

## Clinical pharmacy practice in psychiatry

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### An evolution of pharmacy practice

In an evolutionary process that has spanned several decades,<sup>1</sup> many pharmacists in primary and secondary care settings have shifted their focus from medication supply functions (largely in the form of compounding and dispensing) to assisting other clinical staff with the management of patients and their drug therapy. This clinical pharmacy practice began in the 1960s, when hospital pharmacists began visiting the wards of hospitals to check drug charts and proactively initiate medication supply without the need for prescriptions to be sent to the pharmacy.<sup>2,3</sup> This practice allowed pharmacists to establish a presence at the point of patient care, in daily contact with doctors and nurses, and position themselves to offer advice and assistance with matters relating to drug therapy.<sup>3,4</sup>

In the context of ward pharmacy, pharmacists soon became involved in roles that included activities such as recording patients' medication history<sup>5</sup> and the qualitative review of orders on patients' medication charts.<sup>6</sup> These practitioners were starting to assume a role that helped to guide and inform prescribing, allowing them to function as a part of a multidisciplinary team.<sup>7</sup> Although the re-engineering of pharmacy practice to a ward-based model facilitated these changes, other drivers also contributed. Rationing of public health funds created changes for the hospital sector, so that only the most acutely ill patients were admitted to hospital, for example. This in turn meant that the acuity and complexity of inpatient care progressively increased. Advances in pharmacotherapy led to the discovery and widespread implementation of entirely new drug treatment approaches for many clinical problems, creating a rapid expansion in the scope of information about the clinical applications for these drugs, their adverse effects and drug interactions and the need for individualisation of dosage to accommodate the needs of

patients. The movement to 're-professionalisation' of pharmacy involved practitioners accepting responsibility and accountability for their input into the patient care process.<sup>8</sup>

A concept that is gaining increasing currency and credibility in relation to the role of clinical pharmacists in promoting optimal outcomes for patients is the contribution of these practitioners in the facilitation of *quality use of medicines (QUM)*.<sup>9</sup> QUM has been defined as exhibiting three key components

- judicious selection of therapeutic management options (considering the place of medicines in treating illness and maintaining health, and recognising the possibility that there may be better ways than medicine to manage a particular situation)
- selection of a suitable medication, if a medicine is considered necessary. This will involve consideration of the characteristics of the individual patient, the clinical condition, risks and benefits associated with treatment options, the dosage and duration of treatment, co-existing conditions, other therapies, monitoring considerations, and costs for the individual, the community and the health system as a whole.
- safe and effective use of medications to achieve optimal health outcomes through monitoring, minimizing misuse, over-use and under-use of medications, and ensuring that the patient or their carer have the knowledge and skills to solve problems related to the use of their medication(s).

The QUM framework extends the pharmaceutical care model and provides a mechanism for integrating clinical pharmacists into the broader health care environment. It has the potential to address the issues that the more profession-specific pharmaceutical care model raised in terms of the integration of pharmacists into the healthcare team. It also facilitates the routine incorporation of pharmaceutical care as a component of emerging service delivery programs in hospitals, aged-care and primary health care settings and health care teams. It is important, therefore, that the unique contribution of clinical pharmacists that results from the

training and skills developed in practice should be widely understood.

More than 30 years ago, it was already clear that the basis for pharmacy specialisation is related to a specialised knowledge of pharmacy-related sciences (biological and behavioural), rather than a particular practice setting.<sup>10</sup> Pharmacists practising in specialised roles have the opportunity to provide a highly refined and effective type of pharmaceutical care in a context where a generalist practitioner may not have the opportunity to do so, providing a unique avenue to a high quality and distinctive contribution to the advancement of quality use of medicines for highly vulnerable patients. A range of pharmaceutical specialities have now been acknowledged and are flourishing, including highly focused areas such as oncology pharmacy, radiopharmacy and psychiatric pharmacy. The role of psychiatric pharmacists in patient care has been extensively advocated,<sup>11</sup> and this type of practice model has been shown to improve clinical outcomes and reduce psychotropic medication-related morbidity.<sup>12</sup>

