HAL open science

Enhancing the role played by clinical pharmacists in psychiatric settings to better integrate clinical psychopharmacology into the decision-making process

Hervé Javelot, Sophie Dizet, Céline Straczek, Bastien Langrée, Bruno Michel, Emmanuel Haffen, Gilles Bertschy

To cite this version:

Hervé Javelot, Sophie Dizet, Céline Straczek, Bastien Langrée, Bruno Michel, et al.. Enhancing the role played by clinical pharmacists in psychiatric settings to better integrate clinical psychopharmacology into the decision-making process. Thérapie, 2021, 76 (2), pp.149-156. 10.1016/j.therap.2020.12.011 . hal-03658190

HAL Id: hal-03658190

https://univ-fcomte.hal.science/hal-03658190v1

Submitted on 24 Apr 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

Version of Record: https://www.sciencedirect.com/science/article/pii/S0040595720302286
Manuscript_3b900978e58e194e924c49460a79719d

THERAPIES

HEADING: Neuropsychopharmacology

Enhancing the role played by clinical pharmacists in psychiatric settings to better integrate clinical psychopharmacology into the decision-making process

Shared expertise in clinical psychopharmacology

Hervé Javelot[a,b#†‡*], Sophie Dizet[c‡], Céline Straczek[d,e‡], Bastien Langree[f‡], Bruno Michel[g,h,i#‡], Emmanuel Haffen[j,k†‡], Gilles Bertschy[l,m,n#‡]

[a] *Établissement public de santé Alsace Nord, 67170 Brumath, France*

[b] *UR 7296 laboratoire de toxicologie et pharmacologie neuro cardiovasculaire, université de Strasbourg, 67000 Strasbourg, France*

[c] *Centre de ressources et d'expertise en psychopharmacologie (CREPP) Bourgogne Franche-Comté et service pharmacie, CHS de Sevrey, 71100 Chalon sur Saône, France*

[d] *Département de pharmacie, CHU Henri Mondor, 94000 Créteil, France*

[e] *Institut Mondor de recherche biomédicale, Inserm U955, équipe 15 neuropsychiatrie translationnelle, 94000 Créteil, France*

[f] *Service pharmacie, centre hospitalier Guillaume Régnier, 35000 Rennes, France*

[g] *Department of pharmacy, university hospital of Strasbourg, NHC, 67000 Strasbourg, France*

[h] *Faculty of pharmacy, university of Strasbourg, 67000 Strasbourg, France*

[i] *UR 7296 laboratory of neuro-cardiovascular pharmacology and toxicology, university of Strasbourg, 67000 Strasbourg, France*

[j] *Service de psychiatrie, CIC-1431 INSERM, CHU de Besançon, 25000 Besançon, France*

[k] *Laboratoire de neurosciences, université de Franche-Comté, 25000 Besançon, France*

[l] *Pôle de psychiatrie, santé mentale & addictologie des hôpitaux universitaires de Strasbourg, 67000 Strasbourg, France*

[m] *Inserm U1114, 67000 Strasbourg, France*

© 2020 published by Elsevier. This manuscript is made available under the CC BY NC user license
https://creativecommons.org/licenses/by-nc/4.0/

[n] *Fédération de médecine translationnelle de Strasbourg, université de Strasbourg, 67000 Strasbourg, France*

Received June 24, 2020; accepted July 20, 2020

*__Corresponding author__. Établissement public de Santé mentale Alsace Nord (EPSAN), 141, avenue de Strasbourg, 67170 Brumath, France.
Établissement public de santé Alsace Nord
E-mail adress: herve.javelot@ch-epsan.fr (H. Javelot)

*Collaborative work between the following associations

[#] Pharmacopsy Alsace

[†]AFPBN – section neuropsychopharmacologie (Association Française de Psychiatrie Biologique et de Neuropsychopharmacologie)

[‡]SF2P (Société Francophone Pharmaciens & Psychiatres)

Summary

The importance of clinical psychopharmacological knowledge for modern psychiatric care is both well-established and underdeveloped. Although psychiatric pharmacists are identified as experts in psychopharmacotherapy based on pharmacists' overall expertise in pharmacotherapy, in real-life health settings, such is not necessarily the case. As a matter of fact, (1) pharmacists' real expertise in pharmacotherapy is mainly seen as useful to patients (as part of therapeutic education), (2) pharmacists' practice methods are usually circumscribed to the framework of quality processes (e.g. comprehensive medication management) which are not particularly useful to clinicians who have a greater need for pharmacotherapeutic skills, (3) the difficulties in terms of collaboration between pharmacists and physicians are well-known. We describe here the implementation of an alternative system of pharmacotherapy counselling inspired by case by cases in which the remote expertise of pharmacists in psychopharmacology guided prescribers towards the implementation of recommendations from the literature. This shared decision-making process integrates both the clinical elements provided by the psychiatrist and the pharmacotherapeutic information provided by the clinical psychopharmacist, to promote evidence-based medicine (algorithmic data in recommendations) and tailor-made solutions (drug-drug and drug-disease interactions) for patients. In our experience, the success of such an initiative is likely to promote the development of clinical psychopharmacology in psychiatric settings. Importantly, within this framework, the pharmacovigilance unit and psychopharmacologist are useful resources to guide the decision-making process of the pharmacist-psychiatrist duo.

