé L'Association Française de Psychiatrie Biologique et Neuropsychopharmacologique (AFPBN), au travers de sa section de psychopharmacologie, a élaboré en 2010 des recommandations formalisées d'experts (RFE) sur le dépistage et la prise en charge du trouble bipolaire. L'évolution des possibilités thérapeutiques disponibles en France pour le traitement du trouble bipolaire a justifié la mise à jour de ces recommandations. Le but de ce travail était de fournir un document actualisé et ergonomique visant à favoriser son emploi par les cliniciens. Cette mise à jour porte sur 2 des 6 thématiques précédemment publiées (thérapeutiques à la phase aiguë et thérapeutique au long cours). Des aspects de la prise en charge des patients bipolaires suscitant le débat et les interrogations des cliniciens (utilisation des antidépresseurs, place de la bithérapie, intérêt des antipsychotiques d'action prolongée…) ont également été abordés. Enfin, nous avons proposé des recommandations gradées prenant en compte de manière spécifique la balance bénéfice-risque de chaque molécule.

Sauvaget, A., Cabelguen, C., Pichot, A., et al. (2020/02/05). "Pratique de l'ECT en France." Encéphale online.

L'électroconvulsivothérapie (ECT) est un traitement de référence pour des troubles psychiatriques sévères tels que les troubles de l'humeur avec des taux d'efficacité encore inégalés pour les dépression sévères ou résistantes et les troubles schizophréniques résistants principalement. Les recommandations officielles de l'ANAES concernant l'ECT ont maintenant plus de 20 ans (1997), et peu d'études ont tenté depuis de décrire ses modalités d'utilisation dans notre pays. La littérature scientifique portant sur l'ECT ne fait que croître et nombre de pays occidentaux ont entrepris ces dernières années de décrire l'évolution de la réalisation des ECT (nombre d'actes, optimisation des paramètres, les indications préférentielles, techniques d'anesthésie etc.). L'objectif de cette enquête nationale était de réaliser un état des lieux actualisé en France pouvant servir de base à une démarche d'amélioration des pratiques dans le temps et contribuer à la mise à jour des recommandations, à l'instar de l'initiative ECTAS au Royaume-Uni.

Sauvaget, A., Dumont, R., Bukowski, N., et al. (2020). "Recommandations pour une reprise progressive et contrôlée de l'électroconvulsivothérapie en France en période de levée du confinement et de pandémie COVID-19 liée au SARS-CoV-2." L'Encéphale **46**(3, Supplement): S119-S122.
http://www.sciencedirect.com/science/article/pii/S0013700620300932

Résumé La pandémie du COVID-19 a des conséquences majeures sur l'organisation des soins. En France et dans le monde, les centres pratiquant l'électroconvulsivothérapie (ECT) ont vu leur activité diminuer, voire s'arrêter, pour de diverses raisons. Dans ce contexte, le maintien ou la reprise de cette activité thérapeutique essentielle pour de nombreux patients souffrant de troubles psychiatriques nécessite des adaptations matérielles, humaines et logistiques qu'il convient d'encadrer. L'objectif de ce travail collectif et national est de proposer des recommandations simples et applicables immédiatement par tout établissement de santé, public ou privé, pratiquant les ECT. Elles sont issues d'un retour d'expériences pluriprofessionnelles et interétablissements. Déclinées en trois étapes, ces recommandations sont accompagnées d'une fiche pratique qui décrit, de façon précise, les conditions nécessaires et préalables à toute reprise d'activité ECT.

Sauvaget, A., Dumont, R., Bukowski, N., et al. (2020). "[Recommendations for a gradual and controlled resumption of electroconvulsive therapy in France during the period of lifting of the containment and of the COVID-19 pandemic linked to SARS-CoV-2]." Encephale **46**(3s): S119-s122.

The COVID-19 pandemic has had major consequences for the organization of care. In France and around the world, centers practicing electroconvulsive therapy (ECT) have seen their activity decrease, or even stop for many reasons. In this context, maintaining or resuming this essential therapeutic activity for many patients suffering from psychiatric disorders requires material, human and logistical adaptations that should be supervised. The objective of this collective and national work is to offer simple recommendations that can be applied immediately by any healthcare establishment, public or private, practicing ECT. They are the result of feedback from multiprofessional and inter-establishment experiences. Declined in three stages, these recommendations are accompanied by a practical sheet which describes in detail the necessary conditions and prerequisites for any resumption of ECT activity.

Thomas, C., Jean-Baptiste, G. et Pierre-Michel, L. (2016). "Usage de l'électroconvulsivothérapie en psychiatrie." EMC Psychiatrie **13-4**(37-860-E-10): 1-15.

L'électroconvulsivothérapie (ECT) est le plus ancien traitement encore couramment utilisé en psychiatrie. L'expérience clinique acquise au cours des 80 dernières années, associée aux données de la littérature, confirme l'excellent niveau d'efficacité et d'innocuité de la technique. Ses indications préférentielles sont représentées par les troubles de l'humeur avec, en premier lieu, l'épisode dépressif caractérisé, en cas de résistance aux chimiothérapies antidépressives. Cependant, en cas de sévérité importante des symptômes, ou d'engagement du pronostic vital, l'ECT peut se positionner à un stade plus précoce, y compris en première intention. Les autres indications psychiatriques sont encore à ce jour plus confidentielles, même si quelques données pourraient conférer un nouvel intérêt à l'ECT, dans les formes de schizophrénies résistantes à la clozapine. La tolérance de l'ECT moderne est très favorable, grâce notamment aux progrès dans le domaine de l'anesthésiologie. L'effet indésirable le plus important est celui des troubles cognitifs, touchant principalement la mémoire rétrograde et autobiographique, mais pas uniquement ; avec cependant plusieurs données en faveur du caractère transitoire de ces troubles induits par l'ECT. Les mécanismes d'action, bien que de mieux en mieux cernés, restent encore partiellement connus. L'effet anticonvulsivant de l'ECT et son action neurotrophique démontrée sont sans doute des hypothèses explicatives du mécanisme d'action de l'ECT au travers des théories étiopathogéniques impliquant des processus neuro-immuno-endocriniens, qui sont actuellement largement développées en psychiatrie. La procédure d'ECT, enfin, répond à un cahier des charges bien codifié, permettant une utilisation sécurisée par des équipes pluridisciplinaires formées et entraînées.[résumé d'auteur]

Vacheron, M. N. (2009). "Prise en charge au long cours des états psychotiques complexes ou difficiles." L'Encéphale **35**: S155-S159.
http://www.sciencedirect.com/science/article/pii/S0013700609725205

Vacheron-Trystram, M.-N., Cornic, F. et Gourevitch, R. (2010). 5 - Prise en charge des états dangereux des pathologies mentales graves: stratégies thérapeutiques. La prise en charge des états réputés dangereux ; Paris, Elsevier Masson**:** 97-152.
http://www.sciencedirect.com/science/article/pii/B978229471205050005X

Vallini, A. (2021). Accroissement continu du nombre d'actes de sismothérapie en France. Paris : Sénat.
https://www.senat.fr/questions/base/2019/qSEQ190811833.html.

ÉTUDES ETRANGERES

Agbese, E., Leslie, D., Ba, D., et al. (2022). "Does Electroconvulsive Therapy for Patients with Mood Disorders Extend Hospital Length of Stays and Increase Inpatient Costs?" Administration and Policy in Mental Health and Mental Health Services Research **49**.

Although randomized trials have shown that electroconvulsive therapy (ECT) is an effective and underused treatment for mood disorders, its impact on inpatient length of stay (LOS) and hospital costs are not fully understood. We analyzed private insurance claims of patients hospitalized for mood disorders who had continuous insurance for three months prior to an index hospitalization and six months after discharge (N = 24,249). Propensity score weighted linear models were used to examine the association of any ECT use, the number of ECT treatments, and time to first ECT treatment, with LOS and hospital costs adjusting for potential confounders. Three months prior to the index hospitalization, patients who subsequently received ECT had more than double the total healthcare costs and bed days ($12,669 vs. $6,333 and 4.5 vs. 0.92 days, p < .001) of the other group. During their index admission, patients receiving ECT had longer LOS (16.1 vs. 5.8 days, p < .001) and three times greater hospital costs ($28,607 vs. $8,708, p < .001). Analyses adjusted for other group differences showed a dose–response relationship between the number of ECT treatments and LOS and hospital costs. Receipt of ECT was associated with increased LOS by 4 to 29 days depending on the number of ECT treatments and increasing total hospital costs from $5,767 to $52,717. Receipt of any ECT and the number of treatments during hospitalization were associated with markedly increased LOS, hospital admission costs, and post-discharge costs. Cost-effectiveness of ECT may be enhanced by shifting treatments to outpatient settings when possible.

Aoki, Y., Yamaguchi, S., Ando, S., et al. (2016). "The experience of electroconvulsive therapy and its impact on associated stigma: A meta-analysis." International Journal of Social Psychiatry **62**(8): 708-718.
https://journals.sagepub.com/doi/abs/10.1177/0020764016675379

Background:Despite its efficacy and safety, electroconvulsive therapy (ECT) is underutilized, in part due to stigma associated with the treatment.Aims:The aim of this study was to test the hypothesis that experiencing ECT has an impact on associated stigma, as measured by patient and family knowledge of and attitudes toward ECT.Methods:A comprehensive literature search was conducted using MEDLINE, EMBASE and PsycINFO. Studies with cross-sectional and/or longitudinal designs were identified. Studies were further categorized into subcategories based on participant type (patients or patient family members) and outcome domain (knowledge or attitudes). Effect size (Cohen's d) was calculated for each study and then integrated into each subcategory (participant type by outcome domain) using a random effect model.Results:Eight studies were identified as being eligible for analysis. Two studies were cross-sectional, five were longitudinal and one incorporated both designs. Analysis of the longitudinal studies indicated that experiencing ECT both increased knowledge of and improved attitudes toward ECT in patients; in family members of patients, analysis showed significant positive change in knowledge of ECT, but no significant change in attitudes toward ECT.Conclusion:Experience with ECT may have a positive impact on knowledge of and attitudes toward ECT. However, the quality of evidence of included studies was low; further research is required in order to clarify the relationship and to identify information of use to individuals considering ECT as a treatment option.

Apéria, B. (1986). "Hormone pattern and post-treatment attitudes in patients with major depressive disorder given electroconvulsive therapy." Acta Psychiatr Scand **73**(3): 271-274.

As a follow-up study of a psychoendocrinological investigation of 33 patients with major depressive illness undergoing ECT, attitudes towards ECT were examined and hormones measured in remission. Two thirds of the group had a positive attitude towards ECT. Cortisol, prolactin and TSH levels differed significantly from the depressive state. In contrast, there was no difference in ACTH levels.

Association for Convulsive Therapy, U. S. A. (2002). ECT : Politics of practice. Association for Convulsive Therapy. Annual Meeting.

Banken et Gouvernement du Québec. Agence d'évaluation des technologies et des modes d'intervention en santé. Montréal, Q. C. (2003). L'utilisation des électrochocs au Québec : rapport, Agence d'évaluation des technologies et des modes d'intervention en santé, Montréal

Depuis son introduction en psychiatrie en 1938, l'utilisation des électrochocs, aussi appelés ECT (pour électroconvulsothérapie ou électroconvulsivothérapie), a fait l'objet d'une vive controverse. Si bien qu'au milieu des années 1960, sous la pression sociale et grâce à l'introduction des neuroleptiques, l'utilisation des électrochocs a considérablement diminué dans le monde occidental. Cependant, depuis le milieu des années 1980, on assiste à un accroissement du recours à cette thérapie. En 1997, la revue Québec Science publiait un article qui montrait qu'au Québec, le nombre de séances d'électrochocs avait presque doublé entre 1988 et 1995, passant de 4 000 à 7 200 au cours de la période visée, au grand dam des opposants à cette technique. C'est dans ce contexte que le ministère de la Santé et des Services sociaux du Québec a confié à l'Agence d'évaluation des technologies et des modes d'intervention en santé (Agence) le mandat d'évaluer la pratique de l'électroconvulsothérapie au Québec. Le présent rapport se penche sur l'efficacité et les risques de cette approche thérapeutique, de même que sur les modalités de son utilisation au Québec.

Ben Thabet, J., Charfeddine, F., Abid, I., et al. (2011). "De la réticence face à l'électroconvulsivothérapie : enquête auprès de 120 personnels soignants dans un centre hospitalo-universitaire en Tunisie." L'Encéphale **37**(6): 466-472.
http://www.sciencedirect.com/science/article/pii/S0013700611000753

Résumé L'électroconvulsivothérapie (ECT) est peu pratiquée en Tunisie. On s'est interrogé sur les raisons de cette sous-utilisation et on s'est proposé d'apprécier les connaissances théoriques, la perception et les attitudes des professionnels de la santé concernant l'ECT. Pour ce faire, nous avons mené une enquête, au CHU Hédi-Chaker à Sfax en Tunisie, auprès de 60 médecins et 60 agents paramédicaux, dont la moitié travaillait en milieu psychiatrique. Le taux de ceux qui n'ont pas pu répondre, de façon conforme aux données scientifiques, à un minimum de 75 % des items explorant les connaissances théoriques, était de 67,5 % ; les taux étaient significativement plus bas chez les paramédicaux (p<0,001) et chez ceux travaillant en dehors du milieu psychiatrique (p=0,003). Par rapport aux médecins, les paramédicaux percevaient, plus souvent, l'ECT comme un moyen thérapeutique violent (p=0,001) et refuseraient, plus souvent, de donner leur consentement pour pratiquer l'ECT chez un parent (p=0,044). Les résultats de notre étude indiquent un manque d'informations et de formation, concernant l'ECT, chez les professionnels de la santé. Cela pourrait expliquer, du moins en partie, la réticence envers cette thérapie.

Benbow, Benbow et Tomenson (2003). "Electroconvulsive therapy clinics in the United Kingdom should routinely monitor electroencephalographic seizures." J ect **19**(4): 217-220.

Information recorded during electroconvulsive therapy for all patients treated in Central Manchester was analyzed to examine the range of seizure thresholds, the frequency of prolonged seizures, and the difference between the length of motor and electroencephalographic seizure activity. Prolonged seizures occurred in 19% of courses studied. EEG seizure length was significantly longer than observed motor seizure length. EEG monitoring will detect prolonged seizures and should be performed routinely in ECT clinics in the United Kingdom.

Chakrabarti, S., Grover, S. et Rajagopal, R. (2010). "Electroconvulsive therapy: a review of knowledge, experience and attitudes of patients concerning the treatment." World J Biol Psychiatry **11**(3): 525-537.

OBJECTIVES: Despite its proven efficacy and safety, electroconvulsive therapy (ECT) has a negative image and attracts widespread public criticism. In contrast, perceptions of patients who have received ECT appear to be more favourable. This review intended to encapsulate the evidence on knowledge and views concerning ECT among its recipients. METHODS: Extensive electronic and manual searches were conducted to identify all relevant studies on the subject. RESULTS: Seventy-five reports were found suitable. The evidence from these studies suggested that patients undergoing ECT were usually poorly informed about it. This was attributable to factors such as unsatisfactory pre-treatment explanations or post-ECT memory impairment. About one-third undergoing ECT reported feeling coerced to have the treatment. Fear of ECT and distressing side effects were also present in a majority. Despite these problems, a vast majority of patients perceived ECT to be helpful and had positive views regarding the treatment. Simultaneously, a sizeable proportion was quite critical, although little was known about the extent and nature of such disapproval. CONCLUSIONS: Overall, the weight of the evidence supports the notion that patients undergoing ECT are well-disposed towards it. However, much needs to be done to improve the practice of ECT and to enhance patients' satisfaction with the experience of treatment.

Cohen, D., Taieb, O., Flament, M., et al. (2000). "Absence of cognitive impairment at long-term follow-up in adolescents treated with ECT for severe mood disorder." Am J Psychiatry **157**(3): 460-462.

OBJECTIVE: Cognitive functions of adolescents treated with ECT for mood disorder were evaluated at long-term follow-up. METHOD: At an average of 3.5 years (SD=1.7) after the last ECT, 10 subjects treated during adolescence with bilateral ECT for severe mood disorder completed a clinical and cognitive evaluation, including the California Verbal Learning Test and Squire's Subjective Memory Questionnaire. The same assessments were given to 10 psychiatric comparison subjects matched for sex, age, and diagnosis. RESULTS: All cognitive test scores of the patients treated with ECT were similar to those of the comparison subjects and did not differ from norms from the community. Six of the 10 ECT-treated patients reported having had memory losses immediately after the ECT course, but only one complained of subjective memory impairment at follow-up. CONCLUSIONS: The results suggest that adolescents given ECT for severe mood disorder do not suffer measurable cognitive impairment at long-term follow-up.

Eschweiler, G. W., Plewnia, C. et Bartels, M. (2001). "[Which patients with major depression benefit from prefrontal repetitive magnetic stimulation]." Fortschr Neurol Psychiatr **69**(9): 402-409.

Antidepressive benefit of prefrontal repetitive magnetic stimulation (RTMS) for one or two weeks varies between 6 % and 60 % (mean 37 %) improvement of the Hamilton depression scale vs. 12 % improvement following sham RTMS. This variance is probably caused by study specific stimulus parameters but also by genetic, psychopathological and neuropsychological characteristics of the patients as well as by the functional state of the cortex area below the stimulation coil. Data from 10 open and 7 sham controlled studies including two own studies comprising more than 300 patients with major depression have been published to date. In synopsis several positive predictors for antidepressive response of prefrontal RTMS become apparent: 1) younger age, 2) somatic signs of anxiety, 3) lack of cortical hyperactivity below the magnetic coil pulsed by 10 Hz stimuli, 4) cortical hypermetabolism below the 1 Hz pulsed coil. Negative predictors of response to prefrontal RTMS were: 1) Advanced age, 2) prefrontal atrophy, 3) cognitive impairment in neuropsychological tasks assigned to the prefrontal cortex, 4) psychotic symptoms, 5) cortical hyperactivity below 10 Hz pulsed coil 6) non-response to electroconvulsive therapy (ECT). While prefrontal RTMS will probably not replace ECT in severe major depression with psychotic symptoms it could be beneficial especially in younger anxious patients without cognitive impairment.

Flint et Rifat (1998). "The treatment of psychotic depression in later life : a comparison of pharmacotherapy and ECT.; Traitement de la dépression psychotique chez les personnes âgées : comparaison entre la thérapie

médicamenteuse et les électrochocs." INTERNATIONAL JOURNAL OF GERIATRIC PSYCHIATRY **13**(1): 23-28, tabl., graph.

> Cet article évalue les réactions de patients âgés souffrant de dépression psychotique à deux types de traitement : thérapie médicamenteuse et électrochocs. Les résultats montrent que les patients présentent une fréquence de réactions nettement plus faible au traitement médicamenteux qu'aux électrochocs. Cependant les patients réagissent plus lentement à la pharmacothérapie qu'aux électrochocs et un traitement sur une longue durée confirme la plus grande efficacité du traitement par médicaments.

Gergel, T., Howard, R., Lawrence, R., et al. (2021). "Time to acknowledge good electroconvulsive therapy research." The Lancet Psychiatry **8**(12): 1032-1033.
https://doi.org/10.1016/S2215-0366(21)00352-7

Giacobbe, J., Pariante, C. M. et Borsini, A. (2020). "The innate immune system and neurogenesis as modulating mechanisms of electroconvulsive therapy in pre-clinical studies." J Psychopharmacol **34**(10): 1086-1097.

> BACKGROUND: Electroconvulsive therapy (ECT) is a powerful and fast-acting anti-depressant strategy, often used in treatment-resistant patients. In turn, patients with treatment-resistant depression often present an increased inflammatory response. The impact of ECT on several pathophysiological mechanisms of depression has been investigated, with a focus which has largely been on cellular and synaptic plasticity. Although changes in the immune system are known to influence neurogenesis, these processes have principally been explored independently from each other in the context of ECT. OBJECTIVE: The aim of this review was to compare the time-dependent consequences of acute and chronic ECT on concomitant innate immune system and neurogenesis-related outcomes measured in the central nervous system in pre-clinical studies. RESULTS: During the few hours following acute electroconvulsive shock (ECS), the expression of the astrocytic reactivity marker glial fibrillary acidic protein (GFAP) and inflammatory genes, such as cyclooxygenase-2 (COX2), were significantly increased together with the neurogenic brain-derived neurotrophic factor (BDNF) and cell proliferation. Similarly, chronic ECS caused an initial upregulation of the same astrocytic marker, immune genes, and neurogenic factors. Interestingly, over time, inflammation appeared to be dampened, while glial activation and neurogenesis were maintained, after either acute or chronic ECS. CONCLUSION: Regardless of treatment duration ECS would seemingly trigger a rapid increase in inflammatory molecules, dampened over time, as well as a long-lasting activation of astrocytes and production of growth and neurotrophic factors, leading to cell proliferation. This suggests that both innate immune system response and neurogenesis might contribute to the efficacy of ECT.

Grözinger, M., Smith, E. S. et Conca, A. (2015). "On the significance of electroconvulsive therapy in the treatment of severe mental diseases." Wien Klin Wochenschr **127**(7-8): 297-302.

> BACKGROUND: Quite a few patients with severe mental diseases do not respond sufficiently to psychopharmacology and psychotherapy. For some of these, electroconvulsive therapy (ECT) offers a promising alternative. Erroneously, the method is being perceived as old fashioned by the lay public, but also by many doctors. Therefore, this overview aims at all colleagues who in their role as multipliers, referring physicians or ECT specialists can reduce the likelihood of mental disease to become chronic. METHODS: During the last decades, numerous international medical societies including the Austrian and the German Association for Psychiatry (ÖGPP and DGPPN) have pointed to the importance of ECT as a modern medical intervention. Our overview is based on these guidelines and statements. Additionally selective literature searches have been conducted concerning some key aspects. RESULTS: Due to its excellent efficacy, ECT is an important option in the treatment of severe mental disease. Technological innovations and continued development in the psychiatric environment determined the evolution from the electroshock of the 1930s to the ECT of today. This process led to reduced side effects and a stronger patient-oriented praxis. CONCLUSIONS: ECT is a modern, highly effective and safe treatment of severe mental diseases with comparatively few side effects. The method should not be used as a last resort but in an evidence-based way. Patients should be informed timely and adequately about the therapeutic option.

Halliday, G. et Johnson, G. (1995). "Training to administer electroconvulsive therapy: a survey of attitudes and experiences." Aust N Z J Psychiatry **29**(1): 133-138.

Recent Royal Australian and New Zealand College of Psychiatrists guidelines regarding Electroconvulsive Therapy (ECT) call for "specific training in both the practical and theoretical aspects of ECT", involving provision of an "educational programme" by centres where ECT is administered, and "supervised administration of ECT prior to administering this treatment alone". This survey was undertaken to elicit the attitudes and experiences of current trainees in relation to training to administer ECT. It was found that ECT is given entirely by the registrars, that consultants are rarely or never present, and in most centres, training typically consists of registrars being supervised once or twice by another registrar, and thereafter administering ECT alone. Twenty percent of those who had given ECT, however, reported not being supervised the first time they administered it. Most trainees indicated limited theoretical teaching in this area, and almost none were aware of a formal training scheme at their respective hospitals. The College guidelines, as stated, address these issues, and priority should be given to their implementation.

Husain, M. M., McClintock, S. M., Rush, A. J., et al. (2008). "The efficacy of acute electroconvulsive therapy in atypical depression." J Clin Psychiatry **69**(3): 406-411.

OBJECTIVE: This study examined the characteristics and outcomes of patients with major depressive disorder (MDD), with or without atypical features, who were treated with acute bilateral electroconvulsive therapy (ECT). METHOD: Analyses were conducted with 489 patients who met DSM-IV criteria for MDD. Subjects were identified as typical or atypical on the basis of the Structured Clinical Interview for DSM-IV obtained at baseline prior to ECT. Depression symptom severity was measured by the 24-item Hamilton Rating Scale for Depression (HAM-D(24)) and the 30-item Inventory of Depressive Symptomatology-Self-Report (IDS-SR(30)). Remission was defined as at least a 60% decrease from baseline in HAM-D(24) score and a total score of 10 or below on the last 2 consecutive HAM-D(24) ratings. The randomized controlled trial was performed from 1997 to 2004. RESULTS: The typical (N = 453) and atypical (N = 36) groups differed in several sociodemographic and clinical variables including gender (p = .0071), age (p = .0005), treatment resistance (p = .0014), and age at first illness onset (p < .0001) and onset of current episode (p = .0008). Following an acute course of bilateral ECT, a considerable portion of both the typical (67.1%) and the atypical (80.6%) groups reached remission. The atypical group was 2.6 (95% CI = 1.1 to 6.2) times more likely to remit than the typical group after adjustment for age, psychosis, gender, clinical site, and depression severity based on the HAM-D(24). CONCLUSION: Acute ECT is an efficacious treatment for depressed patients with typical or atypical symptom features. TRIAL REGISTRATION: clinicaltrials.gov Identifier: NCT00000375.

Karabatsiakis, A. et Schönfeldt-Lecuona, C. (2020). "Depression, mitochondrial bioenergetics, and electroconvulsive therapy: a new approach towards personalized medicine in psychiatric treatment - a short review and current perspective." Transl Psychiatry **10**(1): 226.

Major depressive disorder (MDD) is a globally occurring phenomenon and developed into a severe socio-economic challenge. Despite decades of research, the underlying pathophysiological processes of MDD remain incompletely resolved. Like other mental disorders, MDD is hypothesized to mainly affect the central nervous system (CNS). An increasing body of research indicates MDD to also change somatic functioning, which impairs the physiological performance of the whole organism. As a consequence, a paradigm shift seems reasonable towards a systemic view of how MDD affects the body. The same applies to treatment strategies, which mainly focus on the CNS. One new approach highlights changes in the bioenergetic supply and intracellular network dynamics of mitochondria for the pathophysiological understanding of MDD. Mitochondria, organelles of mostly all eukaryotic cells, use carbon compounds to provide biochemical energy in terms of adenosine triphosphate (ATP). ATP is the bioenergetic currency and the main driver for enzymatic activity in all cells and tissues. Clinical symptoms of MDD including fatigue, difficulties concentrating, and lack of motivation were reported to be associated with impaired mitochondrial ATP production and changes in the density of the mitochondrial network. Additionally, the severity of these symptoms correlates negatively with

mitochondrial functioning. Psychotherapy, antidepressant medication, and electroconvulsive therapy (ECT), a method used to treat severe and treatment-resistant forms of MDD, achieve robust antidepressant effects. The biological mechanisms beyond the treatment response to antidepressant strategies are partially understood. Here, mitochondrial functioning is discussed as a promising new biomarker for diagnosis and treatment effects in MDD.

Kellner, D. A. et Kellner, C. H. (2019). "PACU anesthesia liability data indicate safety of electroconvulsive therapy (ECT)." J Clin Anesth **53**: 49.

Kriss, A., Halliday, A. M., Halliday, E., et al. (1980). "Evoked potentials following unilateral ECT. I. The somatosensory evoked potential." Electroencephalography and Clinical Neurophysiology **48**(5): 481-489. http://www.sciencedirect.com/science/article/pii/0013469480902837

The somatosensory evoked potential (SEP) was recorded in 14 patients undergoing unilateral ECT for the treatment of depression. All patients received right-sided ECT. One patient was studied on a second occasion during left-sided ECT. The index and middle fingers of each hand were electrically stimulated 1/sec throughout anaesthesia, the fit and the 0.5 h period following the fit. During barbiturate anaesthesia the SEP showed the characteristic change of attenuation of the P49 component and enhancement of P32, while during the seizure induced by right ECT, the SEP was seen more clearly on the left side of the head, despite the high voltage epileptic activity. No significant asymmetries of any of the SEP components were seen post-ictally, the response returning rapidly on both sides. The subjective threshold to electrical stimulation of the fingers of each hand was significantly raised following ECT.

Kristensen, D., Bauer, J., Hageman, I., et al. (2011). "Electroconvulsive therapy for treating schizophrenia: a chart review of patients from two catchment areas." Eur Arch Psychiatry Clin Neurosci **261**(6): 425-432.

To examine disease and treatment characteristics of patients with schizophrenia treated with electroconvulsive therapy (ECT). We examined charts from 79 patients diagnosed with schizophrenia (n = 55), persistent delusional disorders (n = 7), and schizoaffective disorders (n = 17) between 2003 and 2008. We recorded age, sex, indication for ECT, number of ECT sessions, ECT series, outcome, maintenance ECT, use of antipsychotics, duration of illness, and duration of the current exacerbation. All patients were taking antipsychotics at the time of enrolment in the study. Acute ECT included 2-26 sessions; maintenance ECT (M-ECT) was given to 18 patients for up to 12 years. Initial indications for ECT included psychosis (n = 28), pronounced affective symptoms (n = 28), delirious states (n = 20), and M-ECT (n = 3). Most patients experienced excellent/good outcomes (n = 66), but others experienced moderate (n = 8) or poor (n = 5) outcomes. No factors were identified that predicted treatment responses in individual patients. ECT proved to be effective in a population of patients that were severely ill with treatment-refractory schizophrenia. This does not imply that the patients were cured from schizophrenia. Rather, it reflects the degree of relief from psychosis and disruptive behaviour, as described in the patient charts. The treatment was often offered to patients after considerable disease durations.

Lemasson, M., Rochette, L., Galvão, F., et al. (2018). "Pertinence of Titration and Age-Based Dosing Methods for Electroconvulsive Therapy: An International Retrospective Multicenter Study." J ect **34**(4): 220-226.

BACKGROUND: Although the dosage of electroconvulsive therapy (ECT) stimulus has a major impact on the efficacy and safety of this treatment, the method used to determine an optimal dosage remains a matter of debate. OBJECTIVE: We investigated factors influencing the seizure threshold (ST) in a large-sample study and compared age-based and titration dosing methods in terms of charge. METHODS: A retrospective study examined data from 503 patients across France and Canada. The patients underwent right unilateral (RUL) or bitemporal (BT) ECT during a titration session before undergoing ECT. Seizure threshold and charge differences between age-based and titration-predicted methods were derived for each RUL and BT patient and compared according to sex, age, and anesthetic agents. RESULTS: Based on our results, ST is a function of electrode placement, sex, age, and anesthetic agents. Titration and age-based methods led to completely different patterns of

charges for the same electrode placement, especially in elderly and in women in the RUL group. Regression models showed that differences between the age-based and titration methods varied with respect to age, sex, and anesthetic agent. Specifically, significant effects of sex and age were observed for RUL ECT and of sex and anesthetics for BT ECT. CONCLUSIONS: This study revealed that several factors significantly influence the prediction of ECT dose, depending on individuals and treatment modalities. Caution should be exercised when using nonindividualized methods to calculate ST.

Lloyd, J. R., Silverman, E. R., Kugler, J. L., et al. (2020). "Electroconvulsive Therapy for Patients with Catatonia: Current Perspectives." Neuropsychiatr Dis Treat **16**: 2191-2208.