#### **Rationale for clinical pharmacy in psychiatry**

Extensive previous research has addressed the prevalence of MRPs in hospitals and the community, and the utility of clinical pharmacy services as a means to mitigate medication-related harm: a detailed discussion of this research is beyond the scope of discussion here. The potential impact of the implementation of specialist clinical pharmacy services would be expected to be influenced not only by the utility of the service delivery model, but also the prevalence of mental illnesses and the disability associated with them. With respect to quality use of medicines initiatives in a public health sense, priority must be given to areas in which adverse health outcomes and medication-related harm have the greatest potential to cause death, disability, compromised quality of life and adverse societal consequences, including increased treatment costs, increased health service utilisation and other unfavourable economic outcomes such as loss of productivity.

There has been a rapid growth in information about the epidemiology, severity, and social and economic influences of mental disorders around the world. The compelling and consistent nature of the information that is available to guide policy and to influence directions in health service delivery demands that the detection, prevention, early management and follow-up of mental disorders rate as concerns that equal other major health priorities. Key research in this area has summarised in

Table 1.<sup>13</sup> Perhaps the most noteworthy aspect of this comparison is that, although the data have been drawn from a range of disparate sources such as North America, Western Europe, Asia and Australia, there are several common themes that emerge. Importantly, each study validates the early findings from the work initiated by the WHO, confirming the high prevalence of mental illness in various settings and providing a basis for a conclusion that this area has justifiably been selected by health policy makers as a high priority for the development of strategies that might be used to reduce the associated harm.

It is clear that mental illnesses are very common. Those who are affected, experience significant disadvantages that are evident in terms of poorer health outcomes, higher rates of premature death and enduring disability, socioeconomic disadvantage and poor quality of life. People with mental illness are significant users of health services, having frequent and lengthy hospitalisations and requiring extensive medication therapy. Polypharmacy is common amongst those with psychiatric illnesses, and the drugs that are used are often of low therapeutic index and with considerable potential to cause significant medication-related problems. Fundamentally, it is also clear that pharmacists, by nature of their training, experience and skills developed through ongoing clinical practice, bring a unique perspective to the care of patients with mental illnesses, in this way enhancing health outcomes through the prevention, detection and resolution of medication-related problems. The integration of specialist pharmacists into a multidisciplinary team caring for patients with complex psychotropic pharmacotherapy needs allows the application of the unique skills and experience of these practitioners in situations where that positive impact of the services can be expected to be highest. It is desirable for pharmacists to have distinctive role in multidisciplinary mental health treatment teams, working in cooperation with consumers and clinicians as brokers of specialised knowledge in clinical pharmacy and therapeutics, and integrating this with insight into pathophysiology and an understanding of life challenges faced by patients with severe and chronic psychiatric illnesses.

#### **Evidence for the benefits of clinical pharmacy in psychiatry**

Research into the use of psychotropic drugs has identified important roles for clinical pharmacists in the management of psychiatric illness.<sup>14</sup> Polypharmacy is

common amongst patients with psychiatric illnesses, and the drugs involved are often of low therapeutic index.<sup>15</sup> Medical co-morbidity is common, particularly in the elderly, creating increased potential for drug-disease and drug-drug interactions. Psychosocial problems and difficulties with patient compliance also contribute to the potential for drug-related problems in this patient population.<sup>15</sup>

Nearly 20 years ago, Stimmel identified the need for clinical input by pharmacy staff caring for patients with psychiatric illnesses.<sup>16</sup> Early work in this area focused upon a role for clinical pharmacists in non-acute settings, such as long-term care facilities for intellectually disabled patients. Berchou demonstrated that pharmacy input in the multidisciplinary care of intellectually disabled patients was associated with a significant increase in the use of antipsychotic and anticonvulsant monotherapy.<sup>17</sup> The implementation of clinical pharmacy services in an acute-care, adult psychiatric facility was examined by Saklad et al. in a study using retrospective longitudinal drug utilisation review methods.<sup>18</sup> Saklad found that the introduction of clinical pharmacy services was associated with a significant decrease in the total number of drugs prescribed per patient, the number of antipsychotic drugs prescribed per patient and the re-admission rate for patients during a one year follow-up period.<sup>18</sup> Stanislav et al. retrospectively examined the effects of a psychopharmacy consultation service on patient outcomes in a psychiatric hospital, finding that the majority of consultations resulted in a positive outcome for patients.<sup>19</sup>