KEYWORDS

Psychopharmacology expertise; Psychiatric clinical pharmacist; Pharmacist-psychiatrist collaboration; Shared decision-making

Abbreviations

AGNP: Arbeitsgemeinschaft für Neuropsychopharmakologie und Pharmakopsychiatrie

AMA: American Medical Association

ARS: Agences regionales de santé

BCPP: board certification examination for psychiatric pharmacists

BPS: board of pharmacy specialties

CCI: case conferencing interventions

CMHP: College of Mental Health Pharmacy

CMM: comprehensive medication management

CPNP: College of Psychiatric and Neurologic Pharmacists

CREEP: Resource and Expertise Center in PsychoPharmacology (*Centre de ressources et d'expertise en psychopharmacologie*)

CRPV: regional pharmacovigilance centre

MedRec: medicine reconciliation

MTM: medication therapy management

TDM: therapeutic drug monitoring

UKPPG: United Kingdom Psychiatric Pharmacy Group

Introduction

Since the magical years of psychopharmacology (1950s and 1960s) the interest towards the integration and the optimal use of psychotropic drugs in mental health settings has grown considerably [1, 2]. This has highlighted the need for targeted training for health-care workers, and psychiatrists in particular, as crucial in order to improve the quality of care [3, 4]. Beyond the need for training, the acknowledgment that only a minority of health-care workers can develop psychopharmacological expertise suggests that hospitals should have at least one designated psychiatrist with this particular expertise [4]. However, with the rise of modern psychophamarcology, the knowledge that needs to be mastered has become increasingly complex, making this much needed expertise even less likely. Yet it is widely known that psychotropic drugs are beneficial only when they are handled in the right manner [5]. The question thus remains regarding how the necessary clinical psychopharmacological expertise is to be provided [5].

Another main influence that modern psychopharmacology has exerted in the psychiatric field is the dramatic impact it had on nosology and on the overestimation of the effectiveness and the tolerability of psychotropics [2, 6]. Brief clinical assessments with simplistic checklists for categorical diagnosis are abundantly used in contemporary psychiatric practice and have also contributed to the fact that pharmacotherapy choices are, in many cases, dictated by guidelines/algorithms built upon data from cost-driven studies led by pharmaceutical companies [7]. This has led to an overall decline in clinical curiosity in favor of a widespread use of a more standardized approach; paradoxically, this probably increased the number of prescriptions based on experience rather than knowledge, while potentially impoverishing clinicians' knowledge of the pharmacological tools available [7].

When envisioning the future, modern-day psychiatry bears the challenge of incorporating two important new paradigms, i.e., personalized medicine (that is, adapting psychotropic drugs to an individual clinical situation) and evidence-based medicine (as a general framework). This means that a bridge connecting fundamental and applied neuropsychopharmacology (i.e., the everyday prescriptions made by clinical psychiatrists) needs to be constructed. This is essential in order for clinicians to gain a better understanding of the different pharmacological tools and their potential complementarity. Since the pharmacist is generally seen as one of the experts in medication and pharmacotherapy, he/she could thus be the best option to link pharmacological knowledge to the clinic [8-10].

In this narrative review of the literature, we aim at presenting how we can conceive of a more prominent role of clinical psychopharmacology in decision-making in psychiatric settings. Bearing this in mind, we will present the strengths and limitations from the perspective of mental health pharmacists, and how France is attempting to develop a shared decision-making model between psychiatrists and pharmacists. In addition, we will present the challenges of a shared expertise between pharmacists working in psychiatric settings (or psychiatric pharmacists) and psychiatrists.

Psychiatric pharmacy: pharmacist as experts in psychopharmacotherapy?

The involvement of pharmacists, particularly alongside physicians, in the clinical process is known as "clinical pharmacy", that is, a field whose main aim is to improve therapeutic decisions [11]. Clinical pharmacy has existed in such a format for a long time in France, and for even longer time in North America and in English-speaking countries in general. In the latter countries, clinical pharmacists specialize in one clinical field, i.e., oncology or psychiatry, whereas in France clinical pharmacists do not specialize in one particular medical field. In the USA, psychiatric pharmacy in particular has been part of the board of pharmacy specialties (BPS) since 1992. Four years after the creation of the board certification examination for psychiatric pharmacists (BCPP), several psychiatric pharmacists formed a group that would later become the College of Psychiatric and Neurologic Pharmacists (CPNP; 1998) [12]. In the UK, the College of Mental Health Pharmacy (CMHP) was formed in 2010 by the merger of the United Kingdom Psychiatric Pharmacy Group (UKPPG) and the College of Mental Health Pharmacists [13]. These official groups have largely contributed to the development of psychiatric pharmacy and provided grounds for the collaboration between psychiatrists and pharmacists regarding pharmacotherapeutic decisions.

A psychiatrist-pharmacist partnership approach has already proven effective in improving the quality of mental-health care in a number of studies [8-10, 14, 15]. By favoring psychopharmacologically-informed and evidence-based practice, mental health practitioners reduce stigma associated with mental health [9]. Hence, this approach should no longer be perceived as inaccessible to general psychiatric care, as the partnership between psychiatrists and pharmacists is crucial to improve the quality of prescriptions [15, 16]. However, most of the investment made by pharmacists, including in English-speaking countries, is made within a framework that focus on the quality aspect of the pharmacotherapeutic approach, e.g. in the USA, comprehensive medication

management (CMM; guidelines for CMM in 2012) and medication therapy management (MTM; adopted by Medicare & Medicaid services since 2003) [10].