Catatonia is a serious, common syndrome of motoric and behavioral dysfunction, which carries high morbidity and mortality. Electroconvulsive therapy (ECT) is the definitive treatment for catatonia, but access to ECT for the treatment of catatonia remains inappropriately limited. Catatonia is observable, detectable, and relevant to various medical specialties, but underdiagnosis impedes the delivery of appropriate treatment and heightens risk of serious complications including iatrogenesis. Current understanding of catatonia's pathophysiology links it to the current understanding of ECT's mechanism of action. Definitive catatonia care requires recognition of the syndrome, workup to identify and treat the underlying cause, and effective management including appropriate referral for ECT. Even when all of these conditions are met, and despite well-established data on the safety and efficacy of ECT, stigma surrounding ECT and legal restrictions for its use in catatonia are additional critical barriers. Addressing the underdiagnosis of catatonia and barriers to its treatment with ECT is vital to improving outcomes for patients. While no standardized protocols for treatment of catatonia with ECT exist, a large body of research guides evidence-based care and reveals where additional research is warranted. The authors conducted a review of the literature on ECT as a treatment for catatonia. Based on the review, the authors offer strategies and future directions for improving access to ECT for patients with catatonia, and propose an algorithm for the treatment of catatonia with ECT.

Luchini, F., Medda, P., Mariani, M. G., et al. (2015). "Electroconvulsive therapy in catatonic patients: Efficacy and predictors of response." World journal of psychiatry **5**(2): 182-192.
https://pubmed.ncbi.nlm.nih.gov/26110120

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4473490/

Recent evidence favors the view of catatonia as an autonomous syndrome, frequently associated with mood disorders, but also observed in neurological, neurodevelopmental, physical and toxic conditions. From our systematic literature review, electroconvulsive therapy (ECT) results effective in all forms of catatonia, even after pharmacotherapy with benzodiazepines has failed. Response rate ranges from 80% to 100% and results superior to those of any other therapy in psychiatry. ECT should be considered first-line treatment in patients with malignant catatonia, neuroleptic malignant syndrome, delirious mania or severe catatonic excitement, and in general in all catatonic patients that are refractory or partially responsive to benzodiazepines. Early intervention with ECT is encouraged to avoid undue deterioration of the patient's medical condition. Little is known about the long-term treatment outcomes following administration of ECT for catatonia. The presence of a concomitant chronic neurologic disease or extrapyramidal deficit seems to be related to ECT non-response. On the contrary, the presence of acute, severe and psychotic mood disorder is associated with good response. Severe psychotic features in responders may be related with a prominent GABAergic mediated deficit in orbitofrontal cortex, whereas non-responders may be characterized by a prevalent dopaminergic mediated extrapyramidal deficit. These observations are consistent with the hypothesis that ECT is more effective in "top-down" variant of catatonia, in which the psychomotor syndrome may be sustained by a dysregulation of the orbitofrontal cortex, than in "bottom-up" variant, in which an extrapyramidal dysregulation may be prevalent. Future research should focus on ECT response in different subtype of catatonia and on efficacy of maintenance ECT in long-term prevention of recurrent catatonia. Further research on mechanism of action of ECT in catatonia may also contribute to the development of other brain stimulation techniques.

Matthews, A. M., Rosenquist, P. B. et McCall, W. V. (2016). "Representations of ECT in English-Language Film and Television in the New Millennium." J ect **32**(3): 187-191.

OBJECTIVE: The aim of the study was to survey the media landscape to determine whether visual depictions of electroconvulsive therapy (ECT) are becoming more or less medically accurate in the new millennium. METHOD: English-language film and television shows depicting ECT were analyzed for patient demographics, administrator roles, indication, consent, anesthesia, paralytics, bite block, lead placement, electroencephalogram, and outcome. RESULTS: Thirty-nine ECT scenes were viewed, and just 3 included all 5 essential tools of modern ECT: anesthesia, paralytic, electrodes, electroencephalogram, and a bite block. CONCLUSIONS: Media depictions of ECT do not reflect current practice. Too often, ECT is portrayed as a torture technique rather than an evidenced-based therapy, and even in a therapeutic setting, it is too often shown with outdated techniques.

McDonald, A. et Walter, G. (2009). "Hollywood and ECT." Int Rev Psychiatry **21**(3): 200-206.

Electroconvulsive therapy (ECT) has featured in Hollywood films for sixty years. Film depictions continue to exert a powerful and predominantly negative effect on public attitudes towards the treatment. From review of the 22 currently available films that directly refer to ECT the main themes identified are described. While initially portrayed as a dramatic but effective psychiatric intervention, ECT on film has come to stand for something quite different, representing the brutal and generally futile attempts of society to control and suppress the individual, gathering along the way a hackneyed cinematic grammar that emphasizes its inhumane and punitive nature. The film representation now has little in common with ECT as currently practised, such that filmmakers portraying ECT appear influenced more by films such as One Flew Over the Cuckoo's Nest than by evidence of the safety and effectiveness of ECT as a psychiatric treatment. Filmgoers with no personal or professional exposure to the treatment may fail to make the distinction between the demands of film narrative and clinical reality.

Meyer, J. P., Swetter, S. K. et Kellner, C. H. (2018). "Electroconvulsive Therapy in Geriatric Psychiatry: A Selective Review." Psychiatr Clin North Am **41**(1): 79-93.

Electroconvulsive therapy (ECT) remains an important treatment of geriatric patients. ECT treats severe depression, mania, psychosis, catatonia, and comorbid depression and agitation in dementia. ECT also serves a crucial role in treating urgent illness requiring expedient recovery, such as catatonia, or in patients with severe suicidal ideation or intent. ECT is even more effective in the elderly than in mixed-age adult populations. ECT is a safe treatment option with few medical contraindications. Cognitive effects are largely transient, even in patients with preexisting cognitive impairment.

Milev, R. V., Giacobbe, P., Kennedy, S. H., et al. (2016). "Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive Disorder: Section 4. Neurostimulation Treatments." Can J Psychiatry **61**(9): 561-575.

BACKGROUND: The Canadian Network for Mood and Anxiety Treatments (CANMAT) conducted a revision of the 2009 guidelines by updating the evidence and recommendations. The scope of the 2016 guidelines remains the management of major depressive disorder (MDD) in adults, with a target audience of psychiatrists and other mental health professionals. METHODS: Using the question-answer format, we conducted a systematic literature search focusing on systematic reviews and meta-analyses. Evidence was graded using CANMAT-defined criteria for level of evidence. Recommendations for lines of treatment were based on the quality of evidence and clinical expert consensus. "Neurostimulation Treatments" is the fourth of six sections of the 2016 guidelines. RESULTS: Evidence-informed responses were developed for 31 questions for 6 neurostimulation modalities: 1) transcranial direct current stimulation (tDCS), 2) repetitive transcranial magnetic stimulation (rTMS), 3) electroconvulsive therapy (ECT), 4) magnetic seizure therapy (MST), 5) vagus nerve stimulation (VNS), and 6) deep brain stimulation (DBS). Most of the neurostimulation treatments have been investigated in patients with varying degrees of treatment resistance. CONCLUSIONS: There is increasing evidence for efficacy, tolerability, and safety of neurostimulation

treatments. rTMS is now a first-line recommendation for patients with MDD who have failed at least 1 antidepressant. ECT remains a second-line treatment for patients with treatment-resistant depression, although in some situations, it may be considered first line. Third-line recommendations include tDCS and VNS. MST and DBS are still considered investigational treatments.

Naguib, M. et Koorn, R. (2002). "Interactions between psychotropics, anaesthetics and electroconvulsive therapy: implications for drug choice and patient management." CNS Drugs **16**(4): 229-247.

Despite many predictions that electroconvulsive therapy (ECT) would be replaced by pharmacotherapy, ECT has remained an invaluable adjunct in the management of severe psychiatric disease. Both pharmacotherapy and ECT continue to be used extensively, and will frequently be administered concurrently. The majority of patients requiring ECT will need anaesthesia; therefore, interactions could conceivably occur between the psychotropic drugs, ECT and the anaesthetic agents utilised. In managing an anaesthetic for ECT the effects of the anaesthetic agents and other medications on seizure intensity are important determinants influencing outcome. With regard to the antidepressants, tricyclic antidepressants (TCAs) and ECT can be combined safely and beneficially. More care is required when ECT is administered in the setting of a monoamine oxidase inhibitor (MAOI), especially the older irreversible varieties and in patients recently placed on MAOI therapy. Of the anticonvulsants and mood stabilisers, lithium and ECT given concurrently add significant risk of delirium and/or organic syndromes developing. Possible concerns with valproate, carbamazepine, lamotrigine, gabapentin and topiramate are that they may inhibit seizure activity. Additionally, carbamazepine may prolong the action of suxamethonium (succinylcholine). The combination of antipsychotics and ECT is well tolerated, and may in fact be beneficial. As regards the anxiolytics, benzodiazepines have anticonvulsant properties that might interfere with the therapeutic efficacy of ECT. CNS stimulants on the other hand may prolong seizures as well as produce dysrhythmias and elevate blood pressure. Calcium channel antagonists should be used with great care to avoid significant cardiovascular depression. The anaesthesiologist should therefore remain vigilant at all times, as untoward responses during ECT might occur suddenly due to interactions between psychotropics, anaesthetic agents and/or ECT.

Nard, N., Moulier, V., Januel, D., et al. (2021). "[Electroconvulsive therapy during the perinatal period: Representations of mental health professionals]." Encephale **47**(5): 445-451.

INTRODUCTION: Psychiatric disorders are common in peripartum and are associated with adverse outcomes for mother and fetus. Electroconvulsive therapy (ECT) is one of the most effective and safe options to treat severe mental illness, including during the perinatal period. Nevertheless, it remains underutilized during this period, possibly due to negative representations. Research has been carried out on the representations and attitudes of caregivers towards ECT, but the specificities of these attitudes during peripartum have not been explored. OBJECTIVES: We aimed to assess the attitudes towards ECT during the peripartum among psychiatrists, nurses, social workers and psychologists. The primary objective was to compare the score of favorability for ECT during peripartum according to the profession. The secondary objective was to highlight other factors involved in the favorability for ECT in peripartum. METHODS: We investigated mental health professionals' attitudes sending by e-mail an anonymous questionnaire in five hospitals in France. The questionnaire was composed of demographic details, one scale about the attitudes towards ECT (the Questionnaire on Attitudes and Knowledge of ECT (QuAKE)) used in several studies; in this questionnaire, a specific part for perinatal period has been added for our study, both using a Likert scale. The completion time for this online questionnaire was approximately 5 to 7minutes. A score of favorability for ECT in general and in peripartum was established for each participant. These scores represented the percentage of positive responses to favorable items and of negative responses to unfavorable items towards ECT. Comparison of the QuAKE answers with a sample of English caregivers in 2001 has been determined with $\chi(2)$ tests. A Bonferroni correction was applied due to the large number of tests performed. Factors involved in the favorability for ECT have been studied with Pearson correlation, Kruskall-Wallis and Wilcoxon tests. RESULTS: Two hundred and twenty one professionals (80 psychiatrists, 78 nurses, 19 social workers and 44 psychologists) were included in the study. Their answers to the QuAKE questionnaire were comparable or more favorable to ECT than the English sample answered in 2001.

The perinatal part of questionnaire had a good internal consistency (Cronbach coefficient: 0,91). Participants were less favorable to ECT in perinatal period (favorability score: 44.2) than in general (63.6). They more often responded « uncertain » to the perinatal questionnaire (44,9 % against 18.4 % for the ECT in general; W=19931,5; P<0,001). The favorability for ECT in general and during peripartum were statistically associated with profession (psychiatrists were more favorable), specific training and experience in ECT. Gender, perinatal specialization, age, and the number of years in professional service were not associated with favorability for ECT in general and during peripartum in this study. CONCLUSIONS: In this study, we have found that profession, training and experience in ECT are linked to the attitudes towards ECT, including in the perinatal period. It is necessary to inform professionals about the possibility of prescribing ECT in the perinatal period by training them in the specificities of pregnancy.

Nice (2009). Overwiew : guidance on the use of electroconvulsive therapy. Londres : Nice. https://www.nice.org.uk/guidance/ta59

Nielsen, R. M., Olsen, K. S., Lauritsen, A. O., et al. (2014). "Electroconvulsive therapy as a treatment for protracted refractory delirium in the intensive care unit--five cases and a review." J Crit Care **29**(5): 881.e881-886.

PURPOSE: Delirium in the intensive care unit (ICU) is conventionally treated pharmacologically but can progress into a protracted state refractory to medical treatment--a potentially life-threatening condition in itself. METHODS: We treated 5 cases of severe protracted delirium in our ICU with electroconvulsive therapy (ECT) after failure of conventional medical therapy. RESULTS: The delirious state of long standing agitation, anxiety, and discomfort was controlled in all patients. Electroconvulsive therapy was effective in controlling delirium in 4 patients. The last patient became calm, relieved of stress, and able to cooperate with the ventilator but remained in a state of posttraumatic amnesia after a head trauma. CONCLUSION: Although controversial, ECT is nevertheless recognized as an efficient and safe treatment for various psychiatric illnesses including delirium. Considering the significantly increased mortality and severe cognitive decline associated with delirium in the ICU, we find ECT to be a valuable treatment option for this vulnerable patient population. It can be considered when agitation cannot be controlled with medical treatment, when agitation and delirium make weaning impossible, or prolonged deep sedation the only alternative.

O'Connor, D. W., Gardner, B., Presnell, I., et al. (2010). "The effectiveness of continuation-maintenance ECT in reducing depressed older patients' hospital re-admissions." J Affect Disord **120**(1-3): 62-66.

BACKGROUND: We report on the outcomes in aged patients with severe, treatment-resistant depression or psychosis who were given ongoing outpatient continuation-maintenance ECT of varying duration to prevent remission and relapse following a successful course of acute ECT. METHODS: A retrospective chart review of 58 consecutive patients of three Australian aged psychiatry services comparing the number and length of psychiatric admissions before and after the start of continuation-maintenance ECT. RESULTS: Four patients had only one treatment and two received over 50 (mean 14.7). Five were still enrolled in a maintenance program two years later. In the two years after continuation-maintenance ECT started, admissions fell by 53% in number and 79% in duration compared with the previous two years. Within the actual treatment period which varied from one patient to another, admissions fell by 90% in number and 97% in duration compared with the same period beforehand. CONCLUSION: A treatment effect cannot be proven but the severity and chronicity of patients' conditions make placebo effects and spontaneous remission unlikely. Randomised, controlled trials are almost impossible in this setting and so carefully conducted reviews and case-control studies are still of value. Our findings suggest that continuation-maintenance ECT is effective in carefully selected patients at high risk of relapse.

Perugi, G., Medda, P., Toni, C., et al. (2017). "The Role of Electroconvulsive Therapy (ECT) in Bipolar Disorder: Effectiveness in 522 Patients with Bipolar Depression, Mixed-state, Mania and Catatonic Features." Curr Neuropharmacol **15**(3): 359-371.

OBJECTIVE: We evaluated the effectiveness of Electroconvulsive Therapy (ECT) in the treatment of Bipolar Disorder (BD) in a large sample of bipolar patients with drug resistant depression, mania, mixed state and catatonic features. METHOD: 522 consecutive patients with DSM-IV-TR BD were evaluated prior to and after the ECT course. Responders and nonresponders were compared in subsamples of depressed and mixed patients. Descriptive analyses were reported for patients with mania and with catatonic features. RESULTS: Of the original sample only 22 patients were excluded for the occurrence of side effects or consent withdrawal. After the ECT course, 344 (68.8%) patients were considered responders (final CGIi score ≤2) and 156 (31.2%) nonresponders. Response rates were respectively 68.1% for BD depression, 72.9% for mixed state, 75% for mania and 80.8% for catatonic features. Length of current episode and global severity of the illness were the only statistically significant predictors of nonresponse. CONCLUSION: ECT resulted to be an effective and safe treatment for all the phases of severe and drug-resistant BD. Positive response was observed in approximately two-thirds of the cases and in 80% of the catatonic patients. The duration of the current episode was the major predictor of nonresponse. The risk of ECT-induced mania is virtually absent and mood destabilization very unlikely. Our results clearly indicate that current algorithms for the treatment of depressive, mixed, manic and catatonic states should be modified and, at least for the most severe patients, ECT should not be considered as a "last resort".

Rao et Lyketsos (2000). "The benefits and risks of ETC for patients with primary dementia who also suffer from depression.; Effets bénéfiques des électrochocs sur des patients atteints à la fois de démence et de dépression." INTERNATIONAL JOURNAL OF GERIATRIC PSYCHIATRY **15**(8): 729-735.

20 à 25% des patients déments sont également dépressifs. Les antidépresseurs n'ont aucun effet chez un tiers de ces personnes. Celles-ci constituent donc des candidats appropriés pour le traitement par électrochocs. Cependant, l'utilisation des électrochocs chez les patients déments est préoccupante car ils ont des effets pervers sur la mémoire et les fonctions cognitives. Cette étude vise à déterminer l'efficacité et les effets néfastes de ce type de traitement.

Read, J., Cunliffe, S., Jauhar, S., et al. (2019). "Should we stop using electroconvulsive therapy?" Bmj **364**: k5233.
https://www.bmj.com/content/bmj/364/bmj.k5233.full.pdf

Rhee, T. G., Olfson, M., Sint, K., et al. (2020). "Characterization of the Quality of Electroconvulsive Therapy Among Older Medicare Beneficiaries." J Clin Psychiatry **81**(4).

BACKGROUND: Electroconvulsive therapy (ECT) is an important therapy for treatment-resistant depression and is especially effective for elderly individuals with depression. This is the first US nationally representative description of ECT in the elderly. METHODS: Using 2014-2015 Medicare claims data, we compared elderly individuals with major depressive disorder (using ICD-9 and ICD-10 codes) who received ECT with those who did not on demographic and clinical measures. We characterized treatment patterns by setting and the proportion of individuals receiving index and continuation/maintenance courses, subtherapeutic courses of ECT, and post-ECT follow-up care. RESULTS: Of all Medicare beneficiaries aged 65 years and older diagnosed with depression in 2014-2015, 7,817 (0.41%) received 1 or more ECT sessions. Compared to the general population of elderly Medicare beneficiaries with depression, recipients of ECT were slightly younger and more likely to be male, non-Hispanic, and white and live in a zip code with a higher median income. Among those who received any ECT, 33.7% received < 5 total treatments. Of those who received an index ECT treatment, 33.7% received a continuation/maintenance course of ECT, while 60.9% received some form of post-ECT follow-up treatment (additional ECT or new psychotropic medication). Receipt of psychotherapy was the strongest predictor of those who received ≥ 5 ECT treatments (adjusted odds ratio = 1.43; 95% CI, 1.22 to 1.67). CONCLUSIONS: Despite substantial evidence of efficacy, ECT use remains rare among elderly patients with depression. Findings suggest a potential need for efforts to increase the proportion of patients receiving adequate courses of ECT and evidence-based post-ECT follow-up care.

Rosenquist, P. B., Brenes, G. B., Arnold, E. M., et al. (2006). "Health-related quality of life and the practice of electroconvulsive therapy." J ect **22**(1): 18-24.

In the past several decades, health-related quality of life (HRQL) measures have become increasingly important as a type of patient-reported outcome documenting the subjective psychosocial burden associated with chronic illness. This article provides an introduction to HRQL, summarizes the measurement of HRQL in major depression and bipolar disorder, and reviews electroconvulsive therapy (ECT) studies that have measured HRQL. Health-related quality-of-life definitions and instruments vary widely but have nonetheless proven useful for evaluating the effects of disease and its treatment. Psychiatric disorders profoundly affect HRQL and, in many cases, exceed or contribute to the disease burden imposed by serious physical illness. An emerging literature demonstrates the importance of ECT in restoring function and HRQL in depressed patients. To keep pace as medicine is transformed along the dimensions outlined by the Institute of Medicine's Quality Chasm framework, ECT research must provide evidence supporting its safety and effectiveness and also that the treatment is patient-centered. A research agenda to demonstrate the subjective benefits of ECT must be mirrored by a practice of ECT that is increasingly customized to patient needs and values.

Ross, E. L., Zivin, K. et Maixner, D. F. (2018). "Cost-effectiveness of Electroconvulsive Therapy vs Pharmacotherapy/Psychotherapy for Treatment-Resistant Depression in the United States." JAMA Psychiatry **75**(7): 713-722.

IMPORTANCE: Electroconvulsive therapy (ECT) is a highly effective treatment for depression but is infrequently used owing to stigma, uncertainty about indications, adverse effects, and perceived high cost. OBJECTIVE: To assess the cost-effectiveness of ECT compared with pharmacotherapy/psychotherapy for treatment-resistant major depressive disorder in the United States. DESIGN, SETTING, AND PARTICIPANTS: A decision analytic model integrating data on clinical efficacy, costs, and quality-of-life effects of ECT compared with pharmacotherapy/psychotherapy was used to simulate depression treatment during a 4-year horizon from a US health care sector perspective. Model input data were drawn from multiple meta-analyses, randomized trials, and observational studies of patients with depression. Where possible, data sources were restricted to US-based studies of nonpsychotic major depression. Data were analyzed between June 2017 and January 2018. INTERVENTIONS: Six alternative strategies for incorporating ECT into depression treatment (after failure of 0-5 lines of pharmacotherapy/psychotherapy) compared with no ECT. MAIN OUTCOMES AND MEASURES: Remission, response, and nonresponse of depression; quality-adjusted life-years; costs in 2013 US dollars; and incremental cost-effectiveness ratios. Strategies with incremental cost-effectiveness ratios of $100 000 per quality-adjusted life-year or less were designated cost-effective. RESULTS: Based on the Sequenced Treatment Alternatives to Relieve Depression trial, we simulated a population with a mean (SD) age of 40.7 (13.2) years, and 62.2% women. Over 4 years, ECT was projected to reduce time with uncontrolled depression from 50% of life-years to 33% to 37% of life-years, with greater improvements when ECT is offered earlier. Mean health care costs were increased by $7300 to $12 000, with greater incremental costs when ECT was offered earlier. In the base case, third-line ECT was cost-effective, with an ICER of $54 000 per quality-adjusted life-year. Third-line ECT remained cost-effective in a range of univariate, scenario, and probabilistic sensitivity analyses. Incorporating all input data uncertainty, we estimate a 74% to 78% likelihood that at least 1 of the ECT strategies is cost-effective and a 56% to 58% likelihood that third-line ECT is the optimal strategy. CONCLUSIONS AND RELEVANCE: For US patients with treatment-resistant depression, ECT may be an effective and cost-effective treatment option. Although many factors influence the decision to proceed with ECT, these data suggest that, from a health-economic standpoint, ECT should be considered after failure of 2 or more lines of pharmacotherapy/psychotherapy.

Rush, A. J., Trivedi, M. H., Wisniewski, S. R., et al. (2006). "Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a STAR*D report." Am J Psychiatry **163**(11): 1905-1917.

OBJECTIVE: This report describes the participants and compares the acute and longer-term treatment outcomes associated with each of four successive steps in the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial. METHOD: A broadly representative adult outpatient sample with nonpsychotic major depressive disorder received one (N=3,671) to four (N=123) successive acute

treatment steps. Those not achieving remission with or unable to tolerate a treatment step were encouraged to move to the next step. Those with an acceptable benefit, preferably symptom remission, from any particular step could enter a 12-month naturalistic follow-up phase. A score of <or=5 on the Quick Inventory of Depressive Symptomatology-Self-Report (QIDS-SR(16)) (equivalent to <or=7 on the 17-item Hamilton Rating Scale for Depression [HRSD(17)]) defined remission; a QIDS-SR(16) total score of >or=11 (HRSD(17)>or=14) defined relapse. RESULTS: The QIDS-SR(16) remission rates were 36.8%, 30.6%, 13.7%, and 13.0% for the first, second, third, and fourth acute treatment steps, respectively. The overall cumulative remission rate was 67%. Overall, those who required more treatment steps had higher relapse rates during the naturalistic follow-up phase. In addition, lower relapse rates were found among participants who were in remission at follow-up entry than for those who were not after the first three treatment steps. CONCLUSIONS: When more treatment steps are required, lower acute remission rates (especially in the third and fourth treatment steps) and higher relapse rates during the follow-up phase are to be expected. Studies to identify the best multistep treatment sequences for individual patients and the development of more broadly effective treatments are needed.

Sienaert, P. (2016). "Based on a True Story? The Portrayal of ECT in International Movies and Television Programs." Brain Stimul **9**(6): 882-891.
https://www.sciencedirect.com/science/article/pii/S1935861X16301978

Background Movies and television (TV) programs are an important source of public information about ECT. Objective To narratively review the portrayal of ECT in international movies and TV programs from 1948 until present. Methods Several Internet movie databases and a database of phrases appearing in movies and TV programs were searched, supplemented with a Medline-search. No language restrictions were applied. Results ECT was portrayed in 52 movies (57 scenes), 21 TV programs (23 scenes), and 2 animated sitcoms (2 scenes). In movies, the main indication for ECT is behavioral control or torture (17/57, 29.8%), whereas in TV programs, the most frequent indication is erasing memories (7/25, 28%). In most scenes (47/82; 57.3%) ECT is given without consent, and without anesthesia (59/82; 72%). Unmodified ECT is depicted more frequently in American scenes (48/64, 75%), as opposed to scenes from other countries (11/18; 64.7%). Bilateral electrode placement is used in almost all (89%, 73/82) scenes. The vast majority of movies (46/57, 80.7%) and TV programs (18/25, 72%) show a negative and inaccurate image of the treatment. Conclusion(s) In the majority of scenes, ECT is used as a metaphor for repression, mind and behavior control, and is shown as a memory-erasing, painful and damaging treatment, adding to the stigma already associated with ECT. Only a few exceptions paint a truthful picture of this indispensable treatment in modern psychiatry.

Sumia, P., Seppälä, N., Ritschkoff, J., et al. (2021). "A Survey of Electroconvulsive Therapy in Finland." J ect **37**(1): 36-39.

OBJECTIVES: The purpose of this study was to explore the use of electroconvulsive therapy (ECT) in Finland in 2013. This included the rate of use, patient ages, sex, number of treatments, patient diagnoses, regional distribution, and availability of ECT. METHODS: A structured electronic questionnaire was used to collect data regarding the use of ECT from 21 Finnish hospital districts' 29 psychiatric ECT units. Data for comparison were collected from scientific publications concerning the use of ECT in Sweden, Norway, Denmark, and Estonia. RESULTS: Of 29 psychiatric ECT units, 25 (86%) responded. Electroconvulsive therapy was available in all except 1 hospital district, which used the services of another hospital district. Electroconvulsive therapy was administered to 1023 patients in total. The mean number of treatments per patient was 9.7. Twenty-three persons per 100,000 inhabitants received ECT. The ECT rate between hospital districts varied from 7.5 to 53.0 per 100,000 inhabitants. The mean number and median were 24.9 and 21.7 per 100,000 inhabitants, respectively. Maintenance therapy was administered to 27.1% of patients. Most (75%) of the ECT units indicated the capability to administer ECT to all patients who required it. The most common indications for ECT were major depression (38.4%), psychotic depression (30.9%), and bipolar disorder with depressive episodes (14.2%). CONCLUSIONS: Electroconvulsive therapy was available in every hospital district in Finland. In Finland, ECT was administered at approximately the same level as in Norway, Denmark, and

Estonia (24, 32, and 28 per 100,000 inhabitants, respectively), but less than in Sweden (41 per 100,000 inhabitants).

Tatu, L. (2018). "Edgar Adrian (1889-1977) and Shell Shock Electrotherapy: A Forgotten History?" Eur Neurol **79**(1-2): 106-107.

The English electrophysiologist Edgar Adrian (1889-1977) was the recipient of the Nobel Prize for physiology in 1932 for his research on the functions of neurons. During World War I, at Queen Square in London, he devised an intensive electrotherapeutic treatment for shell-shocked soldiers. The procedure, developed with Lewis Yealland (1884-1954), was similar to "torpillage," the faradic psychotherapy used in France. Adrian and Yealland considered that the pain accompanying the use of faradic current was necessary for both therapeutic and disciplinary reasons, especially because of the suspicion of malingering. According to Adrian, this controversial electric treatment was only able to remove motor or sensitive symptoms. After the war, he finally admitted that war hysteria was a complex and difficult phenomenon.

Taylor, S. (2007). "Electroconvulsive therapy: a review of history, patient selection, technique, and medication management." South Med J **100**(5): 494-498.

Electroconvulsive therapy (ECT) is a safe and effective treatment for severe and persistent depression, bipolar disorder and schizophrenia. Though ECT is now over 60 years old, it remains an underutilized treatment today. History, patient selection, safety, and characteristics of the treatment stimulus, technique, and medications used in ECT are reviewed. Dosing strategies, as pertaining to seizure threshold, will be considered. Mechanisms of action, especially with regard to serotonin, norepinephrine, and dopamine receptor expression will be discussed.

UKECT Review Group. (2003). Efficay and safety of lectroconvulsive therapy in depressive disorders.

van Schaik, A. M., Comijs, H. C., Sonnenberg, C. M., et al. (2012). "Efficacy and safety of continuation and maintenance electroconvulsive therapy in depressed elderly patients: a systematic review." Am J Geriatr Psychiatry **20**(1): 5-17.

BACKGROUND: Electroconvulsive therapy (ECT) is the most efficacious treatment in severely depressed elderly patients. Relapse and recurrence of geriatric depression after recovery is an important clinical issue, which requires vigorous and safe treatment in the long term. Continuation or maintenance ECT (M-ECT) may play an important role in this respect. METHODS: In this systematic search, we evaluate the efficacy and safety of M-ECT in preventing depressive relapse in patients age 55 or older. Computer databases were searched for relevant literature published from 1966 until August 2010 with additional references. RESULTS: Twenty-two studies met the search criteria including three randomized clinical trials. M-ECT was studied in nine studies exclusively in the elderly patients. CONCLUSIONS: Research on this clinically important topic is sparse. On the basis of available literature, M-ECT is probably as effective as continuation medication in severely depressed elderly patients after a successful course of ECT and is generally well tolerated. To date, methodologically sound studies, which take into account important issues in geriatric depression like cognition, comorbidity, and clinical parameters, are lacking.

Westphal, Rush et Department of Psychiatry. Louisiana State University Medical Center. Shreveport, L. U. (2000). "A statewide survey of ECT policies and procedures." J ect **16**(3): 279-286.

The 1990 American Psychiatric Association (APA) Electroconvulsive Therapy (ECT) Task Force Recommendations include facility policy and procedure guidelines. The objectives of this study were to determine and to improve the adherence to the 1990 APA ECT Task Force Recommendations on policies and procedures among the providers of ECT in Louisiana. Completed surveys on ECT policy and procedures were obtained from the seven major Louisiana ECT providers from the last quarter of 1996. Project coordinators distributed copies of the survey results and a comprehensive set of ECT policies and procedures at a statewide meeting of participating hospitals during the spring of 1997.

Most facilities had policies for electrical safety of ECT equipment, testing of new ECT equipment, pre-ECT work-up, ECT informed consent, patient instruction sheets, outpatient ECT, documentation of ECT procedures, clinical privileging, and ECT quality assurance monitoring. Subsequent telephone follow-up found that all participants changed their policies and procedures as a result of the project. Louisiana ECT providers showed general compliance with the facility policy and procedure aspects of the 1990 APA ECT Task Force Recommendations. The awareness model of guideline compliance was applicable to improving facility policies and procedures.

Wilkinson, S. T., Agbese, E., Leslie, D. L., et al. (2018). "Identifying Recipients of Electroconvulsive Therapy: Data From Privately Insured Americans." Psychiatr Serv **69**(5): 542-548.