Other research has also explored the role of clinical pharmacy services in the mental health setting. Canales et al.<sup>12</sup> compared patients receiving standard pharmacy services with a group of patients who received intensive psychiatric pharmacy services. Those in the intervention group showed significant improvements in clinical response and drug-induced extrapyramidal symptoms, and were highly satisfied with the pharmaceutical services they received. Medication costs and length of stay were similar for the two groups. Baigent used a survey to assess the opinions of medical staff on the clinical pharmacy service provided to a mental health unit, finding a high level of acceptance of key services including prescription monitoring, costing of alternative drug therapy, advising on therapeutic drug monitoring teaching roles.<sup>20</sup> Cloete et al. found that the work of a multidisciplinary team (consultant psychiatrist, registrar, senior nurse and pharmacist) on a longstay psychiatric

rehabilitation ward resulted in the improvement in patients' mental state, a reduction in the range of drugs used, a reduction in the number of drugs prescribed per patient and a reduction in drug costs.<sup>21</sup> Lobeck et al. established that the involvement of clinical pharmacists in the care of patients with mental illnesses can decrease the number of prescriptions written for these patients, also decreasing the cost per prescription and the total cost of care.<sup>22</sup>

Another study examined the effects of participating clinical pharmacists using a standard data collection form, documenting a total of 229 recommendations made for 109 patients.<sup>23</sup> In 130 cases (57.6%), there were recommendations for adding a new drug or discontinuing a current one; in 67 cases (29.3%), the recommendations were for increasing or decreasing the dose of a medication; and in 21 cases (9.2%), recommendations were for requesting laboratory tests or monitoring. Ewan and Greene performed a study that provides insight to the input that can be provided by pharmacists in the care of patients with psychiatric illnesses in a community setting, studying interventions by three community pharmacists in the care of 30 long-term mentally ill patients in the UK.<sup>24</sup> There were 94 medication-related problems identified involving 30 patients; and review by an expert panel found that in the case of 84 problems there were appropriate interventions.<sup>24</sup>

Haw and Stubbs studied the nature, frequency and potential severity of prescribing errors detected by pharmacists working in a psychiatric hospital, detecting 311 errors in approximately 2.2% of prescribed items.<sup>25</sup> Prescription writing errors (87.5%) were more common than decision making errors (12.5%), but potentially serious errors were relatively infrequently encountered (8.7 % of all errors detected).<sup>25</sup> A subsequent study involved pharmacists checking 22 036 prescription items in nine hospitals, with 523 errors meeting the study definition detected (2.4% of prescription items checked).<sup>26</sup> Prescription writing errors (77.4%) were most common, while decision-making errors accounted for 22.6% of errors.<sup>26</sup>

Another study analysed qualitative data relating to clinical pharmacy interventions for an acute-care, adult psychiatric inpatient population in an Australian hospital, finding that a significant proportion of clinical pharmacy interventions in the study related to non-psychotropic drug therapy.<sup>27</sup> This finding was in keeping with those of an analysis of drug information enquiries to pharmacy staff at a large psychiatric hospital, where O'Hare *et al.* found that two-thirds of all queries related to the use of

Overall, there now appears to be ample evidence that the provision of clinical pharmacy services in the psychiatric context is justifiable, both from an economic point of view, and more important, to help assure safe and effective drug therapy for patients affected by mental illness. The challenge is for practitioners to develop and sustain a practice model that can allow the delivery of these services, both in hospitals and in the community sector. Inherent to this challenge is the need to devise persuasive business cases that can be used to influence payors and governmental bodies, so that these services can eventually become routinely available where needed.