CMM is a standardized view of care for a given patient in which all medications are reviewed to determine adherence, effectiveness, relevance, and safety [10]. Medicine reconciliation (MedRec), alone or integrated in CMM, corresponds to an intervention that aims at reducing adverse drug events across several settings such as hospitals, primary or long-term care [17]. MedRec is either mandatory or recommended in France and in numerous English-speaking countries (USA, Canada, Australia or UK), and it has recently been the focus of an article in a specific regional psychiatric setting in France [18]. Recently, another standardized tool has integrated MedRec for clinical pharmacists in psychiatric settings [19].

In these highly protocolized intervention systems, the pharmacists' field of expertise appears extremely broad, which reflects the nature of clinical pharmacists' activities in general, ranging from prescription verification (medicine reconciliation, drug-drug and drug-disease interactions, etc.) to therapeutic education (enhancing medication adherence) [8, 20, 21]. It is important to note however that the level of qualification of clinical pharmacists may be different depending on the country, in particular in relation to the duration of the hospital pharmacy residency (see ie. for the differences in Europe [22]).

Hence, expertise in psychopharmacology is just one of many skills, and the pharmacist's pharmacotherapeutic expertise seems to be seen as more useful to the patient than it is to psychiatrists or health care teams ("Patients can benefit from pharmacists' expertise in pharmacology, pharmacokinetics (...)" [8], "Despite (...) the relative expertise in pharmacotherapy, pharmacists are often overlooked as core members of health care teams" [9]). This suggests that either psychiatrists do not need expert advice in clinical psychopharmacology, which does not seem to be the case considering the data presented above (see introduction), or that clinical pharmacists are not considered legitimate, or do not feel legitimate, in terms of their clinical psychopharmacological expertise relative to psychiatrists.

Furthermore, these programs also tend to show that the partnership approach between pharmacists and psychiatrists is not automatic and requires a degree of intentionality to be effective. For instance, while some studies present the benefits of pharmacist-psychiatrist collaboration in terms of the quality of psychotropic drug prescriptions, other research data point to the well-known conflictual relations between the two professions [9, 10, 23]. The American Medical Association (AMA) considers that when pharmacists ask for information about the validity of prescriptions

before dispensation, they “are interfering with the practice of medicine” [10]. This raises the question of the reason why the collaboration might be difficult, in terms of the behavioral patterns involved but also specific organizational difficulties (not knowing the other practitioner, remote communication via emails, telephone, and not face to face, etc.) [9].

It should also be noted that when the specialization of psychiatric pharmacists is acknowledged in its own right, as in the USA, their work is mainly organizational (i.e., therapeutic drug monitoring [TDM] and the follow-up of periodic treatments) and/or administrative (i.e., management). Such is the case for instance of clinics specializing in the use of treatments such as clozapine or methadone or for long-acting injectable drugs [24-26]. Although these new settings show that there is some acknowledgment of the role of mental health pharmacists in clinical psychiatric settings, it does not mean that they are viewed as experts in psychopharmacotherapy.

Considering this, we argue that the acknowledgment of the expertise of clinical pharmacists in mental health settings can be achieved through:

- the intensive training of clinical pharmacists specializing in clinical neuropsychopharmacology, similar to the qualification level that has existed for more than 20 years in the USA and in other English-speaking countries in general [10, 12];

- the education of psychiatrists regarding the type of advice that can be expected from pharmacists.

Of course, the last point raised here is something that pharmacists alone cannot implement, that is, psychiatrists need to believe that there is something to be gained by improving their partnership with pharmacists (e.g., information relevant to their practice). It is undeniable that, in the current standards of intervention of clinical pharmacy, pharmacotherapeutic optimization is conceived essentially, if not exclusively, in a retroactive manner: e.g. drug-drug interactions, medication review for anticholinergics, sedative drugs or antipsychotic polypharmacy, reduction of the use and duration of prescriptions for hypnotics or anxiolytics [9, 10]. Thus, quality analysis grids of medical activity used by pharmacists often take a critical stance at medical practice without considering the clinical motives that led to this situation. The retrospective stance of “what has been done” proposed by pharmacists places the physician in a position where he/she must regularly defend

decisions for which he/she is not always completely responsible. These contexts lead to the feeling that clinicians might “waste their time” and are rightly singled out by the AMA [10].

In order to promote a more virtuous model of neuropsychopharmacology expertise provided by clinical pharmacists in mental health settings, it is crucial to strengthen the skills of clinical pharmacists in the field of mental health.

Contribution of a new partnership approach between psychopharmacists-psychiatrists to improve care in mental health settings

Psychiatry, like many other disciplines, is concerned by the accumulation and diversification of knowledge. Pharmacotherapy represents only a part of the field of psychiatry akin to psychotherapy for instance. In this context, for clinical psychiatrists, knowledge in psychopharmacology is only one part of a growing body of knowledge. Additionally, the number of psychotropic drugs has continued to grow over the years, increasing the complexity of drug interactions and their risks. This context has given rise to a risk of relative regression in the skills of psychiatrists in the field of psychopharmacology and of non-optimal use of psychopharmacological tools [20, 21]. The consequences are twofold. Firstly, the risk of an increase in the prevalence of treatment-resistant cases, a source of chronicization of disorders which entail important well-being and functional consequences. The second risk is iatrogenic, which is a particularly sensitive issue, especially in the elderly. This context highlights the need to integrate a real expert in clinical psychopharmacology into care.