OBJECTIVE: Despite the effectiveness of electroconvulsive therapy (ECT), limited epidemiologic research has been conducted to identify rates of ECT use and characteristics of patients who receive ECT. Sociodemographic and clinical characteristics associated with ECT use were examined among patients with mood disorders in the MarketScan commercial insurance claims database. METHODS: Among individuals with major depressive disorder or bipolar disorder, sociodemographic and clinical characteristics of those who received ECT and those who did not were compared by using bivariate effect size comparisons and multivariate logistic regression. RESULTS: Among unique individuals in the 2014 MarketScan database (N=47,258,528), the ECT utilization rate was 5.56 ECT patients per 100,000 in the population. Of the 969,277 patients with a mood disorder, 2,471 (.25%) received ECT. Those who received ECT had substantially higher rates of additional comorbid psychiatric disorders (risk ratio [RR]=5.70 for any additional psychiatric disorder), numbers of prescription fills for any psychotropic medication (Cohen's d=.77), rates of any substance use disorder (RR=1.97), and total outpatient psychotherapy visits (Cohen's d=.49). The proportion of patients with a mood disorder who received ECT in the West (.19%) was substantially lower than in other U.S. regions (.28%). This difference was almost entirely accounted for by one western state comprising 59.1% of patients in that region. CONCLUSIONS: Use of ECT is exceptionally uncommon and limited to patients with extensive multimorbidity and high levels of service use. ECT utilization is most limited in areas of the country where regulatory restrictions are greatest.

La variabilité des pratiques

ÉTUDES FRANÇAISES

Benadhira, Teles et Chsy. Auxerre, F. R. A. (2001). "Situation actuelle de l'électroconvulsivothérapie dans les services de psychiatrie adultes en France.; Current state of the practice of electroconvulsive therapy in psychiatric health services in France." L'Encéphale **27**(2): 129-136.

> Les auteurs présentent une enquête menée auprès de l'ensemble des services de psychiatrie publique adultes en France sur la pratique de l'ECT entre novembre 1996 et novembre 1997 ; 815 questionnaires ont été envoyés par voie postale, le taux de réponse étant de 47%. Parmi les 391 services ayant répondu, 51% ont déclaré avoir pratiqué l'ECTpendant cette période. Une analyse détaillée de leur pratique est fournie : type d'appareil utilisé, ECTd'entretien, produit anesthésique, position des électrodes, indications et effets secondaires. Tous les résultats sont présentés et discutés individuellement puis comparés avec ceux d'une enquête semblable menée 10 ans auparavant. Nous pouvons déjà signaler une baisse de la pratique de l'ECT entre 1986 et 1997 : 64% déclaraient utiliser ce traitement en 1986 contre à peine 51% dans notre enquête. On note cependant, une augmentation de l'ECT d'entretien (40% contre 11% avec p<0,001) et une amélioration qualitative de la pratique : appareils plus modernes et conditions de sécurité améliorées. Le retentissement de la circulaire de novembre 96 sur la pratique de l'ECT est évalué et discuté. Enfin, l'absence de l'équipement nécessaire à la pratique de l'ECT dans plusieurs secteurs nous fait nous interroger sur l'égalité d'accessibilité aux soins en France.

Capdevielle, D., Ritchie, K., Villebrun, D., et al. (2009). "Durées d'hospitalisation des patients souffrant de schizophrénie : facteurs cliniques de variations et leurs conséquences." L'Encéphale **35**(1): 90-96. http://www.sciencedirect.com/science/article/pii/S0013700608002091

> Résumé Au cours des dernières années, la plupart des pays industrialisés ont mis en place, pour les patients souffrant de schizophrénie, des programmes de désinstitutionalisation s'accompagnant d'une baisse importante du nombre de lits en intrahospitalier, les soins s'orientant vers des prises en charge en extrahospitalier. Mais cette réduction des durées d'hospitalisation a de nombreuses répercussions qui sont encore mal connues. Les hospitalisations au cours d'une année seraient plus nombreuses mais la question qui est de savoir si le nombre total de jour d'hospitalisation sur une année a été modifié reste non résolue. Par ailleurs, de nombreux facteurs liés aux patients et aux traitements sont impliqués dans les variations de la durée de séjour. Ces facteurs sont actuellement peu pris en compte dans les prises en charge des patients. Enfin, les répercussions de ces diminutions des durées de séjours sont encore discutées. La plupart des auteurs vont dans le sens d'une amélioration de la qualité de vie avec une meilleure réinsertion socioprofessionnelle mais soulignent l'importance d'être vigilant sur le risque suicidaire et la nécessité d'un accompagnement soutenu en extrahospitalier.

Coldefy, M. et Nestrigue, C. (2014). "L'hospitalisation au long cours en psychiatrie : analyse et déterminants de la variabilité territoriale." Questions D'economie De La Sante (Irdes)(202): 1-8. http://www.irdes.fr/recherche/questions-d-economie-de-la-sante/202-l-hospitalisation-au-long-cours-en-psychiatrie-analyse-et-determinants-de-la-variabilite-territoriale.pdf

> Les hospitalisations au long cours en psychiatrie – d'un an ou plus, en continu ou non, et associées à une présence en hospitalisation l'année précédente – ont concerné près de 12 700 patients en 2011. Si ce poids est faible dans la file active – 0,8 % des patients pris en charge en établissements de santé –, il représente en revanche un quart des journées d'hospitalisation et un quart des lits. Quand une indication thérapeutique ne l'impose pas et dans un contexte tant de réduction des capacités d'hospitalisation que de durée moyenne de séjour et de développement des soins ambulatoires en psychiatrie, le maintien prolongé à l'hôpital interroge. A partir du Recueil d'informations médicalisées en psychiatrie (Rim-P) et de nombreuses bases de données médico-administratives, cette étude vise à répondre à plusieurs questions : quelles sont les caractéristiques des patients hospitalisés au long cours en psychiatrie ? Comment expliquer la variabilité territoriale du recours à ce type d'hospitalisation ? Quel est le rôle joué

par l'organisation de l'offre de soins, de l'offre médicosociale et du contexte socio-économique dans ces disparités ?

Coldefy, M. et Nestrigue, C. (2015). "La variabilité de la prise en charge de la schizophrénie dans les établissements de santé en 2011." Questions D'economie De La Sante (Irdes)(206): 1-8.
http://www.irdes.fr/recherche/questions-d-economie-de-la-sante/206-la-variabilite-de-la-prise-en-charge-de-la-schizophrenie-dans-les-etablissements-de-sante-en-2011.pdf

La schizophrénie, trouble psychique sévère et invalidant, touche 1 à 2 % des adultes en France, soit environ 400 000 personnes (HAS, 2007). Ses caractéristiques en font non seulement une des pathologies psychiatriques les plus lourdes en termes de souffrance pour les personnes qui en sont atteintes et leur entourage mais aussi la plus coûteuse pour la société : apparition précoce, évolution souvent chronique, fréquence des hospitalisations, intensité des soins, taux élevé d'incapacité et maintien dans l'emploi difficile. A partir des données du Recueil d'informations médicalisées en psychiatrie (Rim-P), cette étude a pour but d'apporter des connaissances sur cette population et sa prise en charge au sein des établissements de santé français. Après une présentation de la patientèle suivie en établissement de santé, sont observées les différences de prises en charge entre établissements. Ces dernières sont d'autant plus variées que les phases de cette maladie complexe réclament une large gamme de modalités de prises en charge : depuis l'hospitalisation à temps plein aux différentes prises en charge à temps partiel et en ambulatoire.

Coldefy, M., Nestrigue, C. et Or, Z. (2012). Etude de faisabilité sur la diversité des pratiques en psychiatrie. Les rapports de l'Irdes ; 555. .
https://www.irdes.fr/EspaceRecherche/BiblioResumeEtSommaire/2012/Rapport1896.htm

Coldefy, M., Nestrigue, C., Paget, L. M., et al. (2016). "L'hospitalisation sans consentement en psychiatrie en 2010 : analyse et déterminants de la variabilité territoriale." Revue française des affaires sociales(6): 253-273.
http://www.cairn.info/revue-francaise-des-affaires-sociales-2016-2-page-253.htm

En France, 71 000 personnes ont été hospitalisées sans leur consentement en psychiatrie, en 2010. Le taux de recours à l'hospitalisation sans consentement varie fortement géographiquement, à la fois entre pays et à l'intérieur d'un pays. Si la contrainte aux soins est une exception psychiatrique, le soin librement consenti reste privilégié et majoritaire. Nécessaire dans certains cas, elle pose des questions en termes d'atteinte aux libertés des personnes et constitue une problématique majeure pour les équipes soignantes et les personnes concernées. À partir de l'exploitation des données du recueil d'informations médicalisées en psychiatrie, la présente étude propose de décrire cette population, de mesurer la variabilité géographique du recours aux soins sans consentement, et d'explorer le rôle de l'environnement géographique, socio-économique et sanitaire dans les disparités observées. Elle conclut au rôle prépondérant du contexte social et économique pour expliquer cette variabilité.

Coldefy, M., Nestrigue, C., Paget, L.-M., et al. (2016). "L'hospitalisation sans consentement en psychiatrie en 2010 : analyse et déterminants de la variabilité territoriale." Revue française des affaires sociales(2): 253-273.
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Gandré, C., Gervaix, J., Thillard, J., et al. (2018). "Thirty-day Readmission Rates and Associated Factors: A Multilevel Analysis of Practice Variations in French Public Psychiatry." J Ment Health Policy Econ **21**(1): 17-28.

BACKGROUND: Inpatient psychiatric readmissions are often used as an indicator of the quality of care and their reduction is in line with international recommendations for mental health care. Research on variations in inpatient readmission rates among mental health care providers is therefore of key importance as these variations can impact equity, quality and efficiency of care when they do not result from differences in patients' needs. AIMS OF THE STUDY: Our objectives were first to describe variations in inpatient readmission rates between public mental health care providers in France on a nationwide scale, and second, to identify their association with patient, health care providers and environment characteristics. METHODS: We carried out a study for the year 2012 using data from ten administrative national databases. 30-day readmissions in inpatient care were identified in the French national psychiatric discharge database. Variations were described numerically and graphically between French psychiatric sectors and factors associated with these variations were identified by carrying out a multi-level logistic regression accounting for the hierarchical structure of the data. RESULTS: Significant practice variations in 30-day inpatient readmission rates were observed with a coefficient of variation above 50%. While a majority of those variations was related to differences within sectors, individual patient characteristics explained a lower part of the variations resulting from differences between sectors than the characteristics of sectors and of their environment. In particular, an increase in the mortality rate and in the acute admission rate for somatic disorders in sectors' catchment area was associated with a decrease in the probability of 30-day readmission. Similarly, an increase in the number of psychiatric inpatient beds in private for-profit hospitals per 1,000 inhabitants in sectors' catchment area was associated with a decrease in this probability, which also varied with overall sectors' case-mix characteristics and with the level of urbanisation of the area. DISCUSSION: The extent of the variations and the factors associated with it question the adequacy of care and suggest that some of them may be unwarranted. Our findings should however be interpreted in consideration of several limits inherent to data quality and availability as we relied on information from administrative databases. While we considered a wide range of factors potentially associated with variations in 30-day readmissions, our model indeed only explained a limited part of the variations resulting from differences between sectors. IMPLICATIONS FOR HEALTH POLICIES: Our findings underscored that practice variations in psychiatry are a reality that merits the full attention of decision makers as they can impact the quality, equity and efficiency of care. A specific data system should be established to monitor practice variations in routine to promote transparency and accountability. IMPLICATIONS FOR FURTHER RESEARCH: Few associations were found between variations in 30-day inpatient readmissions and the supply of care. The routine collection of detailed organizational characteristics of health care providers at a national level should be supported to facilitate additional research work, both in France and in other contexts.

Gandré, C., Gervaix, J., Thillard, J., et al. (2018). "Geographic variations in involuntary care and associations with the supply of health and social care: results from a nationwide study." BMC Health Serv Res **18**(1): 253.

BACKGROUND: Involuntary psychiatric care remains controversial. Geographic disparities in its use can challenge the appropriateness of the care provided when they do not result from different health needs of the population. These disparities should be reduced through dedicated health policies. However, their association with the supply of health and social care, which could be targeted by such policies, has been insufficiently studied. Our objectives were therefore to describe geographic variations in involuntary admission rates across France and to identify the characteristics of the supply of care which were associated with these variations. METHODS: Involuntary admission rate per 100,000 adult inhabitants was calculated in French psychiatric sectors' catchment areas using 2012 data from the national psychiatric discharge database. Its variations were first described numerically and graphically. Several factors potentially associated with these variations were then considered in a negative binomial regression with an offset term accounting for the size of catchment areas. They included characteristics of the supply of care (public and private care, health and social care, hospital and community-based care, specialised and non-specialised care) as well as adjustment factors related to epidemiological characteristics of the population of each sector's catchment area and its level of urbanization. Such variables were extracted from complementary administrative databases. Supply characteristics associated with geographic variations were identified using a significance level of 0.05. RESULTS: Significant variations in involuntary admission rates were observed between psychiatric sectors' catchment areas with a coefficient of variation close to 80%. These variations were associated

with some characteristics of the supply of health and social care in the sectors' catchment areas. Notably, an increase in the availability of community-based private psychiatrists and the capacity of housing institutions for disabled individuals was associated with a decrease in involuntary admission rates while an increase in the availability of general practitioners was associated with an increase in those rates. CONCLUSIONS: There is evidence of considerable variations in involuntary admission rates between psychiatric sectors' catchment areas. Our results provide lines of thoughts to reduce such variations, in particular by supporting an increase in the availability of upstream and downstream care in the community.

Gandré, C., Gervaix, J., Thillard, J., et al. (2018). "Thirty-day Readmission Rates and Associated Factors: A Multilevel Analysis of Practice Variations in French Public Psychiatry." J Ment Health Policy Econ **21**(1): 17-28.

BACKGROUND: Inpatient psychiatric readmissions are often used as an indicator of the quality of care and their reduction is in line with international recommendations for mental health care. Research on variations in inpatient readmission rates among mental health care providers is therefore of key importance as these variations can impact equity, quality and efficiency of care when they do not result from differences in patients' needs. AIMS OF THE STUDY: Our objectives were first to describe variations in inpatient readmission rates between public mental health care providers in France on a nationwide scale, and second, to identify their association with patient, health care providers and environment characteristics. METHODS: We carried out a study for the year 2012 using data from ten administrative national databases. 30-day readmissions in inpatient care were identified in the French national psychiatric discharge database. Variations were described numerically and graphically between French psychiatric sectors and factors associated with these variations were identified by carrying out a multi-level logistic regression accounting for the hierarchical structure of the data. RESULTS: Significant practice variations in 30-day inpatient readmission rates were observed with a coefficient of variation above 50%. While a majority of those variations was related to differences within sectors, individual patient characteristics explained a lower part of the variations resulting from differences between sectors than the characteristics of sectors and of their environment. In particular, an increase in the mortality rate and in the acute admission rate for somatic disorders in sectors' catchment area was associated with a decrease in the probability of 30-day readmission. Similarly, an increase in the number of psychiatric inpatient beds in private for-profit hospitals per 1,000 inhabitants in sectors' catchment area was associated with a decrease in this probability, which also varied with overall sectors' case-mix characteristics and with the level of urbanisation of the area. DISCUSSION: The extent of the variations and the factors associated with it question the adequacy of care and suggest that some of them may be unwarranted. Our findings should however be interpreted in consideration of several limits inherent to data quality and availability as we relied on information from administrative databases. While we considered a wide range of factors potentially associated with variations in 30-day readmissions, our model indeed only explained a limited part of the variations resulting from differences between sectors. IMPLICATIONS FOR HEALTH POLICIES: Our findings underscored that practice variations in psychiatry are a reality that merits the full attention of decision makers as they can impact the quality, equity and efficiency of care. A specific data system should be established to monitor practice variations in routine to promote transparency and accountability. IMPLICATIONS FOR FURTHER RESEARCH: Few associations were found between variations in 30-day inpatient readmissions and the supply of care. The routine collection of detailed organizational characteristics of health care providers at a national level should be supported to facilitate additional research work, both in France and in other contexts.

Gandré, C., Gervaix, J., Thillard, J., et al. (2018). "Understanding geographic variations in psychiatric inpatient admission rates: width of the variations and associations with the supply of health and social care in France." BMC Psychiatry **18**(1): 174.
https://doi.org/10.1186/s12888-018-1747-2

Inpatient care accounts for the majority of mental health care costs and is not always beneficial. It can indeed have detrimental consequences if not used appropriately, and is unpopular among patients. As a consequence, its reduction is supported by international recommendations. Varying rates of psychiatric inpatient admissions therefore deserve to draw attention of researchers, clinicians and

policy makers alike as such variations can challenge quality, equity and efficiency of care. In this context, our objectives were first to describe variations in psychiatric inpatient admission rates across the whole territory of mainland France, and second to identify their association with characteristics of the supply of care, which can be targeted by dedicated health policies.

Le Bail, B., M. et Or, Z. d. (2016). Atlas des variations de pratiques médicales. Recours à dix interventions chirurgicales - Edition 2016, Paris : Irdes
http://www.irdes.fr/recherche/ouvrages/002-atlas-des-variations-de-pratiques-medicales-recours-a-dix-interventions-chirurgicales.pdf

Premier Atlas français des variations de pratiques médicales, cet ouvrage, élaboré grâce à une collaboration entre la DGOS, l'Irdes et les membres du groupe technique national Pertinence des soins, notamment l'ATIH, la Cnamts et la HAS, propose un panorama de dix interventions chirurgicales parmi 33 thématiques déclarées prioritaires par les pouvoirs publics en termes de pertinence et de qualité des soins, d'équité d'accès à l'offre de soins sur le territoire et d'efficience dans l'allocation de ressources humaines et financières. Ces interventions chirurgicales ont été sélectionnées car elles sont identifiées dans la littérature internationale comme sensibles à l'offre de soins et parce que leurs prises en charge varient selon les patients. Cet Atlas permet d'illustrer les écarts de pratiques chirurgicales existant entre les départements et d'interroger leurs causes afin de réduire celles qui ne correspondent pas aux besoins. Il s'adresse tant aux professionnels de santé qu'aux usagers du système de soins, aux institutions de santé et aux chercheurs : les premiers pour les inciter à comparer et questionner leurs pratiques, les deuxièmes pour leur apporter des informations transparentes, les derniers pour les encourager à alimenter la réflexion par la production de données objectives afin de mieux comprendre les déterminants et les conséquences des variations observées.

Lleonart, Pascal et David (2011). "Évaluation de la pratique de l'électroconvulsivothérapie dans une population de gériatres français." LA REVUE DE GERIATRIE **36**(1-2): 19-27, tabl.

Le recours à l'électroconvulsivothérapie dans le cadre de la dépression du sujet âgé est très variable selon les pays dans la littérature, nous avons évalué ce recours chez des gériatres praticiens hospitaliers français. C'est en connaissant mieux cette thérapeutique et ses indications, que les gériatres solliciteront plus souvent leurs psychiatres référents. Il est nécessaire de développer des partenariats entre les structures gériatriques hospitalières et les structures de soins réalisant les séances d'électroconvulsivothérapie. (extraits R.A.).

Moraud (2001). "De l'électroconvulsivothérapie à l'hôpital général en 1999 : étude de deux cas et réflexions.; The use of electroconvulsive therapy in a general hospital in 1999 : comments and study of two cases." ANNALES DE PSYCHIATRIE **16**(1): 14-20.

C'est un paradoxe : alors que les médicaments antidépresseurs et neuroleptiques n'ont jamais été aussi nombreux dans l'arsenal thérapeutique du psychiatre, l'électroconvulsivothérapie devient à nouveau d'actualité après des années de désaffection. Pourtant, malgré une redéfinition des indications, une législation spécifique à sa pratique, une poursuite incessante des recherches et réflexions à propos de son mode d'action, la sismothérapie divise encore et souvent les équipes de soins en psychiatrie, en même temps qu'elle provoque étonnement et curiosité en salle d'anesthésie. Les prises de position diverses des soignants à l'égard de l'électroconvulsivothérapie, au-delà des débats techniques et éthiques indispensables, rentrent en résonance avec leurs représentations propres de la maladie mentale et de son abord. Leur pratique s'en trouve dès lors directement interrogée.

Nestrigue, C., Coldefy, M. et Mousques, J. (2017). "Une hétérogénéité des hospitalisations pour dépression liée aux parcours de soins en amont." Questions D'economie De La Sante (Irdes)(228): 8.
http://www.irdes.fr/recherche/questions-d-economie-de-la-sante/228-une-heterogeneite-des-hospitalisations-pour-depression-liee-aux-parcours-de-soins-en-amont.pdf

Selon l'Enquête santé européenne (EHIS-ESPS), la prévalence estimée de la dépression en France est de 7 %, soit près de 4 millions de personnes âgées de 15 ans ou plus. En 2012-2013, 200 000 primo-hospitalisations pour un épisode dépressif ont été recensées dans les établissements de santé (Sniiram

apparié aux données hospitalières). Ces épisodes hospitaliers sont décrits à travers une typologie en 9 classes. Celles-ci mettent en évidence l'hétérogénéité des prises en charge, la fréquence des hospitalisations en service de médecine plutôt qu'en psychiatrie et leur caractère souvent « non programmé ». Ainsi, 1 primo-hospitalisé sur 10 n'a pas eu de suivi en ambulatoire avant cet épisode hospitalier, surtout parmi les bénéficiaires de la Couverture maladie universelle complémentaire (CMU-C), les jeunes et les personnes très âgées. Un psychiatre a été consulté par 3 patients hospitalisés sur 10 et plus de la moitié des patients a eu une délivrance d'antidépresseurs en amont de l'hospitalisation. L'analyse se concentre ensuite sur 5 classes afin d'étudier le parcours de soins des patients à travers les recours en ambulatoire aux médecins généralistes et aux psychiatres le semestre précédant l'hospitalisation.

Paraponaris, A. et Ventelou, B. (2021). Reçoit-on les mêmes soins partout en France ? La question de l'hérérogénéité des pratiques, de leur raison d'être et de leur contrôle. Le système de santé français aujourd'hui : enjeux et défis. Paris : Eska.

Rakita, U., Bingham, K., Fung, K., et al. (2017). "Factors Associated With Global Variability in Electroconvulsive Therapy Utilization." J ect **33**(4): 253-259.
https://journals.lww.com/ectjournal/Fulltext/2017/12000/Factors_Associated_With_Global_Variability_in.8.aspx

Objectives The aims of this study were to investigate the social and economic factors that contribute to global variability in electroconvulsive therapy (ECT) utilization and to contrast these to the factors associated with antidepressant medication rates. Methods Rates of ECT and antidepressant utilization across nations and data on health, social, and economic indices were obtained from multiple international organizations including the World Health Organization and the Organization for Economic Co-operation and Development, as well as from the published literature. To assess whether relationships exist between selected indices and each of the outcome measures, a correlational analysis was conducted using Pearson correlation coefficients. Those that were significant at a level of $P < 0.05$ in the correlation analysis were selected for entry into the multivariate analyses. Selected predictor variables were entered into a stepwise multiple regression models for ECT and antidepressant utilization rates separately. Results A stepwise multiple regression analysis indicated that government expenditure on mental health was the only significant contributor to the model, explaining 34.2% of global variation in ECT use worldwide. Human Development Index was the only variable found to be significantly correlated with global antidepressant utilization, accounting for 71% of the variation in global antidepressant utilization. Conclusions These findings suggest that across the globe ECT but not antidepressant medication utilization is associated with the degree to which a nation financially invests in mental health care for its citizens.

ÉTUDES ETRANGERES

Appleby, J., Raleigh, V., Frosini, F., et al. (2011). Variations in health care. The good, the bad and the inexplicable. Londres The King's Fund**:** 32 , fig.
http://www.kingsfund.org.uk/publications/securing_good.html

Variations in health care in the NHS are a persistent and ubiquitous problem. But which variations are acceptable or warranted? for example, variations driven by clinical need and informed patient choice ? and which are not? The important question is how to promote "good" variation and minimise "bad" variation. This report explores the possible causes of variation, shows the different ways in which variations can be measured, and analyses variations by PCT in rates of elective hospital admissions for selected procedures.

Bertolín Guillén, J. M., Peiro Moreno, S., Hernández De Pablo, M. E., et al. (2001). "[Variability in attitudes and use conditions of electroconvulsive therapy. Results of a preliminary study]." Actas Esp Psiquiatr **29**(6): 390-395.

OBJECTIVE: Presenting the results of a pilot study on attitudes and use of ECT in Spain which was administrated to volunteers during a national congress of psychiatry. MATERIAL AND METHODS: A cross survey on a sample of psychiatrists (N= 125) which is not representative enough who attended the congress. A descriptive analysis of the outcomes is made. RESULTS AND CONCLUSIONS: There is a statistically significant association depending whether ECT is used in the work place or not. When it is used, there are 100% favorable attitudes. On the other hand, only 36% attitudes are favorable when ECT is not used in the work place. It is typically applied within a period of 8-10 treatment sessions, with a mean frequency of three times a week, performed by psychiatrists who treat with this technique less than 10 patients per year and using facilities within 1 to 5 years old. Maintenance ECT is unusual and it is only performed in monthly or fortnightly sessions. The commonest anesthetic agents are Propofol and Thiopental but this is unknown by 27.6% of the practitioners. The outcomes are contrasted with the consolidated guidelines on clinical practice of ECT.

Bertolín-Guillén, J. M., Peiró-Moreno, S. et Hernández-de-Pablo, M. E. (2006). "Patterns of electroconvulsive therapy use in Spain." Eur Psychiatry **21**(7): 463-470.

OBJECTIVE: To describe the utilization, geographical variations and adaptation of ECT in the Spanish context. METHOD: A cross-sectional study, involving a questionnaire delivered to all hospitals with a Psychiatry Unit (PU) in Spain included in the National Hospitals Catalogue (N = 233). A descriptive analysis was made of the answers to the different questions, using an adequate denominator in each case: all PUs (n = 233), those units that prescribe and apply ECT (n = 174), or only those that apply the technology (n = 108). RESULTS: All PUs completed the questionnaire. Fifty-nine units (25.3%) neither prescribed nor applied ECT, while 108 (46.4%) prescribed and applied the technology, and 66 PUs (28.3%) only prescribed ECT. Those units with training responsibilities for psychiatry residents or pregraduate students, and those with a larger number of beds, were more inclined to apply ECT. The estimated ECT applied in the preceding 12 months totaled 2435 with an annual rate per 10,000 inhabitants of 0.61, and a range per Spanish Autonomous Community of 0.28-16.59. CONCLUSIONS: We now know a reliable rate and characteristics of the use of ECT in Spain, and the attitudes and opinion of PUs Spanish psychiatrists about it. We found a very important variability in ECT application rates among Autonomous Communities.

Bwalya, G. M., Srinivasan, V. et Wang, M. (2011). "Electroconvulsive therapy anesthesia practice patterns: results of a UK postal survey." J ect **27**(1): 81-85.

OBJECTIVE: To review anesthesia practice patterns associated with electroconvulsive therapy (ECT) in the UK. METHODS: A 12-item questionnaire survey on the practice of ECT anesthesia was sent to all units in the UK identified as providing ECT services. RESULTS: One hundred thirty active ECT units were identified. Sixty-six (51%) responded. Forty-five percent of respondents worked in units located within acute hospital boundaries and 53% outside acute hospital boundaries. Forty-seven percent of respondents were associated with units providing consultant anesthetic cover for 75-100% of ECT sessions. Twenty-seven percent of the units did not use capnography, 17% did not use continuous electrocardiography, and 16% did not use noninvasive blood pressure monitoring. LIMITATIONS: Results were entirely from respondents. No practices were directly observed. CONCLUSIONS: Although there is apparent widespread recognition of ECT Accreditation Service guidelines, compliance with recommended standards is variable. Given the typically high comorbidity of ECT patients, and indications of elevated anesthetic risk from non-UK studies, this has important implications for the safety of ECT anesthesia in the UK.

Case, B. G., Bertollo, D. N., Laska, E. M., et al. (2013). "Declining Use of Electroconvulsive Therapy in United States General Hospitals." Biol Psychiatry **73**(2): 119-126.
http://www.sciencedirect.com/science/article/pii/S0006322312007767

Background Falling duration of psychiatric inpatient stays over the past 2 decades and recent recommendations to tighten federal regulation of electroconvulsive therapy (ECT) devices have focused attention on trends in ECT use, but current national data have been unavailable. Methods We calculated the annual number of inpatient stays involving ECT and proportion of general hospitals

conducting the procedure at least once in the calendar year with a national sample of discharges from 1993 to 2009. We estimated adjusted probabilities that inpatients with severe recurrent major depression (n = 465,646) were treated in a hospital that conducts ECT and, if so, received the procedure. Results The annual number of stays involving ECT fell from 12.6 to 7.2/100,000 adult US residents, driven by dramatic declines among elderly persons, whereas the percentage of hospitals conducting ECT decreased from 14.8% to 10.6%. The percentage of stays for severe recurrent major depression in hospitals that conducted ECT fell from 70.5% to 44.7%, whereas receipt of ECT where conducted declined from 12.9% to 10.5%. For depressed inpatients, the adjusted probability that the treating hospital conducts ECT fell 34%, whereas probability of receiving ECT was unchanged for patients treated in facilities that conducted the procedure. Adjusted declines were greatest for elderly persons. Throughout the period inpatients from poorer neighborhoods or who were publicly insured or uninsured were less likely to receive care from hospitals conducting ECT. Conclusions Electroconvulsive therapy use for severely depressed inpatients has fallen markedly, driven exclusively by a decline in the probability that their hospital conducts ECT.

Charpeaud, T., Tremey, A., Courtet, P., et al. (2017). "Place of electroconvulsive therapy in the treatment of depression in France: A comparative study between clinical practice and international recommendations." European Psychiatry **41**: S767-S768.
http://www.sciencedirect.com/science/article/pii/S092493381731461X

Objectives To study the place of electroconvulsive therapy (ECT) in the treatment of major depressive disorder in France and compare it with international recommendations and algorithms. Method Multicenter, retrospective study in 12 French university hospitals. Diagnosis, delay between the onset of the episode and the first day of ECT, previous treatments have been identified. Only patients treated for major depressive disorder between 1 January 2009 and 1 January 2014 were included. Results A total of 754 patients were included (middle age 61.07years, sex ratio 0.53). The diagnoses listed were: first major depressive episode (14.95%), bipolar depression (38.85%) and unipolar recurrent depression (46.19%). The delay before ECT, was 11.01months (13,98), and was significantly longer for first episodes (16.45months, P<0.001) and shorter in case of psychotic symptoms (8.76months, P<0.03) and catatonic symptoms (6.70, P<0.01). Conclusions The delay before ECT appears on average, four times longer than recommended by treatment algorithms for the management of major depressive disorder. This long delay could be explained by a very heterogeneous access to this treatment in French territory.

Dam, H., Bendsen, B. B., Jakobsen, K., et al. (2010). "[Large differences in treatment of depression between departments of psychiatry]." Ugeskr Laeger **172**(46): 3183-3187.