#### **A framework for the delivery of clinical pharmacy services in psychiatry**

Although other systems have been proposed, the conceptual framework that had its foundations in the work relating to the pharmaceutical care model has been widely embraced as a basis for the work of clinical pharmacists in many settings. Strand et al. define a medication-related problem as 'any undesirable event experienced by the patient that involves or is suspected to involve drug therapy and that actually or potentially interferes with a desired patient outcome'.<sup>29</sup> Using this model, pharmacists can base their clinical practice around the prevention, detection, documentation and resolution of *drug-related problems (DRPs)*. The original eight categories of DRP proposed in this system are outlined with examples in Table 2.

The current and active set of clinical pharmacy practice standard from the Society of Hospital Pharmacists of Australia (SHPA) was disseminated in 2004,<sup>30</sup> and describes clinical pharmacy practice as the practice of pharmacy in the context of multidisciplinary healthcare team, directed at achieving quality use of medicines. Each of the clinical pharmacy functions outlined in the SHPA practice standards are directly applicable in the context of psychiatry, and include, but are not limited to:

- active participation in the management of individual patients
- assistance with the application of the best available evidence in daily clinical practice
- contribution of clinical knowledge and skills to the healthcare team
- identification and reduction in risks associated with medicines use
- involvement in the education of patients, carers, and other health professionals and involvement in research.

The guidelines provide information about a range of activities that are components of contemporary clinical

pharmacy practice. These include those activities that are oriented towards the management of DRPs for the individual patients – measures such as obtaining an accurate medication history, assessment of current medication management, clinical review, therapeutic drug monitoring, ward round participation, provision of medicines information to health professionals and patients, adverse drug reaction management and others. In addition, the guidelines outline other aspects of clinical pharmacy practice that although not focused upon individual patient outcomes, still have direct relevance for psychiatric pharmacy practice. These include clinical research, teaching and quality assurance activities.

#### **Practical implementation of clinical pharmacy services in psychiatry**

Particularly, if a practitioner has not had experience in the field of psychiatry, the implementation of clinical pharmacy services in a psychiatric unit can prove to be a daunting task. If there is no existing base to build upon, the best advice would be to start with modest aims, and work steadily to build relationships with clinicians and patients. Take every opportunity to participate in interdisciplinary meetings, and to learn from the experience and wisdom of medical, nursing and paramedical colleagues. Listen actively and carefully to information presented in multidisciplinary meetings, and understand that a holistic approach to patient care must be used to underpin the provision of clinical pharmacy services. It is important to be able to acknowledge that in some cases, drug therapy (although possibly important) is not the only way to approach the management of psychiatric illnesses: psychological therapy, community based support, counselling, and the provision of practical assistance in difficult times can be vital to the success of overall treatment.

In some cases, it may be necessary to prioritise and progressively implement clinical pharmacy services in a way that is commensurate with the resources available. Under these circumstances, it is vital to ensure that basic functions with high impact upon patient outcomes are afforded the highest priority. Medication chart review, assistance through the provision of high quality drug information, adverse drug reaction and drug interaction screening, and work directly at ensuring the patients have an adequate understanding of their medications are the most important functions, as well as making sure that there are adequate supplies of medication available to the patient, and that the patient has the insight and motivation

In many cases, enlisting the support of family or close friends of the patient can assist with these objectives. As practitioners begin to accumulate increasing experience in psychiatric clinical pharmacy practice, they develop greater understanding of the special challenges involved: these include communicating with the mentally impaired patient, recognising a patient who might be a danger to themselves or to others, dealing with issues relating to substance abuse (more common amongst patients with severe psychiatric illness), and problems in helping patients to adhere to the prescribed therapy. Although

clinical pharmacy practice in psychiatry is challenging, it is certainly rewarding in equal measure. In choosing to work in this field, a pharmacist chooses to deal with patients who are often both chronically and severely physically and mentally unwell. There is extensive polypharmacy with drugs of low therapeutic index. Serious adverse drug reactions and drug interactions are common. Mentally ill patients are amongst the vulnerable and underprivileged in any society: arguably there is no higher calling in clinical pharmacy than working for the protection and assistance of these people.