We present below the example of a local network of expertise in clinical psychopharmacology which has been set up for psychiatrists in the Alsace region (formerly part of the current Grand'Est region) in France. Alsace is a region of 1.89 million inhabitants (2017), with an overall equipment rate for psychiatry of 1.22 hospital beds per 1000 inhabitants (below the national average of 1.45) [27]. Since 2014, a network has been built in Alsace with experts in psychopharmacology, under the initial impetus of a psychiatrist (GB) and a psychopharmacist (HJ), with the aim of providing rapid counseling to mental health clinicians (psychiatrists and general practitioners in psychiatry). In 2017, this network was structured in the form of an association called “Pharmacopsy Alsace”, with local referents in the region's 3 psychiatric institutions, making

it possible to raise the questions asked by clinicians [20, 21]. This offer of expertise has become well-identified by psychiatrists who need expertise in psychopharmacology [20, 21]. The objectives of “Pharmacopsy Alsace” are presented in Table 1. Requests for expertise emerge at two key moments in the patient's routine care: (i) in the beginning, in order to optimize the first-line pharmacotherapeutic strategy, (ii) but above all at a later stage in the event of failure, proven resistance or an adverse effect, advice with the aim of treatment modification (Figure 1) [20, 21]. Reflections in terms of accountability for adverse effects linked to psychotropic drugs are the subject of integrated collaboration within the framework of “Pharmacopsy Alsace” with the Alsace regional pharmacovigilance centre (CRPV) based at the Strasbourg University Hospital [20, 21].

The operating model of our network of expertise in psychopharmacology is largely inspired by case conferencing interventions (CCI) found in Australian and Scandinavian settings [9, 28, 29]. CCI correspond to face-to-face dialogues between the referring physician and the reviewing pharmacist (during a multidisciplinary meeting of two or more healthcare professionals in general) in order to plan care for a specific person with chronic and complex care needs [9, 28]. The “model of shared decision-making” was first described as a consensual decision between patient and physician [9, 28]. A similar view could promote shared decision-making as a gold standard in health care teams [28]. The shared decision-making model involves 3 steps: sharing information, deliberation and decision making [28]. However, the CCIs can include only two members of the health care team, i.e., the psychiatric and the pharmacist, in order to: (i) facilitate the communication with the general practitioner, (ii) provide a quality program in order to reduce the prescription of inappropriate drugs, (iii) improve medication adherence [9, 28,29]. In our experience, CCIs involving mental health pharmacists with a qualification in psychopharmacology (e.g. PhD in psychopharmacology or other similar qualifications and strong clinical experience in the field) are able to efficiently provide clinical psychopharmacological counselling to psychiatrists who request it [20, 21].

We have observed that psychiatrists encounter two main difficulties in making pharmacotherapeutic decisions: (1) finding information in the literature on a specific psychopharmacotherapeutic issue, i.e., how to search, then how to select the information found in the literature to ultimately translate the vast theoretical information found into an individual choice, (2) organizing this decision-making considering drug-drug and drug-disease interactions, particularly interactions with somatic drugs and illnesses [20, 21]. From this perspective, pharmacists with a research qualification in psychopharmacology (PharmD, PhD) are often the best

contact options: (1) as researchers with a PhD in psychopharmacology they can provide a critical review of the literature in order to offer an informative synthesis directly to the clinical psychiatrist, (2) as clinical pharmacists to guide prescribers on the different types of interactions either directly or by orienting the communication between the psychiatrist and the general practitioner. Moreover, in our clinical practice, the pharmacist can also greatly benefit from a clinical experience in psychiatric settings (as a mental health clinician or as a post-doctorate fellow, and not as a pharmacist) and contribute to the relevance of the advice that he/she is likely to offer to clinicians [20, 21].

The challenge of this organization is to be able to provide psychiatrists with tailored information for an individual patient. Over the past few years, our expertise activity in the form of CCIs has been highlighted by a number of publications reflecting the diversity of our actions in psychopharmacological expertise: (1) pharmacotherapeutic optimization (e.g. [30-33]), (2) adverse effects (e.g. [34-39]); in these two first sections, we described two cases in which clinical decisions were assisted by TDM [32, 36]. "Pharmacopsy Alsace" is also involved in studies focusing on appropriate psychotropic use [40, 41], the development of prescription support tools (anticholinergic impregnation scale for French psychiatry [42]) and training/information on psychotropic drugs [41, 43]. According to recent feedback from a sample of 106 Alsatian mental healthcare professionals, including 81 psychiatrists and 3 general practitioners, 94.3% of these professionals were totally satisfied with the responses provided by the "Pharmacopsy Alsace" network [44]. The number of requests has grown steadily in recent years, increasing fivefold in five years (reaching more than 300 requests per year in 2019). It is also interesting to note that our network was found to be particularly useful during the current health crisis through the quick recommendations we were able to provide on the management of psychotropic drugs during the SARS-CoV-2 pandemic [45]. Importantly, there was an increase of more than 50% in the number of requests for expertise during the months of April and May 2020 in the clinics presenting with the highest number of psychiatrists on sick leave. This shows that remote expertise in psychopharmacology offers an important support solution for practitioners when their real-life network is affected.