INTRODUCTION: A large proportion of patients admitted to psychological departments and wards suffer from depression. Knowledge is limited about the clinical aspects and treatment of depression at admission and discharge, as well as about the differences between psychiatric hospitals. The purpose of this study was to develop a database for patients admitted to a psychiatric department comprising registration of central clinical parameters. MATERIAL AND METHODS: A group of senior psychiatrists with research experience selected 12 central clinical and treatment parameters. All five hospitals in the Copenhagen area participated. Centralised training in the use of Hamilton Depression Rating Scale (HDRS) was performed. At discharge the scores on the various parameters were reported to a central database. RESULTS: The educational HDRS ratings for the departments were rather uniform. The HDRS ratings and Beck Depression Inventory (BDI) ratings at admission and discharge were rather uniform between the participating departments. A large proportion of patients had depressive symptoms at discharge. The most prevalent antidepressants were newer selective serotonin reuptake inhibitors and serotonin norepinephrine reuptake inhibitors. Much variability was found in the use of medical augmentation strategies and in electroconvulsive therapy (ECT). CONCLUSION: The severity of depression at admission and discharge were uniform across the participating departments. Many patients suffered from depressive symptoms at discharge. Much variability was found in the use of medical augmentation strategies and ECT.

Diehr, P., Cain, K., Connell, F., et al. (1990). "What is too much variation? The null hypothesis in small-area analysis." Health services research **24**(6): 741-771.
https://pubmed.ncbi.nlm.nih.gov/2312306
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1065599/

A small-area analysis (SAA) in health services research often calculates surgery rates for several small areas, compares the largest rate to the smallest, notes that the difference is large, and attempts to explain this discrepancy as a function of service availability, physician practice styles, or other factors. SAAs are often difficult to interpret because there is little theoretical basis for determining how much variation would be expected under the null hypothesis that all of the small areas have similar underlying surgery rates and that the observed variation is due to chance. We developed a computer program to simulate the distribution of several commonly used descriptive statistics under the null hypothesis, and used it to examine the variability in rates among the counties of the state of Washington. The expected variability when the null hypothesis is true is surprisingly large, and becomes worse for procedures with low incidence, for smaller populations, when there is variability among the populations of the counties, and when readmissions are possible. The characteristics of four descriptive statistics were studied and compared. None was uniformly good, but the chi-square statistic had better performance than the others. When we reanalyzed five journal articles that presented sufficient data, the results were usually statistically significant. Since SAA research today is tending to deal with low-incidence events, smaller populations, and measures where readmissions are possible, more research is needed on the distribution of small-area statistics under the null hypothesis. New standards are proposed for the presentation of SAA results.

Doessel, D. P., Scheurer, R. W., Chant, D. C., et al. (2006). "Changes in private sector electroconvulsive treatment in Australia." Aust N Z J Psychiatry **40**(4): 362-367.

OBJECTIVES: This paper reports on changes, over time and between states, in the use of electroconvulsive therapy (ECT) in the private psychiatric sector in Australia between 1984 and 2004. METHOD: Data for ECT services, and all specialist psychiatry services provided under the Medicare system, have been analysed in absolute numbers and as utilization rates. RESULTS: Changes in the use of ECT over time are different from other services provided by private psychiatrists. As in other countries, the use of ECT initially declined in period studied but has increased in recent years. In addition, there is a clear pattern of differential use of ECT between the states and territories. CONCLUSIONS: This descriptive study cannot 'explain' the results obtained: other data, incorporated into an explanatory model using regression analysis, are needed to determine the factors underlying the utilization patterns obtained in this study. Thus, further work is needed. Furthermore, it is important to analyse data at a lower level of geographical aggregation than that of the state/territory: this (state/territory) aggregation conceals differences in utilization between metropolitan, minor city, rural and remote regions of the country.

Dunne, R. et McLoughlin, D. M. (2011). "Regional variation in electroconvulsive therapy use." Ir Med J **104**(3): 84-87.

Although electroconvulsive therapy (ECT) is the most powerful treatment for depression, substantial variability in use has been described in Ireland. The Mental Health Commission collects usage data from approved centres but does not include home addresses or independent sector patients. Therefore, estimates of regional variation cannot be accurate, e.g. 145 (35% of total) independent sector patients were omitted from their 2008 analysis. When public and independent sector patients are combined inter-regional variation for 2008 is more than halved (chi-squared decreased from 83 to 30), with Western region contributing most to variation (chi-squared = 43). Ratio of ECT programmes to depressed admissions correlated negatively with rate for depressed admissions (r = -0.53, p = 0.01), while depressed admission numbers correlated with acute beds per area (r = 0.68, p = 0.001). Regional variation in ECT is less than previously reported; service factors probably account for much of this with smaller centres admitting severely ill patients more likely to require ECT.

Gazdag, G., Dragasek, J., Takács, R., et al. (2017). "Use of Electroconvulsive Therapy in Central-Eastern European Countries: an Overview." Psychiatr Danub **29**(2): 136-140.

Though a number of reports on the use of electroconvulsive therapy (ECT) has been published from the Central-Eastern European region over the past two decades, a systematic review of this literature has not been published. Thus the aim of this paper was to review recent trends in ECT practice in Central-Eastern Europe. Systematic literature search was undertaken using the Medline, PSYCHINFO and EMBASE databases covering the period between January 2000 and December 2013. Relevant publications were found from the following countries: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, Ukraine, but none from Albania and Moldova. ECT practice in the region shows a heterogeneous picture in terms of utilization rate, main indications, and the technical parameters of application. On one end of the spectrum is Slovakia where the majority of psychiatric facilities offer ECT, on the other end is Slovenia, where ECT is banned. In about half of the countries schizophrenia is the main indication for ECT. In Ukraine, unmodified ECT is still in use. Clinical training is generally lacking in the region and only 3 countries have a national ECT protocol. Possible ways of improving ECT practice in the region are briefly discussed.

Glen, Scott et Andrew Duncan Clinic. Royal Edinburgh Hospital. Edinburgh Scotland, G. B. R. (2000). "Variation in rates of electroconvulsive therapy use among consultant teams in Edinburgh (1993-1996)." J Affect Disord **58**(1): 75-78.

Background : Critics of electroconvulsive therapy (ECT) have expressed concern about variations in ECT use among consultant teams within the same hospital. The aim was to establish whether or not there was a significant variation in rates of ECT use among consultant teams in the same hospital when in-patient workload was taken into account. Methods : A computerised database was used to calculate annual and aggregate rates of ECT use by consultant team, expressed as the number of individual in-patients treated per 100 in-patients discharged between 1993 and 1996. Results : The variation in aggregate rates of ECT use varied approximately 18-fold among the 1 general adult psychiatric teams (P<0.001), and twofold among the three sector old-age psychiatric teams (P<0.05). Conclusions : Substantial variation in the rates of ECT use was confirmed, but only among general adult psychiatric teams. Limitations : The extent to which findings from one teaching hospital can be generalised was unknown. Possible explanations of the variations were not assessed.

Haesebaert, J., Moreno, A., Lesage, A., et al. (2020). "A Descriptive Study of Data Collection Systems Used in Electroconvulsive Therapy Units in the Province of Quebec, Canada." J ect **36**(1): 36-41. https://journals.lww.com/ectjournal/Fulltext/2020/03000/A_Descriptive_Study_of_Data_Collection_Systems.8.aspx

Objectives This study aimed to describe the data collection systems routinely used by electroconvulsive therapy (ECT) units across the province of Quebec, Canada. Methods We conducted a descriptive, cross-sectional study. Using an online survey, 31 ECT units delivering inpatient or outpatient ECT treatments in the province of Quebec provided information on the data collection systems used, data recorded, data collection strategies, indicators of satisfaction, limitations of the current data collection systems, and expectations toward the improvement of ECT data collection. Results Most units routinely collected information on individuals receiving ECT treatments, mainly on the medical chart (80%) and in paper format (71%). Most units (88.9%) collected ECT data manually. Electroconvulsive therapy parameters are collected by 66% to 80% of units, but only 16% of them have computerized records. The main limitations of the current systems are as follows: (a) the low frequency of computerization, (b) the underutilization of data, and (c) difficulties in the integration of information from different ECT units. Although 83.3% were satisfied with the current data collection strategies, 80% had a very positive opinion about the development and implementation of an innovative ECT provincial data collection registry. Conclusions An integrated ECT provincial data collection system could overcome the variability documented in existing strategies and respond to the current provincial needs and expectations. Also, an integrated ECT provincial data collection system could support both clinical research and quality assurance necessary to inform standards of ECT practice in Quebec.

Harrison, R., Manias, E., Mears, S., et al. (2019). "Addressing unwarranted clinical variation: A rapid review of current evidence." J Eval Clin Pract **25**(1): 53-65.
https://onlinelibrary.wiley.com/doi/abs/10.1111/jep.12930

Abstract Introduction Unwarranted clinical variation (UCV) can be described as variation that can only be explained by differences in health system performance. There is a lack of clarity regarding how to define and identify UCV and, once identified, to determine whether it is sufficiently problematic to warrant action. As such, the implementation of systemic approaches to reducing UCV is challenging. A review of approaches to understand, identify, and address UCV was undertaken to determine how conceptual and theoretical frameworks currently attempt to define UCV, the approaches used to identify UCV, and the evidence of their effectiveness. Design Rapid evidence assessment (REA) methodology was used. Data sources A range of text words, synonyms, and subject headings were developed for the major concepts of unwarranted clinical variation, standards (and deviation from these standards), and health care environment. Two electronic databases (Medline and Pubmed) were searched from January 2006 to April 2017, in addition to hand searching of relevant journals, reference lists, and grey literature. Data synthesis Results were merged using reference-management software (Endnote) and duplicates removed. Inclusion criteria were independently applied to potentially relevant articles by 3 reviewers. Findings were presented in a narrative synthesis to highlight key concepts addressed in the published literature. Results A total of 48 relevant publications were included in the review; 21 articles were identified as eligible from the database search, 4 from hand searching published work and 23 from the grey literature. The search process highlighted the voluminous literature reporting clinical variation internationally; yet, there is a dearth of evidence regarding systematic approaches to identifying or addressing UCV. Conclusion Wennberg's classification framework is commonly cited in relation to classifying variation, but no single approach is agreed upon to systematically explore and address UCV. The instances of UCV that warrant investigation and action are largely determined at a systems level currently, and stakeholder engagement in this process is limited. Lack of consensus on an evidence-based definition for UCV remains a substantial barrier to progress in this field.

Hermann, R. C., Dorwart, R. A., Hoover, C. W., et al. (1995). "Variation in ECT use in the United States." American Journal of Psychiatry **152**(6): 869-875.
https://ajp.psychiatryonline.org/doi/abs/10.1176/ajp.152.6.869

OBJECTIVE: The authors measured the variation in ECT utilization rates across 317 metropolitan statistical areas of the United States and determined to what degree this variation is associated with health care system characteristics, demographic factors, and the stringency of state regulation of ECT. METHOD: Data from APA's 1988-1989 Professional Activities Survey were used to estimate ECT utilization rates for the metropolitan statistical areas. Multiple regression analysis was used to determine the relative influence of provider, demographic, and regulatory factors on variation in ECT use across areas. RESULTS: Among the psychiatrists surveyed, 17,729 reported treating 4,398 patients with ECT during the study period. No ECT use was reported in 115 metropolitan statistical areas. Among the remaining 202 metropolitan statistical areas, annual ECT use varied from 0.4 to 81.2 patients per 10,000 population. The strongest predictors of variation in ECT use across metropolitan statistical areas were the number of psychiatrists, number of primary care physicians, number of private hospital beds per capita, and stringency of state regulation of ECT. CONCLUSIONS: Rates of ECT use were highly variable, higher than for most medical and surgical procedures. In some urban areas, access to ECT appears limited. Predictors of variation in ECT rates have implications for expanding access to the procedure. The extent of variation suggests psychiatrists continue to lack consensus regarding the use of ECT. Better data on the effectiveness of psychiatric treatments may lead to a broader professional consensus and may narrow variations in clinical practices.

Ka Fai, C. (2003). "Electroconvulsive therapy in Hong Kong : Rates of use, indications, and outcome." J ect **19**(2): 98-102.

Introduction : There has been a concern about indiscriminate use of electroconvulsive therapy (ECT) in Asian countries. This study examined the rates of ECT use and the characteristics and outcomes of patients treated with ECT in Hong Kong. Method : A central database of ECT treatments was used to calculate annual rates of ECT use from 1997 to 2002. We surveyed prospectively patients received ECT over 12 months by a standardized questionnaire. Results : The ECT utilization rates varied from 0.27 to 0.34 patients treated per 10,000 population and 1.34 to 1.88 patients treated per 100 inpatients discharged. There were differences in the pattern of ECT use among Hong Kong, the United States, and the United Kingdom. Only 15% of ECT recipients were 65 years old or older and 23% had schizophrenia as primary diagnosis for ECT. Ninety-five percent of patients who received ECT improved with the treatment as assessed by clinicians. No severe complications and deaths occurred, and 6% stopped ECT due to undesirable results. Conclusion : The rate of ECT use in Hong Kong continues to be below that in the United States and the United Kingdom. Access to ECT is most limited to the elderly and private patients.

Leiknes, K. A., Schweder, L. J.-v. et Høie, B. (2012). "Contemporary use and practice of electroconvulsive therapy worldwide." Brain and Behavior **2**(3): 283-344.
https://onlinelibrary.wiley.com/doi/abs/10.1002/brb3.37

Abstract To explore contemporary (from 1990) utilization and practice of electroconvulsive therapy (ECT) worldwide. Systematic search (limited to studies published 1990 and after) was undertaken in the databases Medline, Embase, PsycINFO, SveMed, and EBSCO/Cinahl. Primary data-based studies/surveys with reported ECT utilization and practice in psychiatric institutions internationally, nationally, and regionally; city were included. Two reviewers independently checked study titles and abstracts according to inclusion criteria, and extracted ECT utilization and practice data from those retrieved in full text. Seventy studies were included, seven from Australia and New Zealand, three Africa, 12 North and Latin America, 33 Europe, and 15 Asia. Worldwide ECT differences and trends were evident, average number ECTs administered per patient were eight; unmodified (without anesthesia) was used in Asia (over 90%), Africa, Latin America, Russia, Turkey, Spain. Worldwide preferred electrode placement was bilateral, except unilateral at some places (Europe and Australia/New Zealand). Although mainstream was brief-pulse wave, sine-wave devices were still used. Majority ECT treated were older women with depression in Western countries, versus younger men with schizophrenia in Asian countries. ECT under involuntary conditions (admissions), use of ambulatory-ECT, acute first line of treatment, as well as administered by other professions (geriatricians, nurses) were noted by some sites. General trends were only some institutions within the same country providing ECT, training inadequate, and guidelines not followed. Mandatory reporting and overall country ECT register data were sparse. Many patients are still treated with unmodified ECT today. Large global variation in ECT utilization, administration, and practice advocates a need for worldwide sharing of knowledge about ECT, reflection, and learning from each other's experiences.

Lemasson, Patry, Lesage, et al. (2016). Profil d'utilisation de l'électroconvulsivothérapie au Québec, Institut national de santé publique du Québec, Montréal

L'électroconvulsivothérapie (ECT) est une intervention médicale de derniers recours utilisée pour certains troubles mentaux sévères qui résistent aux traitements par médicaments tels que la dépression majeure, la schizophrénie, la manie et plus rarement pour quelques conditions médicales graves. Elle consiste à induire une convulsion dans le cerveau, à l'aide d'un courant électrique. Cette étude portant sur le suivi de l'ECT dresse un portrait détaillé de l'utilisation de cette thérapie au Québec de 1996 à 2013. Pendant cette période, 8 149 personnes ont reçu de l'ECT, dont 804 personnes traitées en moyenne par année. Le présent rapport a pour objectif principal de montrer la capacité à dresser le profil d'utilisation de l'ECT au Québec de 1996 à 2013 à partir du jumelage de banque de données administratives. Les objectifs secondaires sont de présenter l'algorithme d'identification de cas d'ECT, d'estimer la prévalence et les modes de pratique de l'ECT, les indications diagnostiques et les volumes régionaux en établissement et par médecin-psychiatre.

Liu, A. Y., Rajji, T. K., Blumberger, D. M., et al. (2014). "Brain stimulation in the treatment of late-life severe mental illness other than unipolar nonpsychotic depression." Am J Geriatr Psychiatry **22**(3): 216-240.

Late-life mental illness is a growing concern. Current medications have limited efficacy and are associated with safety concerns. A variety of brain stimulation approaches offers alternative treatments. We performed a systematic literature search on the efficacy and safety of brain stimulation in late-life mental illnesses, excluding unipolar nonpsychotic depression. Studies on deep brain stimulation, electroconvulsive therapy (ECT), repetitive transcranial magnetic stimulation (rTMS), and vagal nerve stimulation that enrolled exclusively older adults (≥65 years) or analyzed older adults as a separate group were included. The search identified 1,181 publications, of which 43 met the above inclusion criteria: 24 were related to the treatment of non-unipolar depression (ECT: 21; rTMS: 2; ECT and rTMS: 1), 14 related to dementia (ECT: 7[2 of these studies were also related to depression]; vagal nerve stimulation: 2; rTMS: 4; deep brain stimulation: 1), and 7 to schizophrenia (ECT: 7). These studies reported a high degree of variability in efficacy and safety with promising results in general, particularly in the treatment of dementia and schizophrenia. Most publications were limited by small sample sizes, lack of control conditions, and lack of randomization. Large studies with a randomized controlled design or other designs such as crossover or off-on-off-on are needed. In contrast to the empiric and nonspecific use of ECT, future studies using modalities other than ECT could focus on novel biologically based interventions that target specific circuitry. These interventions could also be combined with other non-brain stimulation treatments for possible synergistic effects.

McClintock, S. M., Brandon, A. R., Husain, M. M., et al. (2011). "A systematic review of the combined use of electroconvulsive therapy and psychotherapy for depression." J ect **27**(3): 236-243.

OBJECTIVE: Electroconvulsive therapy (ECT) is one of the most effective treatments for severe major depressive disorder. However, after acute-phase treatment and initial remission, relapse rates are significant. Strategies to prolong remission include continuation phase ECT, pharmacotherapy, psychotherapy, or their combinations. This systematic review synthesizes extant data regarding the combined use of psychotherapy with ECT for the treatment of patients with severe major depressive disorder and offers the hypothesis that augmenting ECT with depression-specific psychotherapy represents a promising strategy for future investigation. METHODS: The authors performed 2 independent searches in PsychInfo (1806-2009) and MEDLINE (1948-2009) using combinations of the following search terms: Electroconvulsive Therapy (including ECT, ECT therapy, electroshock therapy, EST, and shock therapy) and Psychotherapy (including cognitive behavioral, interpersonal, group, psychodynamic, psychoanalytic, individual, eclectic, and supportive). We included in this review a total of 6 articles (English language) that mentioned ECT and psychotherapy in the abstract and provided a case report, series, or clinical trial. We examined the articles for data related to ECT and psychotherapy treatment characteristics, cohort characteristics, and therapeutic outcome. RESULTS: Although research over the past 7 decades documenting the combined use of ECT and psychotherapy is limited, the available evidence suggests that testing this combination has promise and may confer additional, positive functional outcomes. CONCLUSIONS: Significant methodological variability in ECT and psychotherapy procedures, heterogeneous patient cohorts, and inconsistent outcome measures prevent strong conclusions; however, existing research supports the need for future investigations of combined ECT and psychotherapy in well-designed, controlled clinical studies. Depression-specific psychotherapy approaches may need special adaptations in view of the cognitive effects of ECT.

Mercuri, M. et Gafni, A. (2011). "Medical practice variations: what the literature tells us (or does not) about what are warranted and unwarranted variations." J Eval Clin Pract **17**(4): 671-677.

This paper examines the sources of practice variations and definitions of unwarranted variation, as derived from the literature. The literature suggests variables/factors related to patient health needs, doctor 'practice style' and environmental constraints/opportunities as sources of practice variations. However, this list is likely to be incomplete because of significant unexplained variation in each study. Furthermore, it is unclear which factors are sources of unwarranted variation because the reviewed studies do not clearly discriminate between those variations that are unwarranted and those that are not. It is also unclear if context plays a role in determining if and when a factor is unwarranted. The

literature contains few frameworks of what constitutes unwarranted variation. Among those offered, more information is needed regarding the scientific basis for including the selected factors, and how to operationalize the framework provided a particular one is chosen. A clear and consistent framework for unwarranted variation, and a clear indication how each component factor could be measured and integrated can help investigators determine which variables should be included in their studies, such that the sources of unwarranted variations may be identified. A better understanding of the role of patient preference as a potential source of practice variations is also required.

Okkels, N., Mogensen, R. B., Crean, L. C., et al. (2017). "Treatment profiles in a Danish psychiatric university hospital department." Nord J Psychiatry **71**(4): 289-295.

BACKGROUND: Despite concerns about rising treatment of psychiatric patients with psychotropic medications and declining treatment with psychotherapy, actual treatment profiles of psychiatric patients are largely unknown. AIMS: To describe patterns in the treatment of patients in a large psychiatric university hospital department. METHODS: A descriptive mapping of treatment of in- and outpatients in a psychiatric department at Aarhus University Hospital Risskov, Denmark. Information was collected by healthcare staff using a 25-item survey form. The p-value was calculated with a chi-squared test and $p < 0.05$ was considered significant. The study was preceded by a pilot study on 41 patients. RESULTS: Over a 1 month period, a total of 343 consecutive patients were assessed and hereof 200 were included in the age range 18-90 years (mean 53.76); 86 men and 114 women. One-hundred and eighty-eight patients (94%) used psychotropic medication, 37 (19%) as monotherapy, and 148 (74%) in combination with non-pharmacological therapy. Ninety-seven (49%) had psychotherapy and 104 (52%) social support. Among inpatients, 21 (64%) had physical therapy, and 10 (30%) electroconvulsive therapy. In total, 163 (82%) had non-pharmacological therapy. Fifty-two (26%) patients had monotherapy, and 148 (74%) polytherapy. Mean number of treatment modalities used per patient was 2.07 for all patients and 3.23 for inpatients. CONCLUSIONS: In this department, polytherapy including non-pharmacological modalities is applied widely across all settings and patient categories. However, psychotropic medication clearly dominates as the most frequently applied treatment.

Patel, R. S., Sreeram, V., Thakur, T., et al. (2019). "A national study for regional variation of inpatient ECT utilization from 4,411 hospitals across the United States." Ann Clin Psychiatry **31**(3): 200-208.

BACKGROUND: We conducted a study to examine regional variation in the utilization of inpatient electroconvulsive therapy (ECT) across the United States, and its impact on length of hospital stay and cost. METHODS: Analysis of the Nationwide Inpatient Sample databases to compare patient and hospital characteristics, and regional variation of ECT administration across different regions of the United States. RESULTS: The study included 41,055 inpatients who had ECT from 4,411 hospitals. Electroconvulsive therapy use is significantly higher in the Midwest. A higher proportion of females (65.2%) than males received ECT across the United States. Medicaid beneficiaries were less likely to undergo ECT compared with patients with Medicare (52.2%) or private insurance (32%). Electroconvulsive therapy was used mainly for mood disorders (84.3%). There were marked reductions of inpatient costs ($25,298 to $38,244) and average hospital stay (16 days) when ECT was initiated within the first 5 days of admission compared with later during the hospitalization. CONCLUSIONS: There is a wide variability of utilization of ECT, depending on the region, type of hospital, and type of insurance carrier. The utilization of ECT services is reduced across the United States. Appropriate utilization of this effective treatment can greatly help patients who are not responding to standard therapeutics, reduce overall health care cost and length of stay, and, most importantly, alleviate suffering.

Philpot, Treloar, Gormley, et al. (2002). "Barriers to the use of electroconvulsive therapy in the elderly : a European survey." European Psychiatry **17**(1): 41-45.

A postal survey was carried out to determine the clinical and legal guidelines governing the use of electroconvulsive therapy (ECT) in the countries of the wider Europe. Respondents from 23 of the 33 countries returned completed questionnaires. Considerable variation was found in the availability of

ECT, the frequency of its use and associated legal procedures. However, there was a broad consensus with regard to the clinical indications. Access to the treatment was most frequently limited by financial or other resource constraints, political or legal restrictions.

Prudic, J., Olfson, M. et Sackeim, H. A. (2001). "Electro-convulsive therapy practices in the community." Psychol Med **31**(5): 929-934.

BACKGROUND: Controlled studies have demonstrated that variations in electro-convulsive therapy (ECT) technique impacts on efficacy and cognitive side effects. However, there is little information on the extent of variation in how ECT is practiced in community settings in the United States. METHODS: A survey of practice patterns was conducted at ECT facilities in the greater New York City metropolitan area. RESULTS: The 59 facilities varied considerably in many aspects of ECT practice, often clearly departing from the standards in the field. The more intensive the form of ECT used at facilities, the less likely was cognitive status assessed following the treatment course. CONCLUSION: There is marked variability in the nature of ECT practices in community settings. The extent to which this variability impacts on the benefits and risks of ECT needs to be examined.

Rakita, U., Bingham, K., Fung, K., et al. (2017). "Factors Associated With Global Variability in Electroconvulsive Therapy Utilization." J ect **33**(4): 253-259.
https://journals.lww.com/ectjournal/Fulltext/2017/12000/Factors_Associated_With_Global_Variability_in.8.aspx

Objectives The aims of this study were to investigate the social and economic factors that contribute to global variability in electroconvulsive therapy (ECT) utilization and to contrast these to the factors associated with antidepressant medication rates. Methods Rates of ECT and antidepressant utilization across nations and data on health, social, and economic indices were obtained from multiple international organizations including the World Health Organization and the Organization for Economic Co-operation and Development, as well as from the published literature. To assess whether relationships exist between selected indices and each of the outcome measures, a correlational analysis was conducted using Pearson correlation coefficients. Those that were significant at a level of $P < 0.05$ in the correlation analysis were selected for entry into the multivariate analyses. Selected predictor variables were entered into a stepwise multiple regression models for ECT and antidepressant utilization rates separately. Results A stepwise multiple regression analysis indicated that government expenditure on mental health was the only significant contributor to the model, explaining 34.2% of global variation in ECT use worldwide. Human Development Index was the only variable found to be significantly correlated with global antidepressant utilization, accounting for 71% of the variation in global antidepressant utilization. Conclusions These findings suggest that across the globe ECT but not antidepressant medication utilization is associated with the degree to which a nation financially invests in mental health care for its citizens.

Sanz-Fuentenebro, J., Vera, I., Verdura, E., et al. (2017). "Pattern of electroconvulsive therapy use in Spain: Proposals for an optimal practice and equitable access." Rev Psiquiatr Salud Ment **10**(2): 87-95.

OBJECTIVES: The main aims of our study were to estimate the current rates and pattern of electroconvulsive therapy (ECT) use in Spain, as well as exploring the causes that may be limiting its use in our country. METHODS: A cross-sectional survey was conducted covering every psychiatric unit in Spain as of 31 December 2012. RESULTS: More than half (54.9%) of the psychiatric units applied ECT at a rate of 0.66 patients per 10,000 inhabitants. There are wide variations with regard to ECT application rates between the different autonomous communities (0.00-1.39) and provinces (0.00-3.90). ECT was prescribed to a mean of 25.5 patients per hospital that used the technique and 4.5 in referral centre (P=.000), but wide differences were reported in the number of patients who were prescribed ECT from hospital to hospital. CONCLUSIONS: Although the percentage of psychiatric units applying ECT in our country is among the highest in the world, the ECT application rate in Spain is among the lowest within western countries. Large differences in ECT use have been reported across the various autonomous communities, provinces and hospitals. Thus, health planning strategies need

to be implemented, as well as promoting training in ECT among health professionals, if these differences in ECT use are to be reduced.

Selva-Sevilla, C., Gonzalez-Moral, M. L. et Tolosa-Perez, M. T. (2016). "The Psychiatric Patient as a Health Resource Consumer: Costs Associated with Electroconvulsive Therapy." Front Psychol **7**: 790.

BACKGROUND: Clinical practice protocols should consider both the psychological criteria related to a patient's satisfaction as a consumer of health services and the economic criteria to allocate resources efficiently. An electroconvulsive therapy (ECT) program was implemented in our hospital to treat psychiatric patients. The main objective of this study was to determine the cost associated with the ECT sessions implemented in our hospital between 2008 and 2014. A secondary objective was to calculate the cost of sessions that were considered ineffective, defined as those sessions in which electrical convulsion did not reach the preset threshold duration, in order to identify possible ways of saving money and improving satisfaction among psychiatric patients receiving ECT. METHODS: A descriptive analysis of the direct health costs related to ECT from the perspective of the public health system between 2008 and 2014 was performed using a retrospective chart review. All of the costs are in euros (2011) and were discounted at a rate of 3%. Based on the base case, a sensitivity analysis of the changes of those variables showing the greatest uncertainty was performed. RESULTS: Seventy-six patients received 853 sessions of ECT. The cumulative cost of these sessions was €1409528.63, and 92.9% of this cost corresponded to the hospital stay. A total of €420732.57 (29.8%) was inefficiently spent on 269 ineffective sessions. A sensitivity analysis of the economic data showed stable results to changes in the variables of uncertainty. CONCLUSION: The efficiency of ECT in the context outlined here could be increased by discerning a way to shorten the associated hospital stay and by reducing the number of ineffective sessions performed.

Sienaert, P., Falconieri, T., Obbels, J., et al. (2016). "Improving Practice in Electroconvulsive Therapy: A Nationwide Survey in Belgium." J ect **32**(1): 29-32.

OBJECTIVE: The aims of this study were to review the practice of electroconvulsive therapy (ECT) in Belgium and to compare it with the practice of ECT a decade ago. METHODS: A 30-item questionnaire on the practice of ECT was sent to all institutions providing ECT. Results were compared with the results of a survey performed in 2003. RESULTS: In 2013 to 2014, ECT was performed in 13.7% of all psychiatric services, equaling 1 ECT unit per 584,187 inhabitants. Fifteen of the 19 psychiatric services (78.94%) providing ECT replied to the questionnaire. Practice of ECT has improved significantly. LIMITATIONS: This questionnaire study relies upon answers given by psychiatrists and did not audit actual practices. CONCLUSIONS: The past decade, Belgium has witnessed significant changes in the practice of ECT. The number of facilities providing ECT almost halved adding to the growing expertise of fewer but larger ECT facilities. A possible down side to specialization is a potential diminution of the availability of ECT, requiring adequate referral policies in hospitals without ECT facilities. Although the practice significantly improved, continuous education is needed.

Skinner, J. (2011). Chapter Two - Causes and Consequences of Regional Variations in Health Care11This chapter was written for the Handbook of Health Economics (Vol. 2). My greatest debt is to John E. Wennberg for introducing me to the study of regional variations. I am also grateful to Handbook authors Elliott Fisher, Joseph Newhouse, Douglas Staiger, Amitabh Chandra, and especially Mark Pauly for insightful comments, and to the National Institute on Aging (PO1 AG19783) for financial support. Handbook of Health Economics. Pauly, M. V., McGuire, T. G. etBarros, P. P., Elsevier. **2:** 45-93.
https://www.sciencedirect.com/science/article/pii/B9780444535924000025

There are widespread differences in health care spending and utilization across regions of the US as well as in other countries. Are these variations caused by demand-side factors such as patient preferences, health status, income, or access? Or are they caused by supply-side factors such as provider financial incentives, beliefs, ability, or practice norms? In this chapter, I first consider regional health care differences in the context of a simple demand and supply model, and then focus on the empirical evidence documenting causes of variations. While demand factors are important—health in particular—there remains strong evidence for supply-driven differences in utilization. I then consider

evidence on the causal impact of spending on outcomes, and conclude that it is less important how much money is spent, and far more important how the money is spent—whether for highly effective treatments such as beta blockers or anti-retroviral treatments for AIDS patients, or ineffective treatments such as feeding tubes for advanced dementia patients.