**Table 4.1 Key findings of epidemiological studies of mental illness**

Study	Setting	Key findings
Global Burden of Disease	Worldwide	Unipolar depression leading cause of disability
Burden of Disease & Injury in Australia	Australia	Mental disorders account for 30% of non-fatal disease in Australia. Depression and dementias foremost causes of disability caused by mental illness
National Survey of Mental Health and Wellbeing of Adults	Australia	18% of Australians affected by key mental illnesses Health and during the preceding 12 months. 34.5% Wellbeing of adults experienced disability.
Mental Health Disorders in Australian Veterans	Australia	GAD, PTSD, Depression and alcohol abuse most Veteran Community (Veterans) common. PTSD accounts for > 50% of accepted mental health claims.
Mental Health: Report of the Surgeon General	USA	One-year prevalence of diagnosable mental illness approximately 22-23%. Prevalence for anxiety disorders and mood disorders 16.4% and 7.1% respectively.
Mental Health Supplement to the Ontario Health Survey	Canada	18.6% affected, 14.2% with one disorder, 4.5% two or more disorders. Anxiety disorders (12.2%), affective disorders (4.5%) and substance use disorders (5.2%) most prevalent.
National Psychiatric Morbidity	Britain	16% of subjects met screening criteria for mental disorders Surveys of Great Britain. No differences amongst geographical regions of Great Britain
Netherlands Mental Health Survey and incidence study	Netherlands	Lifetime prevalence of 41.2% and 12-month prevalence 23.3% for psychiatric disorders
Taiwan Psychiatric Epidemiological Project	Taiwan	Lifetime prevalence estimates of 16-28% depending upon setting.

Table 2. Categorisation of medication-related problems (after Strand et al.)

<b>Indication without drug therapy</b>
The patient has a medical problem that requires medication therapy (an indication for medication use) but is not receiving a medication for that indication.
Patient with heavy alcohol abuse but no thiamine has been ordered.
<b>Drug use without indication</b>
The patient is taking a medication for which there is no medically valid indication.
Patient with acute agitation in hospital that has resolved post-discharge continues treatment with tranquillisers initiated as an inpatient.
<b>Improper drug selection</b>
The patient has a medication indication but is taking the wrong drug.
Delirium due to a urinary tract infection has been diagnosed, and antibiotic therapy has been prescribed, but the organism involved is not sensitive to the antibiotic that has been chosen.
<b>Sub-therapeutic dosage</b>
The patient has a medical problem that is being treated with too little of the correct medication.
After initiation of an antipsychotic drug, blood glucose concentrations remain unacceptably elevated despite the use of insulin; dosage must be increased to achieve desired control.
<b>Over-dosage</b>
The patient has a medical problem that is being treated with too much of the correct medication.
A patient is prescribed a very large dose of an antipsychotic drug: the magnitude of the dosage does not create additional antipsychotic benefit but generates severe extrapyramidal side effects.
<b>Adverse drug reaction (ADR)</b>
The patient has a medical problem that is the result of an ADR or adverse effect.
The patient develops nausea, vomiting and diarrhoea as a result of treatment with an antidepressant.
<b>Drug interaction</b>
The patient has a medical problem that is the result of a medication-medication, medication-laboratory, or medication-food interaction.
Elevated serum haloperidol concentration with toxicity secondary to hepatic enzyme inhibition arising from SSRI treatment.
<b>Failure to receive a drug</b>
The patient has a medical problem that is the result of not receiving a medication that was intended as a part of the designed treatment regimen.
Patient is prescribed an expensive, non-subsidised drug therapy and has not received any counselling about the expected benefits of therapy. The patient does not have the prescription filled and does not adhere to the established treatment plan.

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