Our network of expertise also promotes the use of TDM among prescribers as an objective means of contributing to the decision-making process in psychopharmacotherapy ([20, 21, 32, 36] and Table 1). This integration of TDM is in line with the recommendations proposed by the TDM task force of the "Arbeitsgemeinschaft für Neuropsychopharmakologie und Pharmakopsychiatrie"

(AGNP) [46, 47]) and the extensive experience developed in this area within the pharmacogenetics and clinical psychopharmacology unit of the Vaud university hospital [48].

Finally, we believe that remote online expertise in psychopharmacology's success lies in the guided, step-by-step implementation by prescribers of recommendations or guideline algorithms from the literature. As noted above, this has become increasingly complex, as the psychopharmacological decision algorithm has to include pharmacodynamics data, evidence- or consensus-based guidelines and meta-analyses, and pharmacoepidemiologic data. The latter contribute to the acknowledgement of real-life conditions compared to clinical trials [49]. Pharmacoepidemiologic data complement data from clinical trials as they provide information regarding the medium- and long-term effects of treatment, which are used regularly throughout the life of the patient. They also integrate data on somatic and psychiatric comorbidities as well as specific treatment effects on specific populations such as children, elderly people or pregnant women [49]. These elements also strongly contribute to pragmatic psychopharmacotherapeutic choices. Although clinicians are often aware of evidence-based guidelines, they do not necessarily apply them, judging them to be incompatible with pragmatic, real-life conditions. A 2017 study for algorithm-guided treatments for depression showed the benefit of three different algorithm-based strategies compared to either the usual treatment or also to a computerized expert system where the clinician does not adapt the prescription according to the clinical picture and/or his/her experience [50]. These data demonstrate the relevance of algorithmic thinking informed by the clinical picture and the clinician's experience. Nevertheless, it is often difficult for the clinician to follow the algorithms and find out how they can be adapted to a specific situation. From our point of view, CCIs built by the shared expertise in psychopharmacology between the psychiatric pharmacist and the psychiatrist contribute to an implementation of evidence-based medicine capable of producing tailor-made solutions for patients [20, 21].

Conclusion

Supporting expertise in clinical psychopharmacology is fundamental to ensuring quality psychiatric care [5]. The need for training in psychopharmacology for both junior and senior psychiatrists is well-known [3, 4, 51] and the relevance of requesting advice from a clinical psychiatric pharmacist to this aim has already been demonstrated [3, 51].

However, although pharmacists are often presented as experts in pharmacotherapy and in terms of knowledge about medications, the actual role they play in providing psychopharmacotherapeutic advice to psychiatrists is still limited.

From our point of view, the new qualifications offered to pharmacists in some countries are sometimes : (i) liable to stir up confrontations between physicians and pharmacists because some of these qualifications are more clinics-oriented (e.g. in psychiatry: early detection or follow up of people with mental health diseases) [9], (ii) some provide more quality-oriented work especially in psychiatry settings (MTM, CMM, MedRec) [10, 17] and do not allow the psychiatric pharmacist to focus his/her expertise on the collaboration with the psychiatrist.

In our experience, the implementation of a model of clinical psychopharmacology inspired by the CCIs is both evidence-based and ecological [20, 21]. From this perspective, pharmacovigilance units and psychopharmacologist researchers are important information resources to guide the decision-making process of the pharmacist-psychiatrist duo. The "Pharmacopsy Alsace" expertise network is now being deployed in France in the form of centers currently being validated by the French regional health agencies (*Agences régionales de santé* [ARS]) which should be called Resource and Expertise Center in PsychoPharmacology (*Centre de ressources et d'expertise en psychopharmacologie* [CREPP]). The first so-called CREPP was recently created in Bourgogne Franche Comté (by SD). These centers have been found to be useful, which provides grounds to develop this concept all over France.

This kind of model allows psychiatrists and psychopharmacists to fully focus on their main skills in clinical psychiatry and psychopharmacotherapy respectively and to develop a useful collaboration, in which clinical curiosity can meet psychopharmacological subtlety [7, 20, 21].

Disclosure of interests

Authors have no competing interest to declare

References

[1] Ciccocioppo R. Grand Challenge in Psychopharmacology: Setting Priorities to Shape a Bright Future. Front Psychiatry 2017;8:15.

[2] Baldessarini RJ. The impact of psychopharmacology on contemporary psychiatry. Can J Psychiatry 2014;59(8):401-5.

[3] Alexander B, Nasrallah HA, Perry PJ, Liskow BI, Dunner FJ. The impact of psychopharmacology education on prescribing practices. Hosp Community Psychiatry 1983;34(12):1150-3.

[4] Garfinkel PE, Cameron P, Kingstone E. Psychopharmacology education in psychiatry. Can J Psychiatry 1979;24(7):644-51.

[5] Harrison PJ, Baldwin DS, Barnes TR, Burns T, Ebmeier KP, Ferrieer IN, et al. No psychiatry without psychopharmacology. Br J Psychiatry 2011;199(4):263-5.

[6] Owen MJ, Sawa A, Mortensen PB. Schizophrenia. Lancet 2016;388(10039):86-97.