Sutherland, K. et Levesque, J. F. (2020). "Unwarranted clinical variation in health care: Definitions and proposal of an analytic framework." J Eval Clin Pract **26**(3): 687-696.

RATIONALE, AIMS, AND OBJECTIVES: Unwarranted clinical variation is a topic of heightened interest in health care systems around the world. While there are many publications and reports on clinical variation, few studies are conceptually grounded in a theoretical model. This study describes the empirical foundations of the field and proposes an analytic framework. METHOD: Structured construct mapping of published empirical studies which explicitly address unwarranted clinical variation. RESULTS: A total of 190 studies were classified in terms of three key dimensions: perspective (assessing variation across geographical areas or across providers); criteria for assessment (measuring absolute variation against a standard, or relative variation within a comparator group); and object of analysis (using process, structure/resource, or outcome metrics). CONCLUSION: Consideration of the results of the mapping exercise-together with a review of adjustment, explanatory and stratification variables, and the factors associated with residual variation-informed the development of an analytic framework. This framework highlights the role that agency and motivation, evidence and judgement, and personal and organizational capacity play in clinical decision making and reveals key facets that distinguish warranted from unwarranted clinical variation. From a measurement perspective, it underlines the need for careful consideration of attribution, aggregation, models of care, and temporality in any assessment.

van Waarde, J. A., Verwey, B., van den Broek, W. W., et al. (2009). "Electroconvulsive therapy in the Netherlands: a questionnaire survey on contemporary practice." J ect **25**(3): 190-194.

OBJECTIVE: To investigate contemporary Dutch practice of electroconvulsive therapy (ECT) and adherence to national and international ECT guidelines. METHODS: Among psychiatrists from all Dutch ECT sites in university and general hospitals (n = 24) and psychiatric hospitals (n = 11), a survey was conducted regarding (1) characteristics of practitioners and institutions, (2) clinical practice of ECT, and (3) technical aspects of ECT. Adherence to 16 criteria selected from (inter)national guidelines was scored. RESULTS: Response rate was 94% (all 24 university and general hospitals and 9 of 11 psychiatric hospitals). Most respondents had extensive experience with ECT (median, 10 years; interquartile range, 4-15 years). Annually, approximately 8.5 sessions of ECT per 10,000 inhabitants were administered. In all ECT sites, 24% used exclusively bilateral electrode placement, 26% used ultrabrief pulse width, and 36% used dosage titration methods. Many practitioners had no knowledge of pulse width (42%) or of current characteristics (12%). Of the 16 investigated criteria, 14 were followed in at least 75% of the institutions. CONCLUSIONS: Although still increasing, the use of ECT in the Netherlands remains modest. Electroconvulsive therapy is generally practiced according to (inter)national guidelines. Electroconvulsive therapy is mostly started unilaterally, and generally, age-dependent dosage methods are being used. Knowledge on pulse width and current characteristics is limited. The implementation of updated guidelines might offer the opportunity to further improve practice and stimulate availability of ECT.

Vera, I., Sanz-Fuentenebro, J., Urretavizcaya, M., et al. (2016). "Electroconvulsive Therapy Practice in Spain: A National Survey." J ect **32**(1): 55-61.

OBJECTIVES: The use of electroconvulsive therapy (ECT) in Spain has not been systematically evaluated since 2000 to 2001. The aim of this study is to assess the current use of ECT in Spain. METHODS: A cross-sectional survey was conducted covering every psychiatric unit in Spain as of December 31, 2012. RESULTS: About 93.2% of the centers answered the questionnaire. About 54.9% of the psychiatric units applied ECT at a rate of 0.66 patients per 10,000 inhabitants. Wide variations existed among the different autonomous communities and provinces. Written informed consent was obtained in all the facilities. About 38.2% of ECT-treated patients were 65 years or older. About 55.7% were

women. Depressive episodes were the main indication for ECT (80.2%). All the facilities applied modified ECT. No sine wave current devices are currently used in Spain. Bifrontotemporal ECT was elective in 85% of the hospitals, bifrontal in 13.3%, and unilateral in 1.8%. Stimulus titration methods were elective in 8.6% of the centers. The decision to end ECT relied on the psychiatrist's clinical impression in 89.4% of the centers and on rating scales in 10.6%. The ECT training was mandatory in 56.5% of the centers. CONCLUSIONS: The ECT practice has significantly improved in Spain in recent years. Overall, Spanish facilities seem to comply with established clinical guidelines; however, specific concerns were identified, meaning there is still further scope for improvement.

Wennberg, J. E. (2002). "Unwarranted variations in healthcare delivery: implications for academic medical centres." Bmj **325**(7370): 961-964.

Wennberg, J. E., Barnes, B. A. et Zubkoff, M. (1982). "Professional uncertainty and the problem of supplier-induced demand." Soc Sci Med **16**(7): 811-824.

This paper discusses the puzzling problem of large differences in per capita use of certain common surgical procedures among neighboring populations, which by all available measures are quite similar in need for and access to services. The evidence reviewed here supports the hypothesis that variations occur to a large extent because of differences among physicians in their evaluation of patients (diagnosis) or in their belief in the value of the procedures for meeting patient needs (therapy). This hypothesis, which we call the professional uncertainty hypothesis, is germane to current controversies concerning the nature and extent of supplier influence on the demand for medical services. It is also important because of its implications for health regulatory policy. Our plan is to (1) review the relevance of the hypotheses for the supplier-induced demand controversy; (2) review the epidemiologic evidence on the nature and causes of variation; (3) examine patterns of use of common surgical procedures to illustrate the importance of supplier influence on utilization; and (4) consider some of the implications of the professional uncertainty hypotheses for public policy.

Westphal, J. R., Horswell, R., Kumar, S., et al. (1997). "Quantifying utilization and practice variation of electroconvulsive therapy." Convuls Ther **13**(4): 242-252.

The objective of this study was to quantify inpatient electroconvulsive therapy (ECT) utilization and its practice variation within the State of Louisiana using Medicare data for beneficiaries age 65 years and older. The Louisiana Medicare claims (MedPar) history and the Medicare beneficiary denominator files for fiscal years 1993 and 1994 were used for analysis. Statistical techniques used were: chi 2 to determine significance of the proposed null hypothesis, and the modified systemic component of variance (SCV) to determine the magnitude of variation between the individual parish utilization rates for ECT. The ECT utilization rate for the Louisiana Medicare population was found to be 2.38 per 10,000 person-years, falling well within the range of previous ECT utilization studies in the United States. The chi 2 value was 0.0003 when comparing parishes, indicating the presence of significant nonrandom variation. The SCVs of inpatient treatment for major depression and impatient ECT were 0.47 and 1.34, respectively. Inpatient ECT in this population demonstrates high geographic variability. Further research is required to determine and quantitate the factors responsible for the geographic variation in inpatient ECT utilization within the Louisiana Medicare population.

Wilhelmy, S., Grözinger, M., Groß, D., et al. (2020). "Electroconvulsive Therapy in Italy—Current Dissemination of Treatment and Determining Factors of the Past." J ect **36**(4).
https://journals.lww.com/ectjournal/Fulltext/2020/12000/Electroconvulsive_Therapy_in_Italy_Current.7.aspx

Objectives The history of electroconvulsive therapy (ECT) spans eight decades, over which period this method of treatment has been modernized. At the same time, however, the conflict between acceptance and rejection of ECT therapy remains unresolved today. This ambivalence is particularly noticeable in Italy, where the number of uses of ECT has been declining for several years. The aim of the present study is to examine the distribution and use of ECT in Italy today in comparison to 2009 and to analyze the factors that have influenced this downward development. Methods A cross-sectional study using a standardized Italian-language questionnaire was conducted in 2017 to

investigate the dissemination and practice of ECT in Italy. The study was addressed to all public and private hospitals providing ECT as a treatment. Results Of the 145 mental health facilities in Italy, only 9 offered ECT. A total of 293 patients were treated with ECT within 1 year (mainly for depression). Rates for 3-year treatments in the centers yielded an uneven picture: 4 centers showed an increase in cases and just as many a decline. A north-south divide existed in terms of geographical distribution: centers were mainly located in the north in 2017. Conclusions The study shows that the dissemination and use of ECT have reached a historical low in Italy. It further documents the extent to which the use of ECT declined after 2009. Three factors that have accompanied this development are discussed. If this downward trend is to be reversed, it will be necessary to develop a new approach so as to engender a perception of ECT as a viable treatment option.

Wood, D. A. et Burgess, P. M. (2003). "Epidemiological analysis of electroconvulsive therapy in Victoria, Australia." Aust N Z J Psychiatry **37**(3): 307-311.

OBJECTIVE: To determine the population-based utilization rate of electroconvulsive therapy (ECT) in Victoria between 1998-1999, to examine the characteristics of the ECT treated group, and to identify patient factors independently associated with differential rates of ECT treatment. METHOD: Electroconvulsive therapy is reported under statute in Victoria, Australia. Crude, age-adjusted and age-sex specific utilization rates were calculated using this statutory data for the 1998-1999 financial year and estimated mid-year populations from the Australian Bureau of Statistics. Descriptive characteristics of those treated with ECT were derived from the statutory data. Patient factors associated with an increased likelihood of ECT in the public sector were explored with logistic regression analysis, using non-ECT treated mental health patients from the Victorian Psychiatric Case Register as the reference population. RESULTS: The crude treated-person and age-adjusted rates for the State (both public and private sectors) were 39.9 and 44.0 persons per 100 000 resident population per annum, respectively. The crude and age-adjusted administration rates were 330.3 and 362.6 ECT administrations per 100 000 resident population per annum, respectively. Age-sex specific rates varied by age and sex, with rates generally increasing with age and female sex. Overall, 62.8% of the treated group were women, 32.9% aged over 64, and 75.2% had depression. Diagnosis, age and sex each independently predicted ECT in the public sector, with diagnosis the most important factor, followed by age then sex. CONCLUSIONS: Despite decades of use, the appropriate rate of ECT utilization is still unclear. Further research should be directed at exploring the factors, including provider variables, determining ECT treatment.

L'expérience des patients

Alexander, L., Kelly, L., Doody, E., et al. (2020). "Over the Cuckoo's Nest: Does Experiencing Electroconvulsive Therapy Change Your Mind? A Mixed Methods Study of Attitudes and Impact of Electroconvulsive Therapy on Patients and Their Relatives." J ect **36**(3): 172-179.

> OBJECTIVE: Electroconvulsive therapy (ECT) is an effective treatment for major depressive disorder, but some aspects remain controversial. Few studies have taken an in-depth mixed methods approach toward the study of attitudes, and there are no significant studies that explore the change of attitudes before and after treatment. The aim was to compare attitudes of patients and their relatives before and after ECT using quantitative and qualitative methods. METHODS: One hundred twenty-three participants were recruited. Forty-one patient/relative participants were recruited from 2 accredited ECT centers along with 82 age- and sex-matched general population controls. A validated 22-item survey about attitudes toward ECT was administered. Patient/relative participants completed the survey before treatment with ECT and engaged in a repeat survey and a semistructured interview 1 month after completion of ECT. Control participants completed the survey on a single occasion. RESULTS: Control versus pre-ECT surveys and pre-ECT versus post-ECT surveys both demonstrated statistically and clinically significant positive attitudinal differences (Cohen d = 1.37, P < 0.001; Cohen d = 1.2, P < 0.001). These differences were maintained for both the patient and relative pre/post subgroups (Cohen d = 1.15, P < 0.001; Cohen d = 1.33, P < 0.001). Qualitative analysis identified 13 attitudinal transitions in cognition, emotion, and imagery domains. CONCLUSIONS: This is the first study to examine a change in attitudes toward ECT of patients, their relatives, and with controls using mixed methods. The findings suggest a 2-phase positive attitudinal change, in which accurate information (phase 1) and experiential learning (phase 2) are both key components. These findings address stigma through accurate knowledge and experiential learning, with a positive outcome through changed attitudes.

Alexander, L., Malone, K., Counihan, E., et al. (2020). "Assessing Public Attitudes to Electroconvulsive Therapy: Validation of the Modified ECT Attitudes Questionnaire Using a Systematic Analysis." J ect **36**(1): 47-53.

> INTRODUCTION: Electroconvulsive therapy (ECT) is an established treatment for major depressive disorder, yet it remains controversial. Attitudes toward ECT have been studied in members of the public and service users, with diverse findings. There is no systematically validated scale to quantify attitudes. OBJECTIVES: The aim of this study was to validate a scale measuring attitudes toward ECT using a systematic analysis. METHODS: Validation consisted of 3 stages: item generation, theoretical analysis, and psychometric analysis. A total of 196 members of the public were surveyed, and the findings were used to perform principal component analysis, Cronbach alpha (CA), and interitem correlation. RESULTS: The Modified ECT Attitudes Questionnaire (EAQ) is a 22-item participant-rated questionnaire (0-44) consisting of 2 principal components: "moral and ethical perceptions of ECT" and "ECT as a last resort treatment." There was adequate reliability for the total EAQ (CA, 0.873) and each of the components (component 1 CA, 0.907; component 2 interitem correlation, 0.389). Among the 196 members of the public, the mean score was 20.4 (SD, 8.4), which equates to 46% positive responses. Component 1 elicited 39% positive responses; component 2 elicited 52% positive responses. The emotion components of attitudes elicited particularly negative responses. CONCLUSIONS: The EAQ is a validated and reliable scale for the measurement of attitudes toward ECT. Application of this scale to 196 members of the public indicates that negative attitudes are rooted in individuals' moral and ethical objections to ECT, particularly the emotion components of such attitudes. This scale can be applied to other groups, including service users, to further characterize attitudes that underlie the stigma toward ECT.

Andrade, C. (2005). "Knowledge about and attitudes towards ECT: methodological issues." J ect **21**(4): 255.

Andrade, C. (2007). "Patients and electroconvulsive therapy: Knowledge or attitudes?" Indian J Psychiatry **49**(2): 145.

Andrews, M. et Hasking, P. (2004). "Effect of two educational interventions on knowledge and attitudes towards electroconvulsive therapy." J ect **20**(4): 230-236.

The aims of this study were to assess students' knowledge and attitudes toward ECT and to assess the effect of an educational video and pamphlet on knowledge and attitudes toward ECT. Additionally, this study aimed to assess which form of information delivery was most efficacious in improving knowledge and changing attitudes toward ECT. Seventy-seven students were allocated to an educational video, pamphlet, or control group. Participants completed questionnaires assessing knowledge and attitudes pre and post the aforementioned educational interventions, to assess the relative efficacy of both forms of information delivery. The majority of participants had reasonable knowledge of ECT indications, effects and side effects. However, participants still maintained a number of common misconceptions and possessed an overall neutral to negative attitude toward ECT. After education (video or pamphlet), participants' overall knowledge significantly increased and attitudes became significantly more favorable, relative to the control group. However, neither form of education was superior. Providing education about ECT, whether in the form of a video or information pamphlet, has the ability to increase knowledge and improve attitudes toward this treatment. The above results may have particular applicability when designing and tailoring educational efforts to the needs of an individual who may be considering ECT as a treatment option.

Aoki, Y., Yamaguchi, S., Ando, S., et al. (2016). "The experience of electroconvulsive therapy and its impact on associated stigma: A meta-analysis." Int J Soc Psychiatry **62**(8): 708-718.

BACKGROUND: Despite its efficacy and safety, electroconvulsive therapy (ECT) is underutilized, in part due to stigma associated with the treatment. AIMS: The aim of this study was to test the hypothesis that experiencing ECT has an impact on associated stigma, as measured by patient and family knowledge of and attitudes toward ECT. METHODS: A comprehensive literature search was conducted using MEDLINE, EMBASE and PsycINFO. Studies with cross-sectional and/or longitudinal designs were identified. Studies were further categorized into subcategories based on participant type (patients or patient family members) and outcome domain (knowledge or attitudes). Effect size (Cohen's d) was calculated for each study and then integrated into each subcategory (participant type by outcome domain) using a random effect model. RESULTS: Eight studies were identified as being eligible for analysis. Two studies were cross-sectional, five were longitudinal and one incorporated both designs. Analysis of the longitudinal studies indicated that experiencing ECT both increased knowledge of and improved attitudes toward ECT in patients; in family members of patients, analysis showed significant positive change in knowledge of ECT, but no significant change in attitudes toward ECT. CONCLUSION: Experience with ECT may have a positive impact on knowledge of and attitudes toward ECT. However, the quality of evidence of included studies was low; further research is required in order to clarify the relationship and to identify information of use to individuals considering ECT as a treatment option.

Asztalos, M., Könye, P. et Gazdag, G. (2020). "[The public's attitudes towards electroconvulsive therapy in Hungary]." Ideggyogy Sz **73**(9-10): 311-316.

BACKGROUND AND PURPOSE: This research focused on the knowledge and attitude toward to electroconvulsive therapy (ECT) in the general population of Hungary. There are only a few studies in the international literature focusing on the public's attitude towards ECT, and no such study has been published from Hungary. METHODS: Participants were reached through social media and asked to fill out a semi-structured questionnaire on internet that comprised seventeen questions. Participation in the survey was entirely voluntary and anonymous. Participants of the survey were not working in health care; their answers to the questionnaire were compared to those of health-care workers. RESULTS: The result showed a significant difference between healthcare workers' and lay people's knowledge and attitude towards ECT. Two third of lay participants have never heard about ECT. Those familiar with ECT were relatively well-informed about its certain aspects yet rejection of ECT was significantly higher in the group of lay participants than in health-care workers. CONCLUSION: Lay people's incomplete knowledge and negative attitude towards ECT was confirmed by this survey. The dissemination of reliable information - which should be the shared responsibility of mental health

professionals and the media - would be vitally important to disperse the prejudices and doubts about ECT.

Atay Ö, C., Bag, S., Usta, H., et al. (2020). "Satisfaction and attitude of bipolar patients regarding electroconvulsive therapy: modified or unmodified." Nord J Psychiatry **74**(2): 131-137.

Objective: Ministry of Health of Turkey issued a legislation to use only modified electroconvulsive therapy (ECT) in 2005, and this study aimed to assess satisfaction and attitude of bipolar patients regarding modified and unmodified electroconvulsive therapy.Methods: A total of 100 patients (50 treated with modified electroconvulsive therapy (M-ECT) and 50 treated with unmodified ECT (UM-ECT) with a diagnosis of Bipolar Disorder (depressive or manic episode) were invited to participate in this study. Patients with euthymic mood were included. Satisfaction and attitude towards ECT were evaluated with a structured attitude questionnaire, and M-ECT and UM-ECT patients, and their subgroups (depressive vs. manic) were compared.Results: No significant differences were found between M-ECT and UM-ECT groups regarding age, sex, marital status and occupation. The majority of all patients (78%) were satisfied from treatment with ECT and with the outcome (88%), without significant differences between modified and unmodified groups. Forgetfulness (70%) and headaches (57%) occurred in all groups, with the only significant difference in forgetfulness being reported by more manic patients treated with UM-ECT. Depressive and manic patients treated with UM-ECT reported concerns of brain damage and physical harm significantly more frequently. While 86% of patients treated with M-ECT consented to a future treatment, this was significantly less in patients treated with UM-ECT (50%).Conclusions: Bipolar patients report a high degree of satisfaction treated either with modified or unmodified ECT but there was a significant difference in perception of adverse effects and willingness for receiving ECT in future.

Battersby, M., Ben-Tovim, D. et Eden, J. (1993). "Electroconvulsive therapy: a study of attitudes and attitude change after seeing an educational video." Aust N Z J Psychiatry **27**(4): 613-619.

Despite the proven efficacy of Electroconvulsive Therapy [ECT], negative attitudes occur in some patients towards its use. However, research into attitudes of patients and public towards ECT, and the influence of the media on these attitudes, is limited and often contradictory. The aims of this study were: to develop a self-administered questionnaire to assess attitudes; to assess the effect of an educational video on attitudes; and to assess the effect of the media on attitudes. The questionnaire was administered to psychiatric and non-psychiatric patients of a Veterans' hospital and to a group of general hospital patients. A video was shown to a randomly assigned group of the Veteran hospital psychiatric patients. Their attitudes were assessed before and after the video. An overall positive attitude towards ECT was demonstrated in all three groups. Showing a video to the Veteran psychiatric patients produced an improvement in some attitudes, but no reduction in fear. For the psychiatric patients, the effect of the media was negative.

Bergsholm, P. (2012). "Patients' perspectives on electroconvulsive therapy: a reevaluation of the review by Rose et al on memory loss after electroconvulsive therapy." J ect **28**(1): 27-30.

OBJECTIVES: In 2003, based on a review of 7 studies, Rose et al concluded that at least one third of patients report significant memory loss 6 months or more after electroconvulsive therapy (ECT). However, few details on the included studies were given. The present study evaluates factors that may have influenced the results. METHODS: The 7 studies were scrutinized as to the 6-month assessment criterion, whether the data represent ECT-treated patients in general, specification and significance of the memory loss, stimulus type, and electrode placement. RESULTS: In 3 studies, the 6-month inclusion criterion was not met, including 1 study with 98% satisfied patients and 1 study with only 37% valid response rate. Two other studies selected individuals from user/advocacy groups generally biased against ECT and were probably overlapping. The significance of memory problems was not mentioned in any of the studies. Two studies reported that 30% and 55% of patients treated with bilateral ECT in the 1970s felt they had persistent memory gaps around the time of treatment, but the long-obsolete sine wave stimulus type was used. The results mostly concerned bilateral ECT, whereas

unilateral ECT seemed to cause little complaints. CONCLUSIONS: Data used by Rose et al are severely flawed, making their results inconclusive and misleading.

Besani, C., Hevey, D., Mangaoang, M., et al. (2011). "ECT: An investigation of lay attitudes and experiences in an Irish sample." Ir J Psychol Med **28**(1): 32-34.

OBJECTIVES: Electroconvulsive therapy (ECT) is one of the most controversial psychiatric treatments of the modern era. Few studies have used validated scales to examine attitudes and knowledge regarding ECT in lay people. We examined attitudes, knowledge and experience of ECT using standardised questionnaires in Irish lay people, and compared the present results with the findings from a similar study reported over 25 years previously. METHODS: A total of 103 lay people were recruited from a variety of settings and completed a questionnaire. Data were analysed using independent samples t-tests, χ2 tests and Pearson correlations. RESULTS: Attitudes to ECT among Irish lay people are negative and knowledge of the treatment is poor. A significant correlation ($r = 0.32$) was found between knowledge and attitudes, with higher levels of knowledge associated with more positive attitudes. People with relatives who experienced ECT had a significantly higher ECT knowledge than the people without such relatives ($p < 0.05$). CONCLUSION: Results confirmed previous findings and revealed novel statistically significant factors that contributed to attitudes towards ECT. Further replications are required to examine the findings' robustness and the relationship between attitudes, knowledge and experience. Such research can help increase the understanding of ECT and remove the stigmatisation associated with ECT. Mental health education programmes should consider the relation between knowledge and attitudes to better inform programme focus and content.

Bilginer, Ç. et Karadeniz, S. (2019). "Knowledge, attitudes, and experience of child and adolescent psychiatrists in Turkey concerning pediatric electroconvulsive therapy." Asian J Psychiatr **46**: 74-78.

OBJECTIVE: Electroconvulsive therapy (ECT) is a treatment modality in children that can be life-saving but is rarely preferred. In this study, we aimed to evaluate the knowledge, experience, and attitudes of child and adolescent psychiatrists (CAPs) in Turkey about pediatric ECT and to draw attention to possible gaps and needs regarding this treatment in the child and adolescent psychiatric policies of Turkey. METHOD: An electronic survey was prepared and shared with child and adolescent psychiatric residents and specialists. The participants were asked about their residency training, clinical experience, and opinion about ECT. The obtained data were entered in SPSS Statistics 23.0. Descriptive analyses and chi-squared tests were applied. RESULTS: One hundred and ninety-one CAPs filled in the questionnaire, 28.8% of whom assessed their knowledge level as "I have no knowledge." Only 34% of them stated that their patients, most of whom had mood disorders, schizophrenia, and catatonia, had received ECT before. Four of these patients were under 12 years old. Sixty-six percent of the participants suggested that ECT was safe in adolescents, whereas only 5.8% held this view for prepubertal children. The most common reason for physicians not to apply ECT was "lack of means to apply ECT," and 92.7% stated that opportunities should be provided for pediatric ECT treatment by the hospital administration. CONCLUSION: This is the first data to present the knowledge and attitudes of CAPs in Turkey about ECT. The results suggest that physicians need to have more knowledge about ECT.

Bustin, J., Rapoport, M. J., Krishna, M., et al. (2008). "Are patients' attitudes towards and knowledge of electroconvulsive therapy transcultural? A multi-national pilot study." Int J Geriatr Psychiatry **23**(5): 497-503.

INTRODUCTION: Electroconvulsive therapy (ECT) is an effective, yet controversial treatment. Most patients receiving ECT have depression and it is likely that the majority having this treatment are older adults. However, attitudes towards ECT and knowledge of ECT in this population have never been studied in relation to the patients' cultural background. OBJECTIVE: To compare the attitudes and knowledge of ECT among older adults depressed patients across three culturally different populations and to explore the relationship between culture, knowledge and attitudes. METHODS: The study was conducted in one centre in each country. A semi-structured survey was used which included three sections: demographics characteristics, attitudes towards and knowledge of ECT. RESULTS: A total of 75 patients were recruited in this study: 30 patients from England; 30 patients from Argentina; and 15

patients from Canada. There was a significant difference in knowledge about ECT across the three countries. No significant difference was found in terms of attitudes. Knowledge was poor in all three countries. The most influential factor shaping subjects' attitudes and knowledge of ECT differed for the three countries. A weak correlation was found between knowledge of and attitudes towards ECT across all patients from the three different countries. CONCLUSION: Attitudes towards ECT are a very complex phenomenon. We could not find evidence that a particular cultural background affects attitudes towards ECT. Generalising the results of our study is restricted by the fact that this was a pilot study that suffered from limitations including small sample size and number of settings.

Calev, A., Kochav-Lev, E., Tubi, N., et al. (1991). "Change in Attitude Toward Electroconvulsive Therapy: Effects of Treatment, Time Since Treatment, and Severity of Depression." Convuls Ther **7**(3): 184-189.

Attitudes toward electroconvulsive therapy (ECT) of patients with major depressive episodes who are treated with ECT were evaluated before the beginning of treatment, 1 to 2 days after completion of the 12th treatment, and 6 months after the termination of the series using a questionnaire (adapted from Freeman and Kendall, 1980). Attitudes toward ECT become more positive after treatment, and remain so at the 6-month follow-up. Attitude changes correlate with changes in depressive symptoms and with subjective side effects during treatment. Patients who had a prior course of ECT had more knowledge of ECT but not a more positive attitude.

Chakrabarti, S., Grover, S. et Rajagopal, R. (2010). "Electroconvulsive therapy: a review of knowledge, experience and attitudes of patients concerning the treatment." World J Biol Psychiatry **11**(3): 525-537.

OBJECTIVES: Despite its proven efficacy and safety, electroconvulsive therapy (ECT) has a negative image and attracts widespread public criticism. In contrast, perceptions of patients who have received ECT appear to be more favourable. This review intended to encapsulate the evidence on knowledge and views concerning ECT among its recipients. METHODS: Extensive electronic and manual searches were conducted to identify all relevant studies on the subject. RESULTS: Seventy-five reports were found suitable. The evidence from these studies suggested that patients undergoing ECT were usually poorly informed about it. This was attributable to factors such as unsatisfactory pre-treatment explanations or post-ECT memory impairment. About one-third undergoing ECT reported feeling coerced to have the treatment. Fear of ECT and distressing side effects were also present in a majority. Despite these problems, a vast majority of patients perceived ECT to be helpful and had positive views regarding the treatment. Simultaneously, a sizeable proportion was quite critical, although little was known about the extent and nature of such disapproval. CONCLUSIONS: Overall, the weight of the evidence supports the notion that patients undergoing ECT are well-disposed towards it. However, much needs to be done to improve the practice of ECT and to enhance patients' satisfaction with the experience of treatment.

Chakrabarti, S., Grover, S. et Rajagopal, R. (2010). "Perceptions and awareness of electroconvulsive therapy among patients and their families: a review of the research from developing countries." J ect **26**(4): 317-322.

OBJECTIVES: Although electroconvulsive therapy (ECT) is used frequently in many developing countries, investigations of patients' awareness and perceptions of the treatment are rare. This review attempted to pool the research evidence in this area from developing countries. METHODS: Electronic searches of databases using relevant keywords were supplemented by extensive manual checking of cross-references and other sources. RESULTS: Sixteen such reports were found suitable for inclusion. The limited data showed that patients were usually poorly informed about ECT, which was partly attributable to unsatisfactory pretreatment explanations received by approximately two thirds of the recipients. About a third also reported deficiencies in the process of consent, including a sense of coercion. Fear of ECT was reported by a significant percentage (36%-75%). Distressing adverse effects were frequent; memory impairment (25%-95%) being the most common one. Despite these problems, most studies found that most patients perceived ECT to be helpful and had positive views about it. Simultaneously, a sizeable percentage (10%-32%) was quite critical of ECT. In contrast, relatives of patients were invariably better aware, more satisfied with the experience, and had more favorable attitudes toward ECT. CONCLUSIONS: Overall, the weight of the evidence supported the notion that

patients undergoing ECT and their relatives are well disposed towards it. However, the lacunae in treatment highlighted by this review and extreme variations in practice of ECT suggest that much more needs to be done to improve the practice of ECT in developing countries, to enhance patients' and relatives' satisfaction with the treatment.

Chavan, B. S., Kumar, S., Arun, P., et al. (2006). "ECT: Knowledge and attitude among patients and their relatives." Indian J Psychiatry **48**(1): 34-38.

BACKGROUND: It is believed that people lack sound knowledge and appropriate attitude towards electroconvulsive therapy (ECT). However, very little systematic research has gone into this area. AIM: To examine the knowledge and attitude of patients and their relatives towards ECT. METHODS: A 16-item questionnaire with satisfactory face validity and content validity was constructed and translated into Hindi. It was then administered to 89 patients and 83 relatives attending the psychiatry services in a major hospital in north India. RESULTS: More than 65% of the respondents in both the groups-patients as well as relatives-gave correct responses such as ECT is life saving, many times it causes temporary but not permanent memory impairment and that ECT is not a non-scientific treatment. There was non-significant disagreement between the two groups. CONCLUSION: The study is a preliminary exploratory one and is likely to give direction for further research with refined methodology.

Cowley, P. N. (1985). "An investigation of patients' attitudes to ECT by means of Q-analysis." Psychol Med **15**(1): 131-139.

This paper is a preliminary investigation into the application of Q-analysis in clinical psychiatry. Q-analysis is used to describe the interrelationships of attitudes that two groups of patients were observed to hold towards ECT. The data were collected as part of the Leicestershire ECT trial. One group comprised 96 patients who consented to enter the trial. The other group was formed by 23 patients who refused to participate in the trial, but who agreed to be interviewed so that their attitudes could be assessed. The method of applying Q-analysis is described, and the resultant outputs for the two groups are discussed. The presence of insight, a subjective need for treatment and trust in ECT were significant features in the 96 patients who agreed to enter the trial. However, among this group there was a subset of patients who were very anxious and who had little desire to receive ECT or trust in it. Among the 23 patients who refused to participate in the trial two main viewpoints could be discerned. First, there was a subgroup who seemed accurately to assess their need for treatment, had insight and trust in ECT as well as specifically wanting to receive it. The second was composed of patients who were very apprehensive, did not want ECT and generally were unhappy about being in hospital. In both groups it was considered that level of knowledge was relatively unimportant in the formation of attitudes.