[7] Vázquez GH. The impact of psychopharmacology on contemporary clinical psychiatry. Can J Psychiatry 2014;59(8):412-6.

[8] McKee JR, Lee KC, Cobb CD. Psychiatric pharmacist integration into the medical home. Prim Care Companion CNS Disord 2013;15(4):PCC.13com01517.

[9] Rubio-Valera M, Chen TF, O'Reilly CL. New roles for pharmacists in community mental health care: a narrative review. Int J Environ Res Public Health 2014;11(10):10967-90.

[10] Goldstone LW, DiPaula BA, Caballero J, Park SH, Price C, Zasadzki Slater M. Improving medication-related outcomes for patients with psychiatric and neurologic disorders: Value of psychiatric pharmacists as part of the health care team. Ment Health Clin 2015;5:1–28.

[11] American College of Clinical Pharmacy. The definition of clinical pharmacy. Pharmacotherapy 2008;28(6):816-7.

[12] Stoner SC, Ott CA, Dipaula BA. Psychiatric pharmacy residency training. Am J Pharm Educ 2010;74(9):163.

[13] College of Mental Health Pharmacy (CMHP). 2020. https://www.cmhp.org.uk/about-us/history-of-cmhp/ [Accessed July 23, 2020].

[14] Jenkins MH, Bond CA. The impact of clinical pharmacists on psychiatric patients. Pharmacotherapy 1996;16:708–14.

[15] Alderman C. Some thoughts about psychotropic drugs and psychiatric pharmacy services. J Pharm Pract Res 2016;46:101–2.

[16] Alderman CP, Lucca JM. Psychiatry and clinical pharmacy: A logical partnership. Indian J Psychiatry 2017;59(2):138-40.

[17] Holbrook A, Bowen JM, Patel H, O'Brien C, You JJ, Roshan T, et al. Process mapping evaluation of medication reconciliation in academic teaching hospitals: a critical step in quality improvement. BMJ Open 2016;6(12):e013663.

[18] Leherle A, Kowal C, Toulemon Z, Dalle-Pecal M, Pelissolo A, Leboyer M, et al. Is the medication reconciliation achievable and relevant in Psychiatry?: Feedback on the implementation of medication reconciliation on hospital admission. Ann Pharm Fr 2020;78(3):252-63.

[19] Simoons M, Ruhé HG, van Roon EN, Schoevers RA, Bruggeman R, Cath DC et al. Design and methods of the 'monitoring outcomes of psychiatric pharmacotherapy' (MOPHAR) monitoring program - a study protocol. BMC Health Serv Res 2019;19(1):125.

[20] Javelot H. L'expertise partagée psychiatre-pharmacien : Pourquoi ? Comment ? Communication orale FA14C. Dans la session partenariale SF2P, Pharmacopsy Alsace, ANHPP, Réseau PIC : « Le partenariat psychiatre-pharmacien en psychiatrie ». 12è Congrès Français de Psychiatrie (CFP) Nice (France) ; intervention le 04/12/2019. French Journal of Psychiatry 2019(1)S2:S74-S75. https://doi.org/10.1016/j.fjpsy.2019.10.051. https://www.sciencedirect.com/science/article/pii/S2590241519305549?via%3Dihub [Accessed July 23, 2020].

[21] Javelot H. Une pharmacie clinique spécialisée en psychiatrie : ça peut exister ? ça sert à quoi ? Session Binôme « Pharmacien-Psychiatre : enjeux de la collaboration pour le bénéfice du patient ». 117è Congrès de Psychiatrie et de Neurologie de Langue Française (CPNLF) Beyrouth (Liban). 20 juin 2019. https://cpnlf.fr/wordpress/wp-content/uploads/2019/04/CPNLF19.G-V42.pdf. [Accessed July 23, 2020].

[22] Slimano F, Gervais F, Massé C, Langrée B. Hospital pharmacy residency in France in 2014: to a recognition of the specialization? Ann Pharm Fr 2014;72(5):317-24.

[23] Yeung EY. Pharmacists becoming physicians: for better or worse? Pharmacy (Basel) 2018;6(3):71.

[24] Kelly DL, Love RC. Psychiatric pharmacist's role in overcoming barriers to clozapine use and improving management. Ment Health Clin 2019;9(2):64-9.

[25] Institute of Medicine (US) Committee on Federal Regulation of Methadone Treatment; Rettig RA, Yarmolinsky A, editors. Federal Regulation of Methadone Treatment. Washington (DC): National Academies Press (US);1995.