Dan, A., Grover, S. et Chakrabarti, S. (2014). "Knowledge and Attitude of Patients with Psychiatric Disorders and their Relatives Toward Electroconvulsive Therapy." Indian J Psychol Med **36**(3): 264-269.

OBJECTIVE: Knowledge and attitude regarding electroconvulsive therapy (ECT) is one of the important parameters for acceptance of ECT as a safe and effective treatment option. Several factors shape the knowledge and attitude of general people such as previous experience of ECT, sources of their information about ECT and prevailing myths about ECT. The present study attempted to examine the knowledge and attitude concerning ECT among patients with psychiatric disorders and their relatives. MATERIALS AND METHODS: Knowledge and attitudes regarding ECT were assessed using the Bengali version of the ECT knowledge and attitude questionnaires, between 100 clinically stable patients with mental illnesses and their healthy relatives. RESULTS: Majority of the patients and relatives were unaware of the basic facts about ECT. Relatives were somewhat better informed and more positive about ECT than patients, but the differences between the two groups were not significant. Previous experience of ECT did not have any major impact in knowledge and attitude in both patients and relative groups. Patients obtained information, mostly from media (44%), doctors (23%), and from personal experiences (13%). On the other hand, relatives obtained information almost equally from media (26%), doctors (27%), and experience of friends or relatives (28%). No significant difference was

observed in knowledge and attitude in patients who had obtained their facts from doctors (n=23) and from other sources (n=77). Among relatives, those who had obtained their information from doctors (n=27) were better informed than those who had obtained so from other sources (n=73). CONCLUSIONS: Since patients and relatives have poor knowledge and negative attitude toward ECT, medical professionals should impart proper information about ECT to patients and relatives to increase the acceptability of this treatment.

De Meulenaere, M., De Meulenaere, J., Ghaziuddin, N., et al. (2018). "Experience, Knowledge, and Attitudes of Child and Adolescent Psychiatrists in Belgium Toward Pediatric Electroconvulsive Therapy." J ect **34**(4): 247-252.

OBJECTIVE: The purpose of the present study was to ascertain the experience, knowledge, and attitudes of child and adolescent psychiatrists toward the use of ECT (electroconvulsive therapy) in children and adolescents in Belgium. METHODS: A questionnaire was mailed to all the members of the Flemish and Walloon Association of Child and Adolescent Psychiatrists. RESULTS: Thirty-five percent (n = 151) of the psychiatrists responded to the questionnaire. Sixty-seven percent (n = 101) rated their knowledge about ECT in children and adolescents as nil or negligible. Only one percent (n = 2) estimated their knowledge to be advanced. Fifteen percent (n = 22) were aware of a minor treated with ECT. Ten (n = 16) and thirty-one percent (n = 47) believed that ECT is a safe treatment for children and adolescents, respectively. Only six percent (n = 10) would recommend ECT for a major psychiatric disorder in a child, whereas thirty-eight percent (n = 58) for an adolescent. Fifty-three percent (n = 71) regarded ECT as a treatment of last resort. A significant correlation was identified between knowledge and attitudes toward the use of ECT in minors. Respondents with some or advanced knowledge perceived ECT as a safer and a more effective treatment option than those with negligible knowledge. Most (91%, n = 138) of the child and adolescent psychiatrists are enthusiastic to learn more about the use of ECT in minors. CONCLUSIONS: Flemish and Walloon child and adolescents psychiatrists have very little experience with using ECT in minors. They self-estimated their knowledge as negligible but are keen to learn more about this treatment option. The lack of knowledge likely explains the rare use of ECT in Belgium for children and adolescents with serious psychiatric disorders.

Dong, M., Zhu, X. M., Zheng, W., et al. (2018). "Electroconvulsive therapy for older adult patients with major depressive disorder: a systematic review of randomized controlled trials." Psychogeriatrics **18**(6): 468-475.

BACKGROUND: Electroconvulsive therapy (ECT) has been widely used in treating older adult patients with major depressive disorder. The results of randomized controlled trials (RCT) are mixed. This study systematically examined the efficacy and safety of ECT versus antidepressants (AD) in older adult patients with major depressive disorder. METHODS: A literature search was conducted independently by two reviewers using the PubMed, Embase, PsycINFO, Cochrane Library, Chinese National Knowledge Infrastructure, Wanfang, and SinoMed databases from their inceptions until 17 May 2017. The Cochrane risk of bias and Jadad scale were used to assess the quality of RCT included in the systematic review. RESULTS: Five RCT (n = 374; mean age: 66.0-66.4 years; men: 36.4-58.3%) all conducted in China were identified, including three RCT (n = 203) with ECT alone and two RCT (n = 171) with ECT-AD co-treatment. In two of the three RCT, ECT alone was superior to AD monotherapy in improving depressive symptoms as assessed by the Hamilton Depression Scale and by clinical judgement at the conclusion of the course of ECT. Both RCT of AD-ECT co-treatment showed a significant reduction in the Hamilton Depression Scale total score after ECT compared with AD monotherapy. The response rate ranged from 80% to 97.5% in the ECT groups and from 63.4% to 73.3% in the AD groups. Rates of adverse reactions were similar between ECT and AD groups in studies with available data. Only one RCT reported the discontinuation rate without a significant group difference. CONCLUSIONS: This systematic review showed that ECT appears to be an effective and safe treatment for older adult patients with major depressive disorder. Further high-quality studies with extended follow-up are warranted.

Dowman, J., Patel, A. et Rajput, K. (2005). "Electroconvulsive therapy: attitudes and misconceptions." J ect **21**(2): 84-87.

This article deals with the current literature regarding general attitudes toward electroconvulsive therapy (ECT), and why there are so many misconceptions regarding this form of treatment. MEDLINE, PsychLIT and internet searches were carried out to gather the information discussed. Considerable stigma still surrounds ECT, and this probably remains the greatest barrier to public acceptance of this treatment.

Ejaredar, M. et Hagen, B. (2014). "I was told it restarts your brain: knowledge, power, and women's experiences of ECT." J Ment Health **23**(1): 31-37.

BACKGROUND: A discrepancy exists between clinician-led studies of people's experience of electroconvulsive therapy (ECT) and consumer-led studies, with the former typically being much more positive about the efficacy and side effects of ECT compared with the latter. Qualitative in-depth explorations of people's experiences of ECT are relatively rare, particularly those looking specifically at women's experience of ECT. AIMS: The aim of this qualitative study was to explore women's experiences of ECT, particularly their experience of knowledge and power related to ECT. RESULTS: Qualitative analysis of the interviews with nine women resulted in four main themes emerging from the interviews with the women: (i) "he really didn't say much," (ii) "I'm going to be very upset with you," (iii) "I was just desperate," and (iv) "it was like we were cattle." CONCLUSIONS: Overall, participants found their experiences with ECT to be quite negative, and characterized by a lack of knowledge during the procedure, and a lack of power throughout the entire process.

Feliu, M., Edwards, C. L., Sudhakar, S., et al. (2008). "Neuropsychological effects and attitudes in patients following electroconvulsive therapy." Neuropsychiatr Dis Treat **4**(3): 613-617.

The current study examined the effects of electroconvulsive therapy (ECT) on neuropsychological test performance. Forty-six patients completed brief neuropsychological and psychological testing before and after receiving ECT for the treatment of recalcitrant and severe depression. Neuropsychological testing consisted of the Levin Selective Reminding Test (Levin) and Wechsler Memory Scale-Revised Edition (WMS-R). Self-report measures included the Beck Depression Inventory (BDI), the Short-Term Memory Questionnaire (STMQ), and several other measures of emotional functioning and patient attitudes toward ECT. The mean number of days between pre-ECT and post-ECT testing was 24. T-test revealed a significant decrease in subjective ratings of depression as rated by the BDI, $t(45) = 9.82$, $P < 0.0001$ (Pre-BDI = 27.9 +/- 20.2; post-BDI = 13.5 +/- 9.7). Objective ratings of memory appeared impaired following treatment, and patients' self-report measures of memory confirmed this decline. More specifically, repeated measures MANOVA [Wilks Lambda $F(11,30) = 4.3$, $p < 0.001$] indicated significant decreases for measures of immediate recognition memory ($p < 0.005$), long-term storage ($p < 0.05$), delayed prose passage recall ($p < 0.0001$), percent retained of prose passages ($p < 0.0001$), and percent retained of visual designs ($p < 0.0001$). In addition, the number of double mentions on the Levin increased ($p < 0.02$). This study suggests that there may be a greater need to discuss the intermittent cognitive risks associated with ECT when obtaining informed consent prior to treatment. Further that self-reports of cognitive difficulties may persist even when depression has remitted. However, patients may not acknowledge or be aware of changes in their memory functioning, and post-ECT self-reports may not be reliable.

Fisher, P. (2012). "Psychological factors related to the experience of and reaction to electroconvulsive therapy." J Ment Health **21**(6): 589-599.

BACKGROUND: Aside from the focus on satisfaction levels, psychological aspects of the experience of electroconvulsive therapy (ECT) have not traditionally been the focus of significant research. Given that clinical psychologists work closely with professionals involved in administering ECT, and have increasing involvement with decisions about ECT, there is a potential role for clinical psychologists in this area. AIMS: To review the diverse sources of literature regarding how patients psychologically experience, and react to, ECT. METHOD: A literature search identified relevant published papers related to the patient experience of ECT. Reviewed articles included clinician and service user led research, comprising qualitative and quantitative research approaches and policy documents. RESULTS: Patients have multiple and diverse reactions to ECT. These can be considered under the

themes of consent, fear, powerlessness, memory and identity. The experience of ECT can significantly impact on patients and this can have a negative long-term influence. CONCLUSIONS: Clinical psychologists need to be actively involved in consent procedures, use clinical formulation to understand the perspective of patients, and empower patients to share their views of ECT with mental health professionals and service developers. Further research into how patients experience ECT, particularly using qualitative methods, is recommended.

Freeman, C. P. et Kendell, R. E. (1980). "ECT: I. Patients' experiences and attitudes." Br J Psychiatry **137**: 8-16.

One hundred and sixty-six patients who had ECT in either 1971 or 1976 were interviewed. The 1976 samples represented 89 per cent of those available for interview. Their experiences of ECT and their attitudes to it are described. They found ECT a helpful treatment and not particularly frightening, but side-effects, especially memory impairment, were frequent.

Freeman, C. P. et Kendell, R. E. (1986). "Patients' experiences of and attitudes to electroconvulsive therapy." Ann N Y Acad Sci **462**: 341-352.

Ghaziuddin, N., Kaza, M., Ghazi, N., et al. (2001). "Electroconvulsive therapy for minors: experiences and attitudes of child psychiatrists and psychologists." J ect **17**(2): 109-117.

OBJECTIVE: To estimate knowledge, experience, and attitudes towards the use of electroconvulsive treatment in minors (patients < 18 years of age), among child and adolescent psychiatrists and psychologists. METHOD: 1,600 questionnaires were mailed to a group of child and adolescent psychiatrists and psychologists. RESULT: There were 625 (39%) respondents. 329 (53.8%) of the respondents stated that they possessed minimal knowledge about the use of ECT in children and adolescents. Lack of confidence in providing a second opinion was common and reported by 75%. Compared with those with minimal knowledge, respondents with advanced knowledge reported a higher perception of safety and efficacy. The majority (70%) of the respondents regarded ECT as a treatment of last resort. CONCLUSION: Many child and adolescent psychiatrists and psychologists have very little knowledge, training, or experience in this treatment. They seem to be ill equipped to appropriately consider or advise patients and families about ECT. Clinical and research implications of these findings are discussed.

Golenkov, A., Ungvari, G. S. et Gazdag, G. (2012). "Public attitudes towards electroconvulsive therapy in the Chuvash Republic." Int J Soc Psychiatry **58**(3): 289-294.

BACKGROUND: Public attitudes towards a given medical procedure can have a significant influence on the employment of that method. Electroconvulsive therapy (ECT) is a medical procedure that has received an exceptionally ambiguous public reception since its inception. AIM: To survey the level of information about and attitudes towards ECT in a general population sample of the Chuvash Republic of the Russian Federation. METHODS: A randomly selected cohort of 5,373 people was contacted by telephone. The respondents were asked three closed and three open questions. RESULTS: The response rate was 74.7%. Only 35.2% of those interviewed said they knew anything about ECT. Health professionals and younger respondents were better informed. The two main sources of information about ECT were foreign films and the mass media. The main indication of ECT was thought to be schizophrenia. The majority (63.3%) of the respondents had negative opinions and emotions about ECT. CONCLUSION: Limited information about and generally negative attitudes towards ECT were found in the general population of the Chuvash Republic. Gender, age, education level, employment in the health industry, and information source were found to be the determining factors in the knowledge of and attitudes towards ECT.

Gowda, G. S., Kumar, C. N., Ray, S., et al. (2019). "Caregivers' Attitude and Perspective on Coercion and Restraint Practices on Psychiatric Inpatients from South India." J Neurosci Rural Pract **10**(2): 261-266.

BACKGROUND: Coercion and restraint practices in psychiatric care are common phenomena and often controversial and debatable ethical issue. Caregivers' attitude and perspective on coercion and

restraint practices on psychiatric inpatients have received relatively less research attention till date. AIMS: Caregivers' attitude and perspective on coercion and restraint practices on psychiatric inpatients. METHODOLOGY: This is a hospital-based, a descriptive, cross-sectional study. A total of 200 (n = 200) consecutive patient and their caregivers were chosen between June 2013 and September 2014 through computer-generated random numbers sampling technique. We used a semi-structured interview questionnaire to capture caregivers' attitude and perspective on coercion and restraint practices. Sociodemographic and coercion variable were analyzed using descriptive statistics. McNemar test was used to assess discrete variables. RESULTS: The mean age was 43.8 (±14.9) years. About 67.5% of the caregivers were family members, 60.5% of them were male and 69.5% were from low-socioeconomic status. Caregivers used multiple methods were used to bring patients into the hospital. Threat (52.5%) was the most common method of coercion followed by persuasion (48.5%). Caregivers felt necessary and acceptable to use chemical restraint (82.5%), followed by physical restraint (71%) and electroconvulsive therapy (ECT) (56.5%) during acute and emergency psychiatric care to control imminent risk behavior of patients. CONCLUSION: Threat, persuasion and physical restraint were the common methods to bring patients to bring acutely disturbed patients to mental health care. Most patients caregivers felt the use of chemical restraint, physical restraint and ECT as necessary for acute and emergency care in patients with mental illness.

Grover, S., Varadharajan, N. et Avasthi, A. (2017). "A qualitative study of experience of parents of adolescents who received ECT." Asian J Psychiatr **30**: 109-113.

AIM OF THIS STUDY: To evaluate the experience of parents of adolescents who received ECT for severe mental illness. METHODOLOGY: Using qualitative methods, 6 parents of 5 adolescents were interviewed by using a self-designed semi-structured interview after the completion of ECT course. The clinicians involved in the ECT procedure, i.e., seeking informed consent and administration of ECT were not aware about the study. All the interviews were recorded and the content was analysed and themes were generated. RESULTS: Parents of all the 5 adolescents expressed that their children were considered for ECT only after the patient had not responded to medication and were unmanageable. Prior to ECT the treating doctors did explain to them about the ECT procedure, they were given information booklet and they were not coerced to consent for ECT. Some of the parents reported that they had dilemma prior to giving consent and were scared prior to the first ECT. However, as the clinical condition of their children improved, they felt that ECT was a good treatment. Majority of the parents felt that ECT was delayed for their children. When asked about restriction in use of ECT in children and adolescents, the parents expressed that it is important for law makers to understand the distress of the parents,when their children are acutely ill. They expressed that decision of administration of ECT must be left to the family and the treating clinicians. CONCLUSION: Parents of adolescents considered for ECT are generally satisfied with the treatment procedure.

Grover, S. K., Chakrabarti, S., Khehra, N., et al. (2011). "Does the experience of electroconvulsive therapy improve awareness and perceptions of treatment among relatives of patients?" J ect **27**(1): 67-72.

OBJECTIVE: Evidence suggests that the actual experience of electroconvulsive therapy (ECT) has a positive impact on perceptions regarding the treatment among patients and their relatives. This assumption was tested by comparing relatives of patients treated with ECT with those of patients treated by other means. DESIGN: Knowledge about and attitudes toward ECT were assessed using specifically designed questionnaires among 206 relatives of patients who were undergoing psychiatric treatment but had never received ECT (non-ECT group). The results were compared with those obtained among 77 relatives of patients who had undergone the treatment (ECT-treated group). RESULTS: The relatives of the ECT-treated group were more likely to have acquired their information about ECT from physicians, whereas relatives of the non-ECT group usually relied on the media for this purpose. The relatives who obtained their information from physicians were more aware and more positive about ECT than those who obtained their information from the media. Knowledge about ECT was greater among relatives of the ECT-treated group than those of the non-ECT group. The relatives of the ECT recipients had significantly more positive attitudes toward the treatment, whereas the relatives of the non-ECT group were more often either ambivalent about ECT or critical of the treatment. CONCLUSIONS: Although the groups differed on certain clinical and demographic variables,

these differences were unlikely to have influenced the results significantly. Thus, it was possible to conclude that sharing the experience of ECT with the patient had a significant and positive impact on the relative's knowledge and attitudes concerning the treatment.

Hersh, J. K. (2013). "Electroconvulsive therapy (ECT) from the patient's perspective." J Med Ethics **39**(3): 171-172.

This is a response to Dr Charlotte Rosalind Blease's paper 'Electroconvulsive Therapy (ECT), the Placebo Effect and Informed Consent', written by Julie K. Hersh who has had ECT. Hersh argues that placebo effect is impossible to prove without endangering the lives of participants in the study. In addition, informing potential ECT patients of unproven placebo effect could discourage patients from using a procedure that from experience has proven highly effective.

Hillard, J. R. et Folger, R. (1977). "Patients' attitudes and attributions to electroconvulsive shock therapy." J Clin Psychol **33**(3): 855-861.

An attributional analysis of ECT as a placebo was investigated by comparing the attitudes of patients on two psychiatric wards. It was hypothesized that on the ward on which ECT was administered more frequently, general attitudes toward the treatment would be more favorable and more patients would express the opinion that ECT had worked well for them personally. The results, which supported the predictions, indicate that the operation of placebo effects in connection with ECT may account for differential treatment results more adequately than explanations based on physiological models. The findings also suggest that more research is needed to explore the relationship between patients' attitudes and treatment outcomes.

Hoffman, G. A., McLellan, J., Hoogendoorn, V., et al. (2018). "Electroconvulsive Therapy: The Impact of a Brief Educational Intervention on Public Knowledge and Attitudes." Int Q Community Health Educ **38**(2): 129-136.

The safety and efficacy of electroconvulsive therapy (ECT) are well established, yet efforts to educate the public about ECT advancements are lagging. The purpose of this study was to experimentally examine the impact of a brief educational intervention on public knowledge of, and attitudes toward, ECT. Participants (n = 91) from a private liberal arts university in the upper Midwestern region of the United States were randomly assigned to either an educational intervention or a control group. The educational intervention group read a brief informational pamphlet about ECT. Both groups completed a 24-item ECT knowledge and attitude measure. Participants who read the ECT pamphlet demonstrated significantly higher levels of ECT knowledge and reported more favorable attitudes toward ECT than did the control group. Furthermore, knowledge of ECT significantly predicted attitudes toward the treatment. Educating the public about available medical treatments not only facilitates help-seeking behavior among prospective patients and their families, but also it hallmarks the informed consent process once help is sought.

Iodice, A. J., Dunn, A. G., Rosenquist, P., et al. (2003). "Stability over time of patients' attitudes toward ECT." Psychiatry Res **117**(1): 89-91.

This study examined the stability of patients' attitudes toward electroconvulsive therapy (ECT). Surveys were administered to 64 study participants at 2 and 4 weeks post treatment. The survey responses were highly significantly correlated and not significantly different, which suggests that attitudes toward ECT are stable during this time.

Kalayam, B. et Steinhart, M. J. (1981). "A survey of attitudes on the use of electroconvulsive therapy." Hosp Community Psychiatry **32**(3): 185-188.

Electroconvulsive therapy in recent years has received extensive coverage in the mass media, much of it negative. However, little can be found in either the professional literature or the popular press on the attitudes of professionals, patients, and the general public toward ECT. A questionnaire study of 587 individuals drawn from these three categories shows an over-all favorable response to the use of

ECT, despite the presence of significant differences in response among members of each category. The implications of the findings for current practice and research are discussed.

Khan, G., Nazar, Z., Haq, M. M. U., et al. (2020). "Assessment of attitudes of patients with psychiatric disorders regarding electroconvulsive therapy as a treatment option." Pak J Med Sci **36**(3): 565-568.

OBJECTIVE: To assess the attitudes of psychiatric patients towards electroconvulsive therapy (ECT) as a treatment modality. METHODS: This descriptive cross-sectional study was conducted from 1(st) January, 2017 to 15(th) April, 2018 in Department of Psychiatry, MTI, Lady Reading Hospital, Peshawar. It comprised of total 154 patients, having previous experience with electroconvulsive therapy (ECT) who were selected through a non-probability consecutive sampling. Their attitude was assessed by their responses to 15 questions on a Likert Scale, each question scoring 01-05 with a summed up cut-off score of 45 points. Score over 45 points is considered positive and below 45 as negative while those scoring exactly 45 points were considered as having Ambivalent attitude towards ECT. RESULTS: Of all, 73% patients revealed positive and 27% negative attitude towards ECT. Mean age of the sample was 35 years. Out of all patients, 67.5% were males & 32.5% females, 73% were married & 27% unmarried, 47% were illiterate & 53% variably educated, 43% were employed while 57% were unemployed. CONCLUSION: A significant majority of the patients accepted ECT as an effective treatment modality. However, to make the procedure more acceptable, it may be made more effective and safe to the expectations of the patients and medical professionals for better outcomes.

Koopowitz, L. F., Chur-Hansen, A., Reid, S., et al. (2003). "The subjective experience of patients who received electroconvulsive therapy." Aust N Z J Psychiatry **37**(1): 49-54.

OBJECTIVE: Despite the vast amount of scientific literature available on electroconvulsive therapy (ECT), there is little qualitative focus upon the patients' subjective experience of this procedure. Using an exploratory descriptive methodology, this study aims to provide a more unique insight into what certain patients actually think of ECT. METHOD: Semistructured interviews were conducted to explore eight patients' opinions and experiences of ECT. Interviews were subjected to analysis by a five-step framework approach that identified prominent themes in relation to five broad questions and in conjunction with issues raised by the subjects themselves. RESULTS: Eleven major themes were identified. Four of these were chosen for discussion, not only as the most prevalent themes (in terms of how frequently they were mentioned by the subjects), but also as the most striking (in regards to the intensity of emotions evoked, or their influence on their perception of ECT as a future treatment option). The four themes are fear of ECT, attribution of cognitive decline and memory loss to ECT, positive ECT experiences, and patients' suggestions. CONCLUSIONS: Using such a qualitative approach, the depth of the information obtained has revealed new perspectives on how patients perceive the experience of ECT. Fears reported by patients present an opportunity to address specific areas of the procedure that generate the most angst. These were closely associated with recommendations that many patients proposed throughout the interviews. Patients' perceptions of the cognitive effects of ECT do not necessarily correspond with those commonly reported in the literature on ECT. Positive experiences with ECT were more complex than simply its efficacy. There is a need for future research in order to explore and address patients' experiences of ECT.

Lauber, C., Nordt, C., Falcato, L., et al. (2005). "Can a seizure help? The public's attitude toward electroconvulsive therapy." Psychiatry Res **134**(2): 205-209.

Despite controversial discussions in the general population, little is known about the public's attitude toward electroconvulsive therapy (ECT). We examined in a representative opinion survey (N=1737) (1) whether the lay public views ECT as an appropriate treatment for schizophrenia and depression, and (2) how demographic, psychological, sociological, and cultural variables influence attitudes. Most respondents (57%) considered ECT as a harmful treatment, and only a small number (1.2%) were in favor of ECT. A large number of respondents did not consider ECT as a treatment. We identified three predictors of negative attitude toward ECT (younger age, cultural area, greater degree of contact with the mentally ill; R2=0.042). The finding was not affected by the type of illness. Thus, having a prejudice

toward ECT is a 'uniform attitude' that does not significantly vary between individual, demographic, or cultural contexts.

Leslie van Daalen-Smith, C. (2011). "Waiting for oblivion: women's experiences with electroshock." Issues Ment Health Nurs **32**(7): 457-472.

This article presents findings and analysis stemming from a two-year qualitative study that explored, in their own voices, women's lived experience of electroshock. Feminist standpoint theory frames and provides the moorings for both the validity and methodology of this woman-centered inquiry. In addition, nurses' experiences with and views of ECT are explored and compared to the experiences reported by the women recipients themselves. Vulnerability and disconnection as emergent themes are presented for the nursing profession's sober consideration. The nurses interviewed believed electroshock culminated in a net gain for patients, but for the majority of the women interviewed, electroshock resulted in damage and devastating loss. This article closes with pressing questions for nurses to ask ourselves as we enter the second decade of this new and promising millennium.

Li, Y., An, F. R., Zhu, H., et al. (2016). "Knowledge and Attitudes of Patients and Their Relatives Toward Electroconvulsive Therapy in China." Perspect Psychiatr Care **52**(4): 248-253.

PURPOSE: To examine the knowledge and attitudes of patients and their relatives as well as patients' subjective experience with electroconvulsive therapy (ECT) in China. DESIGN AND METHODS: Up to 420 responders including patients receiving ECT (n = 210) and their relatives (n = 210) were assessed with self-reported questionnaires. FINDINGS: Patients and their relatives did not receive adequate information before ECT, particularly about the mode of its delivery, risks, and adverse effects. The most common adverse effect of ECT reported by patients was memory impairment. Both patients and their relatives had positive attitudes toward ECT and appeared satisfied with its therapeutic effects. PRACTICE IMPLICATIONS: Mental health professionals need to address the inadequate information on ECT provided to patients and their relatives prior to the treatment.

Malekian, A., Amini, Z., Maracy, M. R., et al. (2009). "Knowledge of attitude toward experience and satisfaction with electroconvulsive therapy in a sample of Iranian patients." J ect **25**(2): 106-112.

Despite the wide consensus over the safety and efficacy of electroconvulsive therapy (ECT), it still faces negative publicity and unfavorable attitudes of patients and families. Little is known about how the experience with ECT affects the patients' and their families' attitude toward it. The aim of this study was to examine a sample of Iranian patients and their families regarding their experience with ECT and to compare their knowledge and attitude toward ECT before and after this experience and their satisfaction with it. We surveyed 22 patients with major depressive disorder about to undergo ECT and 1 family member of each patient for their knowledge and attitude toward ECT and then surveyed them again after the trial of ECT to compare those variables while assessing their experience and satisfaction with ECT. Patients were rated using the Hamilton Depression Rating Scale and Mini-Mental Status Examination before and after the treatment. We found that, before ECT, family members had a more favorable attitude toward ECT than patients, but after ECT, the patients' attitude changed more positively compared with their families. Both patients and their families had a poor knowledge of ECT before the ECT trial, but their total knowledge increased afterward, although not in the areas of indications and therapeutic effects. The majority of patients and their families found ECT to be beneficial and were satisfied with it. Satisfaction with ECT was independent of treatment outcome. There was a high rate of perceived coercion to consent to ECT. Attention should be paid toward educating patients and their families about the ECT process, indications, risks, safety, and effects as well as informing them about their freedom of choice and right to refuse.

McClintock, S. M., Brandon, A. R., Husain, M. M., et al. (2011). "A systematic review of the combined use of electroconvulsive therapy and psychotherapy for depression." J ect **27**(3): 236-243.

OBJECTIVE: Electroconvulsive therapy (ECT) is one of the most effective treatments for severe major depressive disorder. However, after acute-phase treatment and initial remission, relapse rates are

significant. Strategies to prolong remission include continuation phase ECT, pharmacotherapy, psychotherapy, or their combinations. This systematic review synthesizes extant data regarding the combined use of psychotherapy with ECT for the treatment of patients with severe major depressive disorder and offers the hypothesis that augmenting ECT with depression-specific psychotherapy represents a promising strategy for future investigation. METHODS: The authors performed 2 independent searches in PsychInfo (1806-2009) and MEDLINE (1948-2009) using combinations of the following search terms: Electroconvulsive Therapy (including ECT, ECT therapy, electroshock therapy, EST, and shock therapy) and Psychotherapy (including cognitive behavioral, interpersonal, group, psychodynamic, psychoanalytic, individual, eclectic, and supportive). We included in this review a total of 6 articles (English language) that mentioned ECT and psychotherapy in the abstract and provided a case report, series, or clinical trial. We examined the articles for data related to ECT and psychotherapy treatment characteristics, cohort characteristics, and therapeutic outcome. RESULTS: Although research over the past 7 decades documenting the combined use of ECT and psychotherapy is limited, the available evidence suggests that testing this combination has promise and may confer additional, positive functional outcomes. CONCLUSIONS: Significant methodological variability in ECT and psychotherapy procedures, heterogeneous patient cohorts, and inconsistent outcome measures prevent strong conclusions; however, existing research supports the need for future investigations of combined ECT and psychotherapy in well-designed, controlled clinical studies. Depression-specific psychotherapy approaches may need special adaptations in view of the cognitive effects of ECT.

Myers, D. H. (2007). "A questionnaire study of patients' experience of electroconvulsive therapy." J ect **23**(3): 169-174.

OBJECTIVE: To ascertain patients' experience of electroconvulsive therapy (ECT) using a questionnaire having these features: short so to be acceptable to the elderly and the depressed; ascertaining experience, not opinions; coming from a 'neutral' source; and analyzed by methods that do not impose an arbitrary scale on ordinal response categories. METHOD: Two hundred eighty-eight traceable patients consecutively treated with ECT were surveyed, the majority by post. One hundred forty-eight replied. RESULTS: The conviction, a median of 4 years after ECT, that side effects persisted was related to current depression and, inversely, to age, but not to the number of ECT given. Current depression was also associated with a less favorable account of emotional support during ECT. Formal legal status had no effect on any of the answers, but refusal of, or agreement to ECT on sufferance, was linked to a relatively unfavorable view of it. Not all patients regarded the decision to give them ECT compulsorily wrong on principle; some judged by results. CONCLUSIONS: The degree of current depression contributes to several aspects of the patient's view of ECT given a median of 4 years earlier. The belief that side effects persist has a complex basis; but the importance of this belief is not thereby diminished. Legal compulsion of treatment adds its own quota of contention which can be mitigated, but not entirely dispelled, by careful adherence to the law.

Oldewening, K., Lange, R. T., Willan, S., et al. (2007). "Effects of an education training program on attitudes to electroconvulsive therapy." J ect **23**(2): 82-88.