[26] Blake J, Toney G. Incorporation of a Bar Code Medication Administration (BCMA) protocol for long-acting injectable antipsychotics in a primary psychiatric outpatient care setting. College of

Psychiatric and Neurologic Pharmacists 2020;10(3):104–206.
[27] ARS Grand'Est. Projet régional de santé 2018-2027. État de santé de la population et état de l'offre de la région Grand Est. Avril 2017. https://www.grand-est.ars.sante.fr/system/files/2017-05/PRS2_Etat_des_lieux_05_OFFRE_SANTE_20170519.pdf [Accessed July 23, 2020 (92 pp.)].
[28] Bell JS, Aslani P, McLachlan AJ, Whitehead P, Chen TF. Mental health case conferences in primary care: content and treatment decision making. Res Social Adm Pharm 2007;3(1):86-103.
[29] Davis R, Thurecht R. Care planning and case conferencing. Building effective multidisciplinary teams. Aust Fam Physician 2001;30(1):78-81.
[30] Javelot H, Michel B, Steiner R, Javelot T, Cottencin O. Zolpidem test and catatonia. J Clin Pharm Ther 2015;40(6):699-701.
[31] Javelot H, Michel B, Didelot N, Weiner L, Glay-Ribau C, Kabuth B. Benefits and limits of risperidone-methylphenidate combination in child psychiatry: 3 cases. Arch Med 2016;8:4.
[32] Javelot H, Rangoni F, Weiner L, Michel B. High-dose quetiapine and therapeutic monitoring. Eur J Hosp Pharm 2019;26(5):285-7.
[33] Royer T, Michel B, Javelot H. A Case of resistant depression stabilized by testosterone enanthate in a context of hypoandrogenism. Med Case Rep 2018;4(3):3:71.
[34] Heitzmann E, Javelot H, Weiner L, Michel B. A case of aripiprazole-induced tardive dyskinesia with dramatic evolution. Case Rep Psychiatry 2016;2016:7031245.
[35] Heitzmann E, Muller C, Tebacher M, Michel B, Javelot H. Increased QT interval due to antiandrogenic therapy, majorated by psychotropic drugs: About one case. Therapie 2017;72(6):701-3.
[36] Javelot H, Michel B, Kumar D, Audibert B. Clozapine-induced esophagitis at therapeutic dose: a case report. Braz J Psychiatry 2016;38(2):177.
[37] Javelot H, Michel B, Marquis A, Didelot N, Socha M, Javelot T, et al. Acute withdrawal syndrome after discontinuation of a short analgesic treatment with tramadol. Therapie 2016;71(3):347-8.
[38] Javelot H, Royer T, Javelot T, Muller C, Tebacher M. Occurrence of peripheral edema in a switch from buprenorphine alone to the buprenorphine-naloxone combination: About one case. Therapie 2016;71(3):341-3.
[39] Lalli A, Michel B, Georget S, Bouillot C, Mangin A, Javelot H. Thrombocytopenia with quetiapine: two case reports, one with positive rechallenge. Braz J Psychiatry 2015;37(4):351.
[40] Javelot H, Marquis A, Antoine-Bernard E, Grandidier J, Weiner L, Javelot T, et al. Benzodiazepines withdrawal: initial outcomes and long-term impact on falls in a french nursing home. Pharmacy (Basel) 2018;6(2):30.

[41] Javelot H, Pollet C. Patients schizophrènes âgés et psychotropes. Revue Santé Mentale 2018;232:70-7.

[42] Briet J, Javelot H, Heitzmann E, Weiner L, Lameira C, D'Athis P, et al. The anticholinergic impregnation scale: towards the elaboration of a scale adapted to prescriptions in French psychiatric settings. Therapie 2017;72(4):427-37.

[43] Javelot H. Psychopharmacology of anxiety and depression: Historical aspects, current treatments and perspectives. Ann Pharm Fr 2016;74(2):93-118.

[44] Meyer G, Michel B, Tosi JM, Duval F, Pfleger G, Erb A, et al. « PharmacoPsy Alsace » : retour sur 5 ans d'expertise en psychopharmacologie. Congrès Hopipharm à Strasbourg (France) - 13 au 15 mai 2020. Communication 000213. https://www.synprefh.org/sites/www.synprefh.org/files/file/espace-congres/hopipharm/hopi2020_communications-retenues.pdf [Accessed July 23, 2020 (10 pp.)].

[45] Javelot H, Llorca PM, Drapier D, Fakra E, Hingray C, Meyer G, et al. Informations on psychotropics and their adaptations for patients suffering from mental disorders in France during the SARS-CoV-2 epidemic. Encephale 2020;S0013-7006(20)30074-9.

[46] Hiemke C, Bergemann N, Clement HW, Conca A, Deckert J, Domschke K, et al. Consensus guidelines for therapeutic drug monitoring in neuropsychopharmacology: update 2017 [published correction appears in Pharmacopsychiatry. 2018 Jan;51(1-02):e1]. Pharmacopsychiatry 2018;51(1-02):9-62. doi:10.1055/s-0043-116492.

[47] Hiemke C, Baumann P, Bergemann N, Conca A, Dietmaier O, Egberts K, et al. AGNP consensus guidelines for therapeutic drug monitoring in psychiatry: update 2011. Pharmacopsychiatry 2011;44(6):195-235.

[48] Eap CB. Personalized prescribing: a new medical model for clinical implementation of psychotropic drugs. Dialogues Clin Neurosci 2016;18(3):313-22.

[49] Tournier M, Montastruc F. Interest of pharmacoepidemiology for the study of psychotropic drugs. Therapie 2019;74(2):239-44.