Widespread negative attitudes toward electroconvulsive therapy (ECT) are present in the general public and among heath care professionals. However, there is evidence to suggest that clinical experience and knowledge of ECT positively improve attitudes toward this treatment. The purpose of this study was to evaluate the effects of an ECT education training program on attitudes toward ECT. Participants were 73 student nurses (91.8% women) and 21 care aid students (81.0% women) undertaking a 6-week rotation in psychiatry at a large provincial psychiatric hospital in British Columbia, Canada. The ECT education training program consisted of a brief lecture, viewing of an educational videotape, familiarization with the ECT equipment, and observation of an ECT treatment. Participants completed a short questionnaire pretraining and posttraining program. Attitudes toward ECT did not substantially differ between the 2 groups. For the entire sample, only 8.5% reported that they were well informed about ECT before the training session. More favorable attitudes were reported upon completion of the ECT education program compared with attitudes reported before training. These findings suggest that attitudes toward ECT increase favorably when individuals are provided with training and experience.

Orr, A. et O'Connor, D. (2005). "Dimensions of power: older women's experiences with electroconvulsive therapy (ECT)." J Women Aging **17**(1-2): 19-36.

Older women are particularly prone to being treated for depression, and, despite the controversy surrounding it, electroconvulsive therapy (ECT) has gained popularity as a treatment with this population. Research has examined the physical and cognitive changes associated with ECT but there is little understanding regarding how older women themselves experience this treatment. In order to gain better understanding into the subjective experience of receiving ECT, this qualitative study explored the experiences of six older women who were treated with ECT for a diagnosis of depression, using in-depth personal interviews. Analysis suggests that this experience for these older women could not be understood in isolation. Rather, their stories highlighted the importance of interpreting the ECT experience within a broader context that included the larger depression experience, the dynamics of helping relationships, and the discourse available to them for sense-making. Specifically, the central theme underpinning all of these women's stories was the shifting of power from themselves to others. This paper examines how this occurred and discusses implications for practice.

Paheenthararajah, K., Ladas, T., Gauggel, S., et al. (2015). "[Medical students' attitude towards electroconvulsive therapy: Impact of patient-oriented training]." Nervenarzt **86**(5): 566-570.

BACKGROUND: As a particular aspect of psychiatric clinical training many students instinctively harbor reservations towards the field of electroconvulsive treatment (ECT). In this context the question arises how controversial issues, such as ECT can be addressed during the placement. The clinical training is predestined to provide basic knowledge concerning ECT for future doctors. As multipliers and potential referrers they then can work to prevent severe mental illness from becoming chronic. MATERIALS AND METHODS: Prior to the clinical psychiatric teaching course 158 medical students of the RWTH Aachen University were randomly assigned to three groups. The first actively took part in an ECT therapy session (ECT group), the second was shown an educational video (video group) and the third served as a control group. A questionnaire was filled in before and after the training concerning the knowledge and the attitudes towards ECT. RESULTS: In the course of the clinical training the attitudes of the students towards ECT became more positive for all items. The willingness to agree to ECT in the case of patients, family members and friends and themselves increased in the ECT group and the video group but not in the control group. Only the ECT group proved to be superior to the control group in the direct comparisons. In both interventions the knowledge about ECT increased more in comparison to the control group despite the very limited interventions. CONCLUSION: Reservations to touch on the controversial issue of ECT during the clinical training do not seem to be justified. Even a single hands-on or video experience can have a relevant impact on knowledge and attitude towards ECT in medical students. This opportunity should be used more intensively.

Pettit, D. E. (1971). "Patients' attitudes toward ECT--not the 'shocker' we think?" Can Psychiatr Assoc J **16**(4): 365-366.

Rabheru, K. (2001). "The use of electroconvulsive therapy in special patient populations." Can J Psychiatry **46**(8): 710-719.

BACKGROUND: Despite its well-established efficacy and its increasing use, electroconvulsive therapy (ECT) remains a controversial treatment. Lack of clarity in the issues related to its use in special patient populations (for example, in children, in adolescents, in pregnant women, in the elderly, and in the medically ill) often contributes to the debate about the use of ECT. METHOD: The literature on ECT use in special patient populations is reviewed, together with the commonly associated high-risk medical conditions in clinical practice. Specific reference is made in each case to the safety, tolerability, and efficacy of the procedure. RESULTS: Much of the literature surveyed consists of case studies, although a few controlled trials are available. In general, ECT use in special populations is relatively safe and extremely effective. In small case series, ECT use in children and adolescents is effective but requires further systematic study. In pregnant women, ECT is very effective, and with proper medical care, it is relatively safe in all trimesters of pregnancy, as well as in the postpartum period. The frail elderly are

particularly good candidates for ECT because they are often unresponsive to or intolerant of psychotropic medication. Medical conditions that should receive particular attention during a course of ECT are disorders of the central nervous system (CNS), cardiovascular, and respiratory system. With modern anesthesia techniques and careful medical management of each high-risk patient, most can successfully complete a course of ECT. The process of obtaining informed consent also requires special consideration in this group of patients because their capacity to consent to treatment may be compromised. CONCLUSIONS: With careful attention to each patient's medical and anesthesia needs, ECT is an effective and relatively safe procedure in high-risk special patient populations.

Rajagopal, R., Chakrabarti, S., Grover, S., et al. (2012). "Knowledge, experience & attitudes concerning electroconvulsive therapy among patients & their relatives." Indian J Med Res **135**(2): 201-210.

BACKGROUND & OBJECTIVES: Electroconvulsive therapy (ECT) is used frequently in developing countries, but investigations of patients' awareness and perception of ECT are rare. The present study thus attempted a comprehensive examination of knowledge, experience and attitudes concerning ECT among patients treated with brief-pulse, bilateral, modified ECT, and their relatives. METHODS: Of the 153 recipients of ECT, 77 patients and relatives were eventually assessed using questionnaires designed to evaluate their awareness and views about ECT. RESULTS: Patients were middle-aged, poorly-educated, often unemployed, with chronic, severe, and predominantly psychotic illnesses. Relatives were mainly parents, older, better-educated and usually employed. Apart from the very rudimentary aspects, patients were largely unaware of the procedure. Though most did not find the experience of ECT upsetting, sizeable proportions expressed dissatisfaction with aspects such as informed consent, fear of treatment and memory impairment. Although patients were mostly positive about ECT, ambivalent attitudes were also common, but clearly negative views were rare. Relatives were significantly likely to be more aware, more satisfied with the experience and have more favourable attitudes towards ECT, than patients. INTERPRETATION & CONCLUSIONS: The results endorse the notion that recipients of ECT are generally well-disposed towards the treatment, but also indicate areas where practice of ECT needs to be improved to enhance satisfaction among patients and relatives.

Rose, D., Fleischmann, P., Wykes, T., et al. (2003). "Patients' perspectives on electroconvulsive therapy: systematic review." Bmj **326**(7403): 1363.

OBJECTIVE: To ascertain patients' views on the benefits of and possible memory loss from electroconvulsive therapy. DESIGN: Descriptive systematic review. DATA SOURCES: Psychinfo, Medline, Web of Science, and Social Science Citation Index databases, and bibliographies. STUDY SELECTION: Articles with patients' views after treatment with electroconvulsive therapy. DATA EXTRACTION: 26 studies carried out by clinicians and nine reports of work undertaken by patients or with the collaboration of patients were identified; 16 studies investigated the perceived benefit of electroconvulsive therapy and seven met criteria for investigating memory loss. DATA SYNTHESIS: The studies showed heterogeneity. The methods used were associated with levels of perceived benefit. At least one third of patients reported persistent memory loss. CONCLUSIONS: The current statement for patients from the Royal College of Psychiatrists that over 80% of patients are satisfied with electroconvulsive therapy and that memory loss is not clinically important is unfounded.

Rose, D. S., Wykes, T. H., Bindman, J. P., et al. (2005). "Information, consent and perceived coercion: patients' perspectives on electroconvulsive therapy." Br J Psychiatry **186**: 54-59.

BACKGROUND: Electroconvulsive therapy (ECT) is a procedure that attracts special safeguards under common law for voluntary patients and under both current and proposed mental health legislation, for those receiving compulsory treatment. AIMS: To review patients' views on issues of information, consent and perceived coercion. METHOD: Seventeen papers and reports were identified that dealt with patients' views on information and consent in relation to ECT; 134 'testimonies' or first-hand accounts were identified. The papers and reports were subjected to a descriptive systematic review. The testimony data were analysed qualitatively. RESULTS: Approximately half the patients reported that they had received sufficient information about ECT and side-effects. Approximately a third did not

feel they had freely consented to ECT even when they had signed a consent form. Clinician-led research evaluates these findings to mean that patients trust their doctors, whereas user-led work evaluates similar findings as showing inadequacies in informed consent. CONCLUSION: Neither current nor proposed safeguards for patients are sufficient to ensure informed consent with respect to ECT, at least in England and Wales.

Schweder, L. J., Lydersen, S., Wahlund, B., et al. (2011). "Electroconvulsive therapy in Norway: rates of use, clinical characteristics, diagnoses, and attitude." J ect **27**(4): 292-295.

OBJECTIVES: The aim of the study was to describe the rate of use and demographic distribution of electroconvulsive therapy (ECT) in Norway in 2004, as well as the attitudes among Norwegian psychiatrists about ECT. METHODS: A 42-item questionnaire on the practice of ECT was sent to 125 Norwegian psychiatric hospitals, district psychiatric centers, and child and adolescent psychiatric units in 2004. RESULTS: A total of 67 (54%) psychiatric units responded, including 26 (67%) of 39 psychiatric hospitals, 32 (46%) of 69 district psychiatric centers, and 9 (53%) of 17 child and adolescent units. There were 672 patients who received ECT during 2004, which gives a yearly incidence of 2.4 of 10,000 inhabitants. A total of 5.3% of all inpatients received ECT.The rate of ECT use varied from 1.83 to 3.44 per 10,000 inhabitants per year between the different health regions.Of the 672 patients, 394 reported their sex (59%), of which 135 were men and 259 were women (male-female ratio, 1:2). The most common diagnosis treated with ECT was depression, followed by bipolar disorder and schizoaffective disorder.The responders expressed generally positive attitudes toward ECT. Almost all considered ECT important, that hospitals should offer ECT, and that there are solid indications for such treatment. Most of the responders expressed concern about the underuse of ECT. CONCLUSIONS: Electroconvulsive therapy is widely available in Norway but its use is unevenly distributed between health regions. The attitudes toward ECT are generally positive among psychiatrists.

Taieb, O., Cohen, D., Mazet, P., et al. (2000). "Adolescents' experiences with ECT." J Am Acad Child Adolesc Psychiatry **39**(8): 943-944.

Taieb, O., Flament, M. F., Corcos, M., et al. (2001). "Electroconvulsive therapy in adolescents with mood disorder: patients' and parents' attitudes." Psychiatry Res **104**(2): 183-190.

The aim of the study was to assess retrospectively patients' and parents' experiences and attitudes towards the use of electroconvulsive therapy (ECT) in adolescence. The experiences of subjects (n=10) who were administered ECT in adolescence for a severe mood disorder and their parents (n=18) were assessed using a semi-structured interview after a mean of 4.5 years (range, 19 months to 9 years). Their attitudes were mostly positive and ECT was considered a helpful treatment. Concerns were frequently expressed, probably because ECT was not fully understood by the patients and their families. Most complaints were of transitory memory impairment. The parents were satisfied with the consent procedure, while all but one patient did not remember the consent procedure. We concluded that, despite negative views about ECT in public opinion, adolescent recipients and their parents shared overall positive attitudes towards the use of ECT in this age range.

Takamiya, A., Sawada, K., Mimura, M., et al. (2019). "Attitudes Toward Electroconvulsive Therapy Among Involuntary and Voluntary Patients." J ect **35**(3): 165-169.

OBJECTIVE: We aimed to examine attitudes toward electroconvulsive therapy (ECT) among involuntary patients, voluntary patients, and their relatives. METHODS: Patients experiencing a major depressive episode and receiving ECT and their relatives were recruited for the survey. Patients and their relatives answered the self-rating questionnaires with a 7-point Likert scale. We explored differences in the survey results between involuntary and voluntary patients, as well as differences in the survey results between patients and their relatives. RESULTS: We recruited 97 participants (53 patients and 44 relatives) for the survey. Approximately 80% of the patients showed positive attitudes toward ECT. There were no statistically significant differences between involuntary (n = 23) and voluntary (n = 30) patients across multiple aspects of the ECT experience, including treatment satisfaction, positive or adverse effects of ECT, and treatment preference in the future. Relatives were more satisfied with the

positive effects of ECT and with the information offered before ECT treatment than the patients themselves. CONCLUSIONS: Approximately 80% of the patients showed overall satisfaction with ECT irrespective of consent status. Relatives were more satisfied with ECT than patients. Electroconvulsive therapy can be a lifesaving treatment for severely depressed patients, and the subjective experience of involuntary patients should be taken into consideration when discussing involuntary ECT treatment.

Tang, W. K., Ungvari, G. S. et Chan, G. W. (2002). "Patients' and their relatives' knowledge of, experience with, attitude toward, and satisfaction with electroconvulsive therapy in Hong Kong, China." J ect **18**(4): 207-212.

Although electroconvulsive therapy (ECT) is a safe and efficacious treatment, there is a widespread negative view of ECT in public and professional circles. There are no data on Chinese patients' knowledge of, experience with, attitude toward, and level of satisfaction with ECT in Hong Kong. The aims of this study were to examine patients' experience of ECT, and patients' and their relatives' knowledge of, attitude toward, and level of satisfaction with ECT. To this effect, a prospective cross-sectional survey was conducted, involving 96 patients and their 87 relatives. The study showed that the majority of patients believed they had not received adequate information about ECT. The most commonly reported side effect was memory impairment. Patients and relatives had only limited knowledge of ECT, yet the majority of them were satisfied with the treatment and, having found it beneficial, maintained a positive attitude toward its use. The researchers concluded that Hong Kong Chinese patients and their relatives accepted ECT as a treatment. The way information is provided to patients and relatives when obtaining consent for ECT needs improvement.

Teh, S. P., Helmes, E. et Drake, D. G. (2007). "A Western Australian survey on public attitudes toward and knowledge of electroconvulsive therapy." Int J Soc Psychiatry **53**(3): 247-273.

AIMS: Healthcare professionals have debated the use and effects of electroconvulsive therapy (ECT) for more than 65 years. Yet, knowledge about, and attitudes towards, ECT have not been thoroughly researched within the Australian community. This study focused on a Western Australian perspective on these issues. METHOD: The objectives were achieved with specifically developed questionnaires. Six hundred surveys were distributed across the metropolitan area of Perth, Australia. RESULTS: A total of 379 completed questionnaires indicated that more than 60% of respondents had some knowledge about the main aspects of ECT. Participants were generally opposed to the use of ECT on individuals with psychosocial issues, on children and on involuntary patients. Public perceptions of ECT were also found to be mainly negative. CONCLUSION: The findings suggest that clinicians should ensure that individuals recommended for ECT are knowledgeable about basic ECT processes and implications in order to ensure their full informed consent.

Tsai, J., Huang, M. et Lindsey, H. (2019). "Perceptions and knowledge related to electroconvulsive therapy: A systematic review of measures." Psychol Serv.

Electroconvulsive therapy (ECT) is one of the most effective treatments for mood disorders, but patients and the general public often have negative perceptions and inaccurate knowledge about ECT. A systematic review of measures assessing perceptions and knowledge about ECT was conducted, including all published peer-reviewed journal articles from 1938 to 2018. Inclusion criteria were studies that included psychiatric patient samples and reported quantitative measures assessing perceptions and/or knowledge related to ECT. An initial 112 articles identified were distilled to 31 studies that were ultimately selected for inclusion in the review. Selected studies spanned 15 countries across 5 decades and included 570 individual measurement items. Items were categorized into 8 content domains under 2 overarching concepts of perceptions (97% of studies) and knowledge (77% of studies). Among gaps in content domains, the role of health-care providers in ECT within perceptions domains was rarely assessed by existing measures. And among knowledge domains, the scientific evidence for ECT was least assessed by existing measures. Among all studies reviewed, only 3 studies reported the psychometric properties of the measures used. Together, these findings demonstrate that a variety of measures have been used to assess a range of psychosocial domains related to ECT. However, not one measure comprehensively examined all domains and reported psychometric properties. Thus, there is great potential for new measures to be developed both for

research and as patient education tools for ECT treatment. (PsycINFO Database Record (c) 2019 APA, all rights reserved).

Virit, O., Ayar, D., Savas, H. A., et al. (2007). "Patients' and their relatives' attitudes toward electroconvulsive therapy in bipolar disorder." J ect **23**(4): 255-259.

Although electroconvulsive therapy (ECT) is a safe and efficacious treatment, there is a widespread negative view of ECT in public and professional circles. Previous studies that reported psychiatric patients' and their relatives' feelings and attitudes toward ECT revealed generally positive results. However, there are no data focusing on bipolar patients' and their relatives' attitudes toward ECT. In this study, the perspectives of 70 bipolar patients and their 70 relatives were examined before ECT. The study showed that the majority of patients and relatives believed they had not received adequate information about ECT, but they were satisfied with the treatment, found it beneficial, and maintained a positive attitude toward its use. The most commonly reported side effect was memory impairment. This is the first study focusing on bipolar patients' and their relatives' attitudes toward ECT in the literature.

Walter, G., Koster, K. et Rey, J. M. (1999). "Electroconvulsive therapy in adolescents: experience, knowledge, and attitudes of recipients." J Am Acad Child Adolesc Psychiatry **38**(5): 594-599.

OBJECTIVE: To ascertain the experience, knowledge, and attitudes regarding electroconvulsive therapy (ECT) of persons who received the treatment in adolescence. METHOD: A 53-item survey was administered by telephone to persons who received ECT before the age of 19 years in the Australian state of New South Wales between 1990 and 1998. RESULTS: Twenty-six patients were interviewed. Experiences and opinions about ECT were generally positive. Fifty percent stated ECT had been helpful. Approximately three quarters believed their illness was worse than either ECT or pharmacotherapy. Frequencies of recalled side effects with ECT and medication were similar. Some patients perceived deficiencies in the consent process. A slight majority had attempted to conceal the history of ECT treatment. The vast majority considered ECT a legitimate treatment and, if medically indicated, would have ECT again and would recommend it to others. CONCLUSIONS: The findings are consistent with and complement evidence showing ECT to be an effective and safe treatment for seriously ill adolescents. The mostly favorable experiences and attitudes reported by interviewees will be reassuring to adolescent patients, their families, and treating health professionals when ECT is being considered.

Walter, G., Rey, J. M. et Starling, J. (1997). "Experience, knowledge and attitudes of child psychiatrists regarding electroconvulsive therapy in the young." Aust N Z J Psychiatry **31**(5): 676-681.

OBJECTIVE: To ascertain the experience, knowledge and attitudes of Australian and New Zealand child psychiatrists in relation to electroconvulsive therapy (ECT) in the young in order to determine whether they would be willing and able to provide an opinion if consulted about children or adolescents in whom ECT is proposed. METHOD: A 28-item questionnaire was posted to all members of the Faculty of Child and Adolescent Psychiatry living in Australia or New Zealand. RESULTS: Eighty-three percent (n = 206) answered the questionnaire. Forty percent rated their knowledge about ECT in the young as nil or negligible. Having had patients treated with ECT was the best predictor of possessing some knowledge. Thirty-nine percent believed that ECT was unsafe in children compared to 17% for adolescents and 3% for adults. Almost all (92%) respondents believed child psychiatrists should be consulted in all cases of persons under 19 in whom ECT was recommended. The vast majority believed the Faculty or College should have guidelines relating to ECT use in this group and that it would be useful to have a national register of young persons treated with ECT. CONCLUSIONS: Child and adolescent psychiatrists wish to be involved in the process of ECT treatment in young people. At the same time, there are gaps in their knowledge. This will need to be remedied, particularly if formal guidelines advocating their involvement are introduced.

Wilhelmy, S., Rolfes, V., Grözinger, M., et al. (2018). "Knowledge and attitudes on electroconvulsive therapy in Germany: A web based survey." Psychiatry Res **262**: 407-412.

OBJECTIVE: The aim of this article is to examine knowledge and attitudes on electroconvulsive therapy (ECT) among the German population. METHOD: A web-based population survey based on a standardized questionnaire was used to examine knowledge and attitudes towards ECT as a treatment of severe depression among the general public (sample of 1000; representative in terms of age, gender and federal states of the German population). RESULTS: ECT is not well known and negatively connoted among the German population. A higher level of awareness and knowledge about ECT correlates with higher agreement to treatment with it. The analysis of feedback from the open question underlines the complexity of ECT: on the one hand, negative attitudes, stereotypes, and associations, and on the other hand interest, willingness, and acceptance to deal with the method were shown. CONCLUSION: The results suggest an urgent need for more information about the basic facts, psychiatric applications, and effectiveness of ECT in order to increase the level of awareness and knowledge, and thus the method's acceptance. An increase in acceptance would expand the therapeutic spectrum for the mentally ill. Correspondingly, persons affected and their relatives as well as physicians and healthcare professionals should be involved in awareness-raising measures.

Zhang, Q. E., Zhou, F. C., Zhang, L., et al. (2018). "Knowledge and attitudes of older psychiatric patients and their caregivers towards electroconvulsive therapy." Psychogeriatrics **18**(5): 343-350.

BACKGROUND: Electroconvulsive therapy (ECT) is an effective treatment for older patients with severe psychiatric disorders, but their knowledge and attitudes regarding ECT have not been well studied. This study examined the knowledge and attitudes of older Chinese patients and their caregivers towards ECT. METHOD: A total of 216 participants comprising older patients treated with ECT (n = 108) and their caregivers (n = 108) were recruited. Their knowledge and attitudes regarding ECT were assessed using self-reported questionnaires. RESULTS: Most caregivers received sufficient information on the therapeutic effects of ECT, but inadequate information about the ECT process, its adverse effects, and risks was provided to caregivers and patients before treatment. Although ECT was generally viewed as beneficial, effective, and safe, around two-thirds of patients and caregivers believed that ECT should be used only for critically ill patients. Over half of the patients reported adverse effects caused by ECT, with memory impairment being the most commonly reported. CONCLUSIONS: Clinicians in Chinese psychiatric hospitals need to provide sufficient information on ECT to older patients and their caregivers before treatment, particularly regarding the treatment process and adverse effects.

Zong, Q. Q., Qi, H., Wang, Y. Y., et al. (2020). "Knowledge and attitudes of adolescents with psychiatric disorders and their caregivers towards electroconvulsive therapy in China." Asian J Psychiatr **49**: 101968.

BACKGROUND: Electroconvulsive therapy (ECT) is effective in treating adolescents with severe psychiatric disorders. This study examined the knowledge, experiences and attitudes of adolescents with severe psychiatric disorders and their caregivers towards ECT in China. METHODS: A total of 158 participants, including 79 adolescents who received ECT and their caregivers (n = 79), were enrolled in this study. Their knowledge and experiences about and attitudes towards ECT were evaluated with self-administered data collection forms. RESULTS: Only around half of patients and caregivers reported that they received sufficient information about the process, the therapeutic and side effects, and the risks of ECT, although most believed that ECT is beneficial, and around half believed that ECT is safe. Around one third of patients and caregivers reported that only critically ill patients should receive ECT. More than half of patients experienced side effects, such as memory impairment, headache and short-term confusion. CONCLUSIONS: Sufficient information about ECT should be provided to adolescents with severe psychiatric disorders and their caregivers prior to treatment, with particular focus on the treatment process and possible side effects.

Les effets secondaires

(2011). "Treatment-resistant depression: no panacea, many uncertainties. Adverse effects are a major factor in treatment choice." Prescrire Int **20**(116): 128-133.

> At least 50% of patients with depression do not enter remission after several weeks of antidepressant therapy. To determine the treatment options and their respective risk-benefit balances in this setting, we reviewed the literature using the standard Prescrire methodology. Clinical trials and epidemiological studies show that depression should only be considered drug-resistant after at least 6 weeks of therapy. After assessing residual symptoms and their impact on the patient's quality of life, a search should be made for factors responsible for the persistence of depression, such as the patient's environment, a psychiatric or somatic disorder, and drug intake or addiction. Increasing the dose of the first-line antidepressant is only based on weak evidence. Trials comparing continuing the first-line antidepressant versus switching to another pharmacological class have yielded conflicting results. A switch may benefit some patients, but the elimination half-life of the discontinued drug must be taken into account to limit the risk of interactions during the transition. Combining two antidepressants mainly increases the risk of adverse effects, without a tangible clinical benefit. Two meta-analyses suggest that adding a so-called atypical neuroleptic to ongoing antidepressant therapy leads to 1 extra remission per 7 to 10 treated patients, but also to treatment cessation due to adverse effects in 8% to 9% of cases. Older neuroleptics have not been properly evaluated in this setting. Comparative trials suggest that lithium may have a certain antidepressant effect in this setting, but there is no firm evidence that adding lithium increases the chances of remission. Lithium has a narrow therapeutic margin and overdose can be fatal; the blood lithium concentration must therefore be monitored. Adding an antiepileptic or a psychostimulant is more harmful than beneficial. Adding a thyroid hormone, a benzodiazepine, buspirone or pindolol has no proven antidepressive effect. Four trials, each including fewer than 20 patients, have assessed the efficacy of psychotherapy in patients with treatment-resistant depression. Two of them provided positive results. Electroconvulsive therapy is probably effective for some patients with refractory depression but it necessitates general anaesthesia and carries a risk of memory disorders. Vagal nerve electrostimulation has no proven efficacy. Transcranial magnetic stimulation seems to have some efficacy and few adverse effects, but its optimal modalities remain to be determined. In practice, when the patient and doctor decide to attempt second-line therapy for treatment-resistant depression, adverse effects must be taken into account in the choice of drug(s). Maintaining a good quality relationship between patient and doctor may be more important than attempting to obtain remission "at any cost".

Andrade, C., Arumugham, S. S. et Thirthalli, J. (2016). "Adverse Effects of Electroconvulsive Therapy." Psychiatr Clin North Am **39**(3): 513-530.

> Electroconvulsive therapy (ECT) is an effective treatment commonly used for depression and other major psychiatric disorders. We discuss potential adverse effects (AEs) associated with ECT and strategies for their prevention and management. Common acute AEs include headache, nausea, myalgia, and confusion; these are self-limiting and are managed symptomatically. Serious but uncommon AEs include cardiovascular, pulmonary, and cerebrovascular events; these may be minimized with screening for risk factors and by physiologic monitoring. Although most cognitive AEs of ECT are short-lasting, troublesome retrograde amnesia may rarely persist. Modifications of and improvements in treatment techniques minimize cognitive and other AEs.

Bergsholm, P. (2012). "Patients' perspectives on electroconvulsive therapy: a reevaluation of the review by Rose et al on memory loss after electroconvulsive therapy." J ect **28**(1): 27-30.

> OBJECTIVES: In 2003, based on a review of 7 studies, Rose et al concluded that at least one third of patients report significant memory loss 6 months or more after electroconvulsive therapy (ECT). However, few details on the included studies were given. The present study evaluates factors that may have influenced the results. METHODS: The 7 studies were scrutinized as to the 6-month assessment criterion, whether the data represent ECT-treated patients in general, specification and significance of the memory loss, stimulus type, and electrode placement. RESULTS: In 3 studies, the 6-month inclusion criterion was not met, including 1 study with 98% satisfied patients and 1 study with only 37% valid response rate. Two other studies selected individuals from user/advocacy groups generally

biased against ECT and were probably overlapping. The significance of memory problems was not mentioned in any of the studies. Two studies reported that 30% and 55% of patients treated with bilateral ECT in the 1970s felt they had persistent memory gaps around the time of treatment, but the long-obsolete sine wave stimulus type was used. The results mostly concerned bilateral ECT, whereas unilateral ECT seemed to cause little complaints. CONCLUSIONS: Data used by Rose et al are severely flawed, making their results inconclusive and misleading.

Bihan, L., Parneix, S., Maury, et al. (2003). "Electroconvulsivothérapie et prévention du risque infectieux." TECHNIQUES HOSPITALIERES(677): 12-16.

L'electroconvulsivothérapie (ECT) est une thérapeutique reconnue comme sûre et efficace dans les affections psychiatriques les plus sévères. Les complications infectieuses, liées à la pratique de l'anesthésie lors de ce traitement, sont rares. Cependant, les infections nosocomiales doivent faire l'objet d'une stratégie définie de prévention. Cet article reprend les recommandations de la Société française d'anesthésie réanimation (SFAR) et du Comité technique national des infections nosocomiales (CTIN) pouvant s'appliquer à l'anesthésie sous ECT.

Bosc, E. (2014). "Limites d'efficacité de l'électroconvulsivothérapie en curatif et préventif." European Psychiatry **29**(8, Supplement): 665-666.
http://www.sciencedirect.com/science/article/pii/S0924933814002533

Résumé L'efficacité de l'électroconvulsivothérapie (ECT) dans la prise en charge des troubles de l'humeur, notamment dans les situations d'urgence, n'est plus à prouver. En effet les études comparatives et essais cliniques ont montré que le traitement par ECT était efficace dans tous les types d'épisodes dépressifs majeurs avec notamment un taux de réponse de 80 à 90 % lorsque l'ECT était pratiqué dans le cadre d'un premier épisode dépressif (APA, 2001). Cependant, une méta-analyse récente a mis en évidence un taux de rechute des épisodes dépressifs uni ou bipolaires de 51 % au cours de la première année suivant l'arrêt des ECT, et de 37 % à 6 mois, malgré un relais médicamenteux bien conduit (Jelovac, 2013). La place des ECT de continuation, puis de maintenance apparaît à ce jour incontournable dans la stratégie de prévention de la rechute après la phase curative. L'essai contrôlé randomisé de Nordenskjöld (2013) met effectivement en évidence un taux de rechute à 1an plus faible chez les patients traités par l'association ECT et psychotropes (32 %) comparativement aux patients traités exclusivement par pharmacothérapie (61 %). La question inhérente à la pratique des ECT de continuation puis de maintenance reste leur tolérance clinique. Les principaux effets indésirables redoutés par les praticiens sont les altérations mnésiques. L'étude rétrospective de Elias (2014) n'a pas montré de différence significative sur le plan cognitif avant et après le début des ECT de maintenance sur une période de 12ans. Cependant, l'apparition d'altérations mnésiques invalidantes chez un patient traité par ECT rend difficile la poursuite de cette thérapeutique. Dans ce contexte, les autres techniques de stimulations transcrâniennes comme la rTms apparaissent comme une alternative thérapeutique.