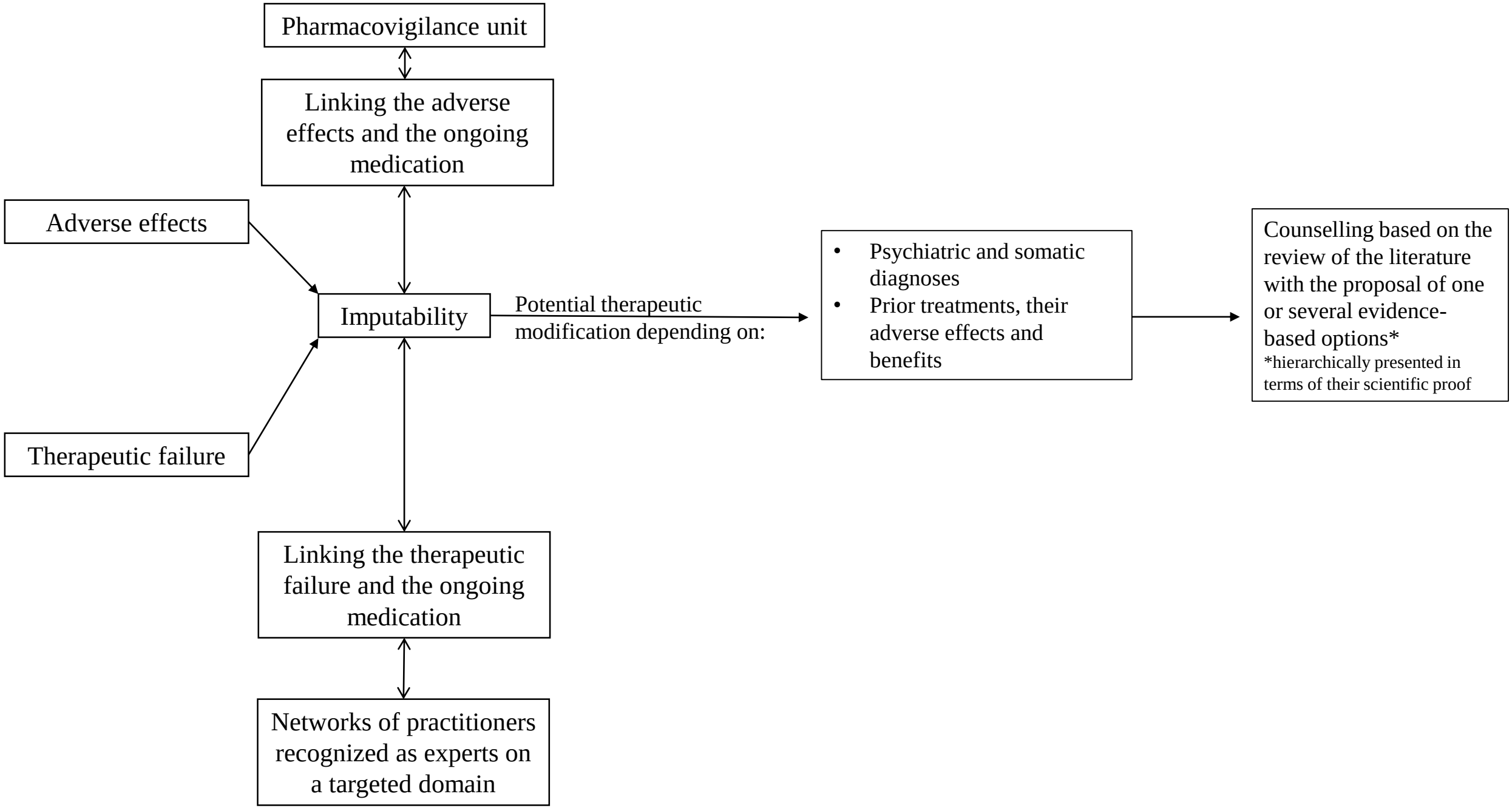
[50] Adli M, Wiethoff K, Baghai TC, Fisher R, Seemüller F, Laakmann G, et al. How effective is algorithm-guided treatment for depressed inpatients? Results from the randomized controlled multicenter German algorithm project 3 trial. Int J Neuropsychopharmacol 2017;20(9):721-30.

[51] Dorevitch A. A psychopharmacology education program for psychiatry residents--the role of a clinical pharmacist. Isr J Psychiatry Relat Sci 1994;31(4):287-91.

Table 1. Objectives of the Alsace Network of expertise in clinical psychopharmacology, "Pharmacopsy Alsace".

Primary objectives	To develop, for the benefit of patients, support for psychiatrists in the field of clinical psychopharmacology, in order to optimize pharmacotherapeutic decisions at each stage of the care process.
Secondary objectives	To develop the interest and skills of psychiatrists in the field of psychopharmacology, especially among young psychiatrists.
	Identification of the regional network of expertise in the field of psychopharmacological treatments (with specific sub-areas of expertise supported by specific practitioners)
	Improving the benefits to be gained from the use of therapeutic drug monitoring
	Trigger initiatives and the development of research in psychopharmacology
	Contributing to the medication education (via psychoeducation) of patients in mental health settings

Figure 1. Stepped-expertise management in news cases conferencing interventions for psychiatry


Pharmacovigilance unit
Linking the adverse effects and the ongoing medication
Adverse effects
Imputability
Therapeutic failure
Potential therapeutic modification depending on:
• Psychiatric and somatic diagnoses
• Prior treatments, their adverse effects and benefits
Counselling based on the review of the literature with the proposal of one or several evidence-based options*
*hierarchically presented in terms of their scientific proof
Linking the therapeutic failure and the ongoing medication
Networks of practitioners recognized as experts on a targeted domain