Brock-Utne, J. G. (2008). 42 - Difficultés respiratoires à la suite d'une sismothérapie. Anesthésie clinique. Brock-Utne, J. G. Paris, Elsevier Masson**:** 129-131.
http://www.sciencedirect.com/science/article/pii/B9782810100217500428

Ceccaldi, P. F., Dubertret, C., Keita, H., et al. (2008). "Place de la sismothérapie dans la prise en charge des dépressions graves de la grossesse." Gynécologie Obstétrique & Fertilité **36**(7): 773-775.
http://www.sciencedirect.com/science/article/pii/S1297958908002968

Résumé L'électro-convulsivothérapie (ECT) ou la sismothérapie est une option thérapeutique chez les patients présentant des dépressions graves. Elle consiste à provoquer une crise comitiale, sous brève anesthésie générale avec curarisation. Sa réalisation au cours de la grossesse est un événement peu fréquent et mal évalué. Une primigeste ayant pour antécédent un trouble bipolaire présenta un épisode dépressif majeur au cours du deuxième trimestre, modestement amélioré par traitement médical. Une sismothérapie fut réalisée (dix séances prévues de 26 à 30 semaines d'aménorrhée [SA]), après accord de la patiente. Une nette amélioration de son état a été constatée dès les premières

séances. En raison d' une menace d'accouchement prématuré (MAP), la dernière séance ne fut pas réalisée. La patiente bénéficia d'un traitement médical antidépresseur dans le mois précédant l'accouchement. À 36 SA, l'accouchement fut naturel et rapide, d'un enfant bien portant (3120g, Apgar 10-10-10). La relation mère–enfant fut bonne. Si la littérature est rassurante, il a été récemment rapporté le cas d'un enfant présentant de multiples infarctus cérébraux chez une patiente prééclamptique ayant bénéficié d'une sismothérapie. C'est pourquoi la survenue de toute pathologie obstétricale surajoutée (prééclampsie, menace d'accouchement prématuré) doit faire rediscuter cette option thérapeutique. Compte tenu des complications possibles, elle exige une surveillance stricte de la grossesse en milieu hospitalier.

Chatrian, G. E. et Petersen, M. C. (1960). "The convulsive patterns provoked by indoklon, metrazol and electroshock: Some depth electrographic observations in human patients." Electroencephalography and Clinical Neurophysiology **12**(3): 715-725.
http://www.sciencedirect.com/science/article/pii/0013469460901164

L''injection intra-veineuse de penthylenetetrazol (Métrazol) et l'administration d'électrochocs ont été enregistrés au moyen d'électrodes multiples implantées dans le cerveau de cinq malades psychotiques (sans médication) avant lobotomie frontale. Les patterns de observés dans ces tracés qui sont indemnes de tout artéfact musculaire, durant les phases prodromique, tonique et clonique des crises, et durant la période post-critique ont été décrits et mis en relation avec les phénomènes cliniques qui les accompagnent. Les observations suggèrent (1) que l'Indoklon et le Métrazol, durant la phase de prodrome, et ces deux agents plus lélectrochoc durant la crise elle-même, agissent sur le cerveau humain par un mécanisme commun, (2) que la décharge convulsive se développe avec un certain degré d'indéndance dans les différentes régions du cerveau qu'elle que soit la façon dont elle a débuté ou dont est contrôlée, et (3) que la prédominance et la persistance plus longue dans les régions frontales des perturbations lentes apparaisant à la suite des crises induites par électrochoc sont en relation avec une organisation structurale et fonctionnelle du cerveau plutôt qu'avec une action locale du convulsivant.

Cristancho, M. A., Alici, Y., Augoustides, J. G., et al. (2008). "Uncommon but serious complications associated with electroconvulsive therapy: recognition and management for the clinician." Curr Psychiatry Rep **10**(6): 474-480.

Electroconvulsive therapy (ECT) is a safe and effective treatment for severe mood disorders. Rarely there can be serious complications, such as postictal agitation, cardiovascular compromise, prolonged seizures, and status epilepticus, all of which are important for the clinician to recognize and treat. Postictal agitation can be severe, requiring emergent intervention and subsequent prophylactic measures to avoid premature ECT discontinuation. Cardiovascular responses to ECT include significant hemodynamic changes that may result in complications, even in patients without preexisting cardiovascular conditions. However, preexisting cardiovascular conditions per se are not contraindications to ECT in patients with disabling psychiatric disease. Recognizing and treating prolonged seizures is essential to prevent progression to status epilepticus. Failure to recognize and treat any of these events may result in increased mortality and morbidity. Understanding such complications and their management strategies avoids unnecessary treatment discontinuation due to manageable ECT complications.

Duma, A., Maleczek, M., Panjikaran, B., et al. (2019). "Major Adverse Cardiac Events and Mortality Associated with Electroconvulsive Therapy: A Systematic Review and Meta-analysis." Anesthesiology **130**(1): 83-91.

BACKGROUND: Cardiac events after electroconvulsive therapy have been reported sporadically, but a systematic assessment of the risk is missing. The goal of this study was to obtain a robust estimate of the incidence of major adverse cardiac events in adult patients undergoing electroconvulsive therapy. METHODS: Systematic review and meta-analysis of studies that investigated electroconvulsive therapy and reported major adverse cardiac events and/or mortality. Endpoints were incidence rates of major adverse cardiac events, including myocardial infarction, arrhythmia, pulmonary edema, pulmonary embolism, acute heart failure, and cardiac arrest. Additional endpoints were all-cause and cardiac

mortality. The pooled estimated incidence rates and 95% CIs of individual major adverse cardiac events and mortality per 1,000 patients and per 1,000 electroconvulsive therapy treatments were calculated. RESULTS: After screening of 2,641 publications and full-text assessment of 284 studies, the data of 82 studies were extracted (total n = 106,569 patients; n = 786,995 electroconvulsive therapy treatments). The most commonly reported major adverse cardiac events were acute heart failure, arrhythmia, and acute pulmonary edema with an incidence (95% CI) of 24 (12.48 to 46.13), 25.83 (14.83 to 45.00), and 4.92 (0.85 to 28.60) per 1,000 patients or 2.44 (1.27 to 4.69), 4.66 (2.15 to 10.09), and 1.50 (0.71 to 3.14) per 1,000 electroconvulsive therapy treatments. All-cause mortality was 0.42 (0.11 to 1.52) deaths per 1,000 patients and 0.06 (0.02 to 0.23) deaths per 1,000 electroconvulsive therapy treatments. Cardiac death accounted for 29% (23 of 79) of deaths. CONCLUSIONS: Major adverse cardiac events and death after electroconvulsive therapy are infrequent and occur in about 1 of 50 patients and after about 1 of 200 to 500 electroconvulsive therapy treatments.

Galinowski, A., Pretalli, J. B. et Haffen, E. (2010). "Stimulation magnétique transcrânienne répétée (rTMS) en psychiatrie : principes, utilisation pratique, effets secondaires et sécurité d'emploi." Annales Médico-psychologiques, revue psychiatrique **168**(5): 382-386.
http://www.sciencedirect.com/science/article/pii/S0003448710001022

Résumé La stimulation magnétique transcrânienne répétée (en anglais : repetitive transcranial magnetic stimulation, ou rTMS) est une technique de neuromodulation qui utilise un champ magnétique appliqué sur le cortex à l'aide d'une bobine. La TMS est pratiquée en ambulatoire, sans anesthésie générale, en présence d'un médecin et en respectant des précautions d'emploi. Divers paramètres de stimulation sont utilisés, en particulier la fréquence haute ou basse, selon que l'on recherche un effet stimulant ou inhibiteur dans diverses pathologies psychiatriques (surtout dépression et schizophrénie). L'intensité de la stimulation est calculée en fonction du seuil moteur qui correspond à l'excitabilité du cortex moteur d'un sujet donné. Les effets indésirables sont rares et généralement sans gravité, essentiellement des céphalées. Le risque principal est l'induction d'une crise d'épilepsie (risque<1/1000), d'autant plus rare que les facteurs de risques sont contrôlés. Une série de recommandations assure la sécurité d'emploi de cette thérapeutique dont les paramètres techniques ne sont pas encore totalement codifiés. Repetitive Transcranial Magnetic Stimulation (rTMS) is a neuromodulation technique using a magnetic field applied to the cortex with a coil. rTMS is an ambulatory therapy that does not require general anesthesia supervised by a medical officer according to safety rules. Several stimulation patterns are available, in particular fast or slow frequency in order to induce a stimulating or an inhibitory effect in various psychiatric conditions (mainly depression and schizophrenia). The intensity of stimulation depends on the motor threshold corresponding to the cortical excitability of a given subject. Side effects are rare and usually mild, mostly headaches. The principal risk is induction of epileptic seizures (<1/1000), unlikely if safety rules are taken into account. Guidelines are proposed to warrant a safe use of rTMS, the optimal parameters of which are still under study.

Ingram, A., Saling, M. M. et Schweitzer, I. (2008). "Cognitive side effects of brief pulse electroconvulsive therapy: a review." J ect **24**(1): 3-9.

Cognitive impairment remains a common side effect of brief pulse electroconvulsive therapy (ECT), and its minimization has been the motivation for many different treatment modifications over the decades. The level of impairment has been shown to vary according to different technical parameters of ECT including, but not limited to, electrode placement, dosage, and waveform, as well as patient factors, such as age and premorbid intellect. Most past research has focused the assessment on memory impairments associated with ECT. Specifically, ECT can result in both anterograde and retrograde memory impairments. However, the study of non-memory cognitive functions after ECT has been relatively neglected. Furthermore, although considerable recovery has been observed within weeks of treatment completion, data are lacking in the longer term. The following article presents an overview of what is currently known about the pattern and recovery of cognitive side effects of ECT. Controversies within the literature and areas requiring further research are highlighted.

Kaliora, S. C., Zervas, I. M. et Papadimitriou, G. N. (2018). "[Electroconvulsive therapy: 80 years of use in psychiatry]." Psychiatriki **29**(4): 291-302.

> Electroconvulsive therapy (ECT) is the oldest among the early biological treatments introduced in psychiatry, and the only one still in use. In this paper we attempt a brief presentation of ECT usage over the last 80 years, since it was originally introduced. It is a safe, well-tolerated, and highly effective treatment option for major psychiatric disorders, such as mood disorders and schizophrenia, especially when there is an acute exacerbation of psychotic symptoms or if catatonic symptoms are prominent. ECT has also been used successfully for the treatment of Parkinson's disease, delirium, neuroleptic malignant syndrome, autism and agitation and depression in demented patients. There are no absolute contraindications. However, it is considered a high risk procedure for patients with increased intracranial pressure, recent myocardial infarction, recent cerebral hemorrhage or stroke, vascular aneurysm, retinal detachment and pheocromocytoma. Modern genetic and neuroimaging techniques have helped clarify possible mechanisms of action of ECT, but much remains unknown. Improvement of this method through a number of technical advancements has contributed in the reduction of side effects. Thus, modified ECT is currently considered as an effective and safe form of treatment even in vulnerable populations such as the geriatric patients, the adolescents and the pregnant patients. The mortality rate is very low, comparable to that of a minor anesthetic procedure. The most common adverse events are headache, nausea, myalgias and postictal delirium while the most severe are the cardiovascular side effects. Of note, the cognitive side effects especially amnesia, although transient, has been the focus of skepticism against the treatment. Major psychiatric disorders are chronic, recurring disorders. The relapse rate after a successful course of ECT without any intervention is extremely high. Pharmacotherapy or continuation ECT reduces equally the relapse rate up to 40%. Continuation and maintenance ECT, in combination with pharmacotherapy, have been successfully used in preventing relapse and recurrence. Gradual tapering off acute ECT treatments and individualized continuation and maintenance ECT treatments based on the needs of each patient seems the optimum clinical practice. Conclusively, despite impressive new developments in pharmacotherapy and in biological non pharmacological treatments ECT remains a valuable, irreplaceable treatment option for debilitating, resistant major psychiatric disorders.

Leclerc, C. (2017). "Effets cardiovasculaires de l'électroconvulsivothérapie." Le Praticien en Anesthésie Réanimation **21**(2): 73-76.
http://www.sciencedirect.com/science/article/pii/S1279796017300359

> Résumé Les effets adverses de l'électroconvulsivothérapie (ECT) sont variés mais les événements cardiovasculaires sont les plus remarquables. Ils sont en rapport avec une activation soudaine et intense du système nerveux autonome. Ils peuvent survenir pendant, au décours, voire à distance d'une séance. Ils sont rarement préoccupants. L'anesthésiste-réanimateur en assure la prise en charge initiale mais les interventions thérapeutiques, en particulier pharmacologiques, sont rarement nécessaires. Les complications sévères sont exceptionnelles.

Margittai, Z., Yardimci, T., Marin, D., et al. (2018). "[Cognitive deficits associated with electroconvulsive therapy for depression: moderating factors and neuropsychological tests]." Fortschr Neurol Psychiatr **86**(11): 690-698.

> Due to the efficacy of electroconvulsive therapy (ECT) in the guideline-based treatment of therapy-resistant depressive episodes and the clinical significance of cognitive impairments, it is necessary to optimize the management of potential side effects. As cognitive side effects of the treatment combined with impairments resulting from the depression may lead to a reduction in the ability to function in social contexts and reduce subjective wellbeing, comprehensive information about and monitoring of potential side effects is essential. In this review we present the clinical relevance and measurement of cognitive side effects that may occur during electroconvulsive therapy. The individual characteristics of the patient as well as the technical and pharmacological parameters that influence the effect of ECT on cognition will be discussed. Furthermore, the recommendations of national and international treatment guidelines for the monitoring of cognitive side effects will be summarized.After ECT, impairments of global cognition, and anterograde as well as retrograde amnesia may occur. While the first two side effects appear to be transient, the extent of retrograde

amnesia, particularly for autobiographical information, is not yet well understood and may potentially be present for a longer period. A controversial issue in this context is the question whether there are appropriate instruments for the monitoring of reduction in cognitive performance. In clinical context, a number of different measures are used, and in many cases, monitoring is omitted due to lack of time and methodological uncertainty. Current national and international guidelines make very different suggestions about the monitoring of cognitive side effects during ECT and in German-speaking regions no concrete recommendations are available. In this context, we recommend a revision of current guidelines and identify future areas of research that would further our understanding of the effects of ECT on cognition. These may enable us to keep an eye on these deficiencies better as well as allow us to identify patients that may have a higher risk of developing such impairments.

Munk, O., Laursen, Videbech, et al. (2007). "All-cause mortality among recipients of electroconvulsive therapy : Register-based cohort study." BRITISH JOURNAL OF PSYCHIATRY **190**(05): 435-439.

Background : Studies investigating mortality secondary to electroconvulsive therapy (ECT) are few. Aims To assess the risk of mortality from natural and unnatural causes among ECT recipients compared with other psychiatric in-patients over a 25-year period. Method : Register-based cohort study of all in-patients admitted to a psychiatric hospital from 1976 to 2000. Cause-specific mortality was analysed using log - linear Poisson regression. Results : There were 783 deceased in-patients who had received ECT compared with 5781 who had not. Patients who had received ECT had a lower overall mortality rate from natural causes (RR=0.82,95% Cl 0.74-0.90) but a slightly higher suicide rate (RR=1.20,95% Cl 0.99-1.47), especially within the first 7 days after the last ECT treatment (RR=4.82,95% Cl 2.12-10.95). Conclusions : Further investigation of the effect of ECTon physical health and the observed increased suicide rate immediately following treatment are needed, although the last finding is likely to result from selection bias.

Nobler, M. S. et Sackeim, H. A. (2008). "Neurobiological correlates of the cognitive side effects of electroconvulsive therapy." J ect **24**(1): 40-45.

Although electroconvulsive therapy (ECT) is a highly effective form of treatment, its use is limited by the emergence of cognitive side effects, notably anterograde and retrograde amnesia. Despite a large literature on the neurobiology of therapeutic mechanisms of ECT, very little is known about the neurobiological underpinnings of its cognitive effects. On theoretical grounds, structures within the medial temporal lobes, especially the hippocampus, are predicted to be critical regions mediating anterograde and, possibly, retrograde amnesia. However, functional neuroimaging studies in normal volunteers have demonstrated that frontal cortical regions are also involved in human memory processes. This review will highlight some of the biochemical, electrophysiological, and neuroimaging correlates of the amnestic side effects of ECT. In terms of electrophysiological and functional imaging studies, there are data that implicate both medial temporal and frontal regions as being associated with cognitive dysfunction. Interestingly, such data also appear to indicate a dissociation of the neural systems critical to the efficacy and adverse cognitive effects of ECT.

Obenda, N. S., Boukriche, Y. et Lalu, T. (2019). "Syndrome d'encéphalopathie postérieure réversible post-sismothérapie : à propos d'un cas." Revue Neurologique **175**: S137.
http://www.sciencedirect.com/science/article/pii/S0035378719304175

Introduction Le syndrome d'encéphalopathie postérieure réversible (PRES) est une entité dont les facteurs favorisants sont entre autres l'insuffisance rénale, l'éclampsie et l'utilisation de traitements immunosuppresseurs. Observation Une patiente âgée de 65 ans suivie pour trouble bipolaire traité par sismothérapie depuis 1 mois (8 séances), a présenté des troubles de la mémoire depuis la dernière séance puis des crises convulsives tonicocloniques généralisées quelques jours après. L'examen trouvait une patiente confuse et une tension artérielle élevée. L'IRM cérébrale mettait en évidence des lésions cortico-sous-corticales compatible avec une leucopathie postérieure réversible. Le diagnostic de PRES a été retenu. L'évolution était favorable sous traitement antihypertenseur et antiépileptique. L'IRM cérébrale de contrôle montrait une disparition quasi complète des lésions. Discussion La pathogénie de PRES reste mal élucidée. Une élévation de la pression artérielle semble

être le facteur principal déclenchant. La sismothérapie engendre souvent une hypotension transitoire et secondairement une hypertension artérielle. Même si la sismothérapie ne provoque pas des lésions cérébrales objectivables à l'imagerie nous pensons qu'en engendrant une HTA la sismothérapie peut être un facteur favorisant le PRES. Conclusion La survenue de PRES au cours de la sismothérapie n'est pas décrite dans la littérature, elle pourrait être fortuite ou secondaire à la survenue d'une hypertension artérielle après la sismothérapie.

Oremus, C., Oremus, M., McNeely, H., et al. (2015). "Effects of electroconvulsive therapy on cognitive functioning in patients with depression: protocol for a systematic review and meta-analysis." BMJ Open **5**(3): e006966.

INTRODUCTION: Depression is the leading cause of disability worldwide, affecting approximately 350 million people. Evidence indicates that only 60-70% of persons with major depressive disorder who tolerate antidepressants respond to first-line drug treatment; the remainder become treatment resistant. Electroconvulsive therapy (ECT) is considered an effective therapy in persons with treatment-resistant depression. The use of ECT is controversial due to concerns about temporary cognitive impairment in the acute post-treatment period. We will conduct a meta-analysis to examine the effects of ECT on cognition in persons with depression. METHODS: This systematic review and meta-analysis has been registered with PROSPERO (registration number: CRD42014009100). We developed our methods following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement. We are searching MEDLINE, PsychINFO, EMBASE, CINAHL and Cochrane from the date of database inception to the end of October 2014. We are also searching the reference lists of published reviews and evidence reports for additional citations. Comparative studies (randomised controlled trials, cohort and case-control) published in English will be included in the meta-analysis. Three clinical neuropsychologists will group the cognitive tests in each included article into a set of mutually exclusive cognitive subdomains. The risk of bias of randomised controlled trials will be assessed using the Jadad scale. We will supplement the Jadad scale with additional questions based on the Cochrane risk of bias tool. The risk of bias of cohort and case-control studies will be assessed using the Newcastle-Ottawa Scale. We will employ the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) to assess the strength of evidence. STATISTICAL ANALYSIS: Separate meta-analyses will be conducted for each ECT treatment modality and cognitive subdomain using Comprehensive Meta-Analysis V.2.0.

Petersen, J. Z. et Miskowiak, K. W. (2018). "[Cognitive side effects of electroconvulsive therapy]." Ugeskr Laeger **180**(18).

Electroconvulsive therapy (ECT) is the most effective treatment for severe depression but is associated with cognitive side effects. Side effects on executive function and memory may persist for months. Patients with a low cognitive reserve and/or poor cognition before ECT seem to be at greater risk of cognitive side effects than patients with a high cognitive reserve. However, better understanding of the nature and predictors of these side effects is needed. We recommend implementing a cognition assessment tool to monitor cognition during ECT. This may improve patient information and provide a basis for more personalised treatments.

Peyron, P. A., Cathala, P. et Baccino, E. (2014). "Fractures osseuses par électrisations à basse tension : à propos de deux cas." La Revue de Médecine Légale **5**(4): 170-175.
http://www.sciencedirect.com/science/article/pii/S1878652914000820

Résumé Les fractures osseuses secondaires à des électrisations sont généralement causées par des courants haute-tension ou par des traumatismes secondaires directs. Les fractures par électrisation à bas voltage sont quant à elles rares et résultent de la contraction tétanique des muscles traversés par l'influx électrique. Nous rapportons deux cas de fractures de ce type. Le premier cas concerne un ouvrier électrisé en manipulant une machine alimentée par un courant de 380V. L'imagerie mettait en évidence de façon retardée une fracture des deux scapulas, qui était traitée orthopédiquement. Le second cas concerne une fillette de 6ans victime d'une électrisation par un courant de 230V en appuyant sa main droite sur le poteau d'un réverbère mal isolé. Une radiographie du poignet droit

montrait une fracture de l'extrémité inférieure du radius avec déplacement antérieur. Aucune séquelle n'était rapportée après immobilisation de l'articulation pendant 3 semaines. Ces cas sont originaux du fait de la bilatéralité des lésions pour l'un, et de la rareté de la topographie fracturaire pour l'autre. Ils soulignent l'importance de l'imagerie en cas de point d'appel clinique ostéo-articulaire après électrisation à bas voltage.

Pierre-Michel, L., Schmitt, A., Mialoux, M., et al. (2009). "Usage des traitements par électrochoc en psychiatrie." EMC Psychiatrie **138**(37 860 E 10): 1-14.

L'électroconvulsivothérapie reste actuellement une stratégie thérapeutique indispensable dans certaines indications, là où les chimiothérapies trouvent leurs limites. Les mécanismes qui sous-tendent son efficacité restent encore mal connus, et son avenir dans le traitement des troubles de l'humeur dépend d'une meilleure connaissance de son mécanisme d'action afin d'en avoir une utilisation plus codifiée. Nous proposons d'aborder les différentes théories actuelles qui permettent d'expliquer son mécanisme d'action : d'une part sur le fonctionnement cérébral global (théorie anticonvulsivante), puis au niveau cellulaire avec le rôle des différents neurotransmetteurs impliqués également dans la pharmacologie des antidépresseurs. Nous aborderons également son action probable sur la synthèse peptidique avec l'implication du glutamate et du système neurohormonal, et enfin l'impact de l'électroconvulsivothérapie au niveau génique, même si les hypothèses restent peu précises. Nous développerons les indications et contre-indications de cette thérapeutique dans les affections psychiatriques et exposerons, à travers les données de la littérature, les aspects techniques de son utilisation, ainsi que l'impact sur la qualité de vie des patients. [résumé d'auteur]

Prapotnik, M., Pycha, R., Nemes, C., et al. (2006). "[Adverse cognitive effects and ECT]." Wien Med Wochenschr **156**(7-8): 200-208.

Electroconvulsive therapy (ECT) is a rapidly acting and highly effective treatment for severe and life threatening conditions seen in affective and schizophrenic diseases. Notwithstanding its therapeutic benefits, ECT remains controversial because of seizure induction, cognitive side effects, memory dysfunction and effects on cerebral physiology. These factors have raised the concern that ECT produces structural and functional brain damages. This issue continues to have a major impact on the acceptance of ECT as a therapeutic modality, both within the medical community and in public opinion. A close look at incidence, type, severity, neurofunctional and -anatomical correlates, aetiology and therapeutic approaches of the adverse cognitive effects attributed to ECT may contribute to rational and objective handling of this topic. The final chapter deals with the issue of whether ECT causes brain damage.

Prudic, J. (2008). "Strategies to minimize cognitive side effects with ECT: aspects of ECT technique." J ect **24**(1): 46-51.

The adverse cognitive effects of electroconvulsive therapy are important limitations in the use of this treatment that continues to be a significant therapeutic strategy after 7 decades of use. Among the approaches to mitigation of these side effects are considerations involving the prescription and manipulation of the electrical stimulus itself. The impact of the following electrical factors on the cognitive outcomes of electroconvulsive therapy are surveyed: efficiency of the stimulus as expressed in electrical waveform; targeting of the stimulus, the major concept underlying electrode placement; stimulus dosing; and frequency and number of treatments. The current state of development of knowledge in these areas is summarized, and methods to achieve the best cognitive outcomes without sacrificing clinical efficacy are discussed. Future trends in the further optimization of the electrical stimulus are briefly mentioned.

Quiles, C., Bosc, E. et Verdoux, H. (2013). "Altérations cognitives et plaintes mnésiques lors d'un traitement par électroconvulsivothérapie : revue de la littérature." Annales Médico-psychologiques, revue psychiatrique **171**(5): 285-294.
http://www.sciencedirect.com/science/article/pii/S0003448713000978

Résumé L'électroconvulsivothérapie (ECT) est susceptible d'entraîner des altérations mnésiques, repérables à l'aide de tests neuropsychologiques « objectifs » et à l'origine de plaintes mnésiques « subjectives » rapportées par les sujets. Les études disponibles mettent en évidence des altérations mnésiques « objectives » à la suite d'un traitement par ECT variables selon les tests neuropsychologiques utilisés et la période d'évaluation par rapport aux séances ECT. Les méthodes d'évaluation des plaintes mnésiques « subjectives » et leurs résultats divergent également selon les études. L'objectif de cette revue de la littérature est de synthétiser les données disponibles concernant les altérations mnésiques « objectives » ainsi que les plaintes mnésiques « subjectives » rapportées à la suite d'un traitement par ECT et d'observer les relations entre ces deux types d'altérations mnésiques. Cette revue systématique de la littérature a permis de retenir 29 articles publiés de 1970 à 2012. Les seules altérations cognitives « objectives » persistantes à long terme après un traitement par ECT sont des altérations mnésiques rétrogrades autobiographiques. Les plaintes mnésiques concordent avec les altérations mnésiques objectives lorsqu'elles sont évaluées globalement, mais diffèrent lorsque les outils de mesure des plaintes subjectives utilisés demandent une évaluation plus spécifique.

Tørring, N., Sanghani, S. N., Petrides, G., et al. (2017). "The mortality rate of electroconvulsive therapy: a systematic review and pooled analysis." Acta Psychiatr Scand **135**(5): 388-397. https://onlinelibrary.wiley.com/doi/abs/10.1111/acps.12721

Objective Electroconvulsive therapy (ECT) remains underutilized because of fears of cognitive and medical risks, including the risk of death. In this study, we aimed to assess the mortality rate of ECT by means of a systematic review and pooled analysis. Method The study was conducted in adherence with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. The ECT-related mortality rate was calculated as the total number of ECT-related deaths reported in the included studies divided by the total number of ECT treatments. Results Fifteen studies with data from 32 countries reporting on a total of 766 180 ECT treatments met the inclusion criteria. Sixteen cases of ECT-related death were reported in the included studies yielding an ECT-related mortality rate of 2.1 per 100 000 treatments (95% CI: 1.2–3.4). In the nine studies that were published after 2001 (covering 414 747 treatments), there was only one reported ECT-related death. Conclusion The ECT-related mortality rate was estimated at 2.1 per 100 000 treatments. In comparison, a recent analysis of the mortality of general anesthesia in relation to surgical procedures reported a mortality rate of 3.4 per 100 000. Our findings document that death caused by ECT is an extremely rare event.

Valente, P. (2006). "Les effets mnésiques de l'électroconvulsivothérapie : nature, facteurs aggravants, mécanismes supposés, options thérapeutiques." L'information psychiatrique **82**(5): 415-420. https://www.cairn.info/revue-l-information-psychiatrique-2006-5-page-415.htm

Les effets mnésiques de l'électroconvulsivothérapie (ECT) sont le plus souvent résolutifs, même s'il peut parfois persister quelques plages d'amnésie lacunaire rétrograde. Le placement bilatéral des électrodes, la charge utilisée, le nombre et la fréquence des séances aggravent ces effets. L'hypothèse physiopathologique semble être celle d'une perturbation (surtout hippocampique) de la potentialisation à long terme (LTP), non par inhibition, mais par saturation maximale rendant impossible tout apprentissage ultérieur ou rappel d'informations. Cette saturation serait temporaire grâce à l'action de scavengers ou d'antagonistes, d'où l'espoir thérapeutique que pourrait représenter l'utilisation d'antagonistes aux récepteurs du N-méthyl-D-aspartate.

Walter et Rey (2003). "Has the practice and outcome of ECT in adolescents changed ? Findings from a whole-population study." J ect **19**(2): 84-87.

Objective : To investigate whether there were changes in the practice and outcome of electroconvulsive therapy (ECT) in adolescents in a whole population over a decade. Method : All persons younger than 19 years who received ECT in the state of New South Wales, Australia, in the period from 1990 to 1999 were identified. Detailed information about diagnosis, treatment and outcome were then obtained. Results : Seventy-two patients aged 14-18 years underwent a total of 84 courses of ECT (1.53/100,000 adolescents were treated with ECT per year). In 1996 to 1999 compared

with 1990 to 1995, there was an increase in ECT among females hospitalized involuntarily, EEG monitoring, stimulus dosing, bilateral ECT, and use of thiopentone. Overall, mood disorders derived most benefit from ECT while comorbid personality disorder predicted poorer short term outcome. Side effects were minor and transient. Conclusions : The changes in ECT practice are consistent with changes in ECT practice generally over the survey period. The overall data on effectiveness and safety further support the treatment's use in young people.

Walter, G. et Rey, J. M. (1997). "An Epidemiological Study of the Use of ECT in Adolescents." Journal of the American Academy of Child & Adolescent Psychiatry **36**(6): 809-815.
http://www.sciencedirect.com/science/article/pii/S0890856709665072

ABSTRACT Objective There is little knowledge about the use of electroconvulsive therapy (ECT) in adolescents. Given the prevalence and severity of psychiatric disorders in this age group, it is important to determine the frequency, indications, effectiveness, and side effects of ECT. Method Persons younger than 19 years who received ECT between 1990 and 1996 in the Australian state of New South Wales were identified. Detailed information about diagnosis, treatment, and outcome was then obtained. Results Forty-two patients aged 14 to 18 years underwent a total of 49 courses comprising 450 ECTs (0.93% of all treatments given to all persons). Marked improvement or resolution of symptoms occurred in half of the completed courses. Mood disorders derived most benefit from ECT. Side effects were transient and minor. Prolonged seizures were observed in 0.4% of treatments. Comorbid personality disorder predicted poorer response, and the anesthetic propofol was associated with shorter seizures. Conclusions Although ECT is an effective treatment for some mental disorders in adolescents and has few side effects, it is seldom used. Indications, response, and unwanted effects were similar to those observed in adults. The use of propofol may reduce the risk of prolonged seizures.

Watts, B. V., Groft, A., Bagian, J. P., et al. (2011). "An examination of mortality and other adverse events related to electroconvulsive therapy using a national adverse event report system." J ect **27**(2): 105-108.

BACKGROUND: : There is currently an incomplete understanding of adverse events related to electroconvulsive therapy (ECT) treatments. Much of the published literature is based either on a limited number of ECT providers or reports not representative of modern ECT practice. METHODS: : We searched the Veterans Affairs (VA) National Center for Patient Safety database for reports of adverse events related to ECT. The type and the cause of the events were determined and aggregated. The number of ECT treatments given in the VA was used to develop estimated rates of mortality associated with ECT. RESULTS: : There were no deaths associated with ECT reported in any VA hospital between 1999 and 2010. Based on the number of treatments given, we estimate the mortality rate associated with ECT as less than 1 death per 73,440 treatments. The most common reported adverse events related to ECT were injury to the mouth (including dental and tongue injury) and problems related to paralysis. CONCLUSIONS: : Based on this VA data, ECT may be safer than is widely reported. The reported adverse events were generally rare and typically minor in severity. Simple steps may possibly result in further enhancements to ECT safety.