AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

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National Inpatient Medication Chart and Psychiatric Acute Services Survey Report

January 2012

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Acknowledgment
Many individuals responded to the survey. The involvement and willingness of all concerned to share their experience and expertise is greatly appreciated. Staff at Medication Services, Queensland Health shared unpublished research and a clozapine titration chart with us.

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Report recommendations

1. That the NIMC be used in acute psychiatric services. This will:
    a. Maintain advantages from standardisation across units;
    b. Reduce the likelihood of error as the patient journey traverses care settings; and
    c. Assist staff prescribing and administering medications in generalist and mental health settings.
2. That the designated NIMC warfarin section should remain in the chart for use in mental health services. The safety issues that led to its incorporation in the initial design affect a small but significant minority of patients in psychiatric care settings. Psychiatric nurses have less, rather than more, experience than generalist colleagues in safely and effectively managing this medication and will benefit from standardised prescribing information.
3. That a separate chart be used in acute psychiatric settings for initiation, titration and administration of clozapine. This will not affect non-psychiatric services as use of a separate chart for initiation of clozapine is only ever likely to be used in specialist mental health settings. Work on a separate clozapine chart already completed in Queensland may be circulated for wider implementation across the country and for potential inclusion in a standardised national mental health medication safety improvement initiative (Horswill, Hill et al. 2011). ACSQHC could undertake to coordinate this initiative.
4. That existing NIMC educational resources be reviewed and recommunicated to psychiatric health professionals and institutions
5. That a new NIMC educational resource be developed specifically for acute psychiatric services addressing practice issues identified including charting of:
    a. Intermittent (depot) medications;
    b. PRN medications; and
    c. Twice-daily variable dose medications.
6. Further consultation should occur with consumers and with legal advisors prior to the introduction of a space for an identifying patient photograph. Though considerable support was found for such an innovation, the issues raised by opponents need further consideration.

1. Introduction

This report provides and describes the results of a national survey by the Australian Commission on Safety and Quality in Health Care (ACSQHC) of mental health clinicians on use of the *National Inpatient Medication Chart* in psychiatric acute care settings.

Purpose

To report the results of a national survey of mental health clinicians on the use of the *National Inpatient Medication Chart* in psychiatric acute care settings.

Objectives

1. To report and analyse the results of the survey;
2. To recommend actions for improving medication management safety in acute psychiatric services in relation to the NIMC and standardised practice; and
3. To inform the ongoing *National Inpatient Medication Chart* quality assurance process.

Key points

1. The survey was undertaken to identify current barriers to use of the NIMC in psychiatric acute care settings.
2. The survey was circulated widely amongst networks of clinicians in public and private psychiatric acute care settings across Australia and through links on the Commission web site.
3. The survey was open from 22 July 2011 until 30 November 2011.
4. The consultation process included meetings with State medication safety staff and reference to earlier reviews of medication safety and standardisation.

Principles

The *National Inpatient Medication Chart* is based on extensive research and practice. Variation to it for specialised charts should only be to the extent required for the specialist practice.

The *NIMC Summary Rationale* forms Attachment A to this document.

2. Background

The *National Inpatient Medication Chart* (NIMC) is a major national initiative to improve the safety of medicines use through standardisation of medication ordering in hospitals.

Responding to feedback from clinicians in psychiatric acute services about issues encountered using the NIMC, the Australian Commission on Safety and Quality in Health Care (ACSQHC) undertook to consult more broadly with health professionals working in the sector. This survey forms one part of that consultation process.

Preliminary consultation identified four key issues:

1. Length of stay for psychiatric inpatients different from non-psychiatric inpatients;
2. Therapeutic differences for psychiatric medications requiring a high use of variable dose medicines;
3. Aspects of the NIMC design (such as dedicated warfarin space) which are underutilised; and
4. Patient identification requirements for mobile patients.

Review of NIMC use in acute mental health settings is consistent with the *National Safety and Quality Standards Medication Safety Standard 4.2*:

Undertaking a regular, comprehensive assessment of medication use systems to identify risks to patient safety and implementing system changes to address identified risks.(Australian Commission on Safety and Quality in Health Care 2011)

This review also begins implementation of the Reducing Adverse Medication Events in Mental Health Working Party's report *Contributions to the Quality Use of Medicines in Mental Health in Australia* (March 2010) recommendation that the ACSQHC's Medication Reference Group establish a national focus on medication safety in mental health.

3. Survey design

The survey was designed using Survey Monkey software. It incorporates 43 questions: a number of demographic questions to establish what disciplines respondents work in and the type of care settings in which they work; a number of process questions on use of the NIMC; several items rated on Likert scales; and four open questions inviting respondents to expand on prior ratings. A copy of the complete survey is included as Appendix B.

The survey was promoted widely. It was:

1. Advertised on the front page of the ACSQHC's website;
2. Circulated to members of the ACSQHC's Health Services Medication Expert Advisory Group including public and private hospital representatives;
3. Circulated to members of the ACSQHC's Private Hospital Sector Committee;
4. Provided through networks of public and private health clinicians with information about the survey and a link to the survey page; and
5. Advertised in the ACSQHC's *Medication Safety Update Number 6 July 2011*.

The survey was open from 22 July 2011 until 30 November 2011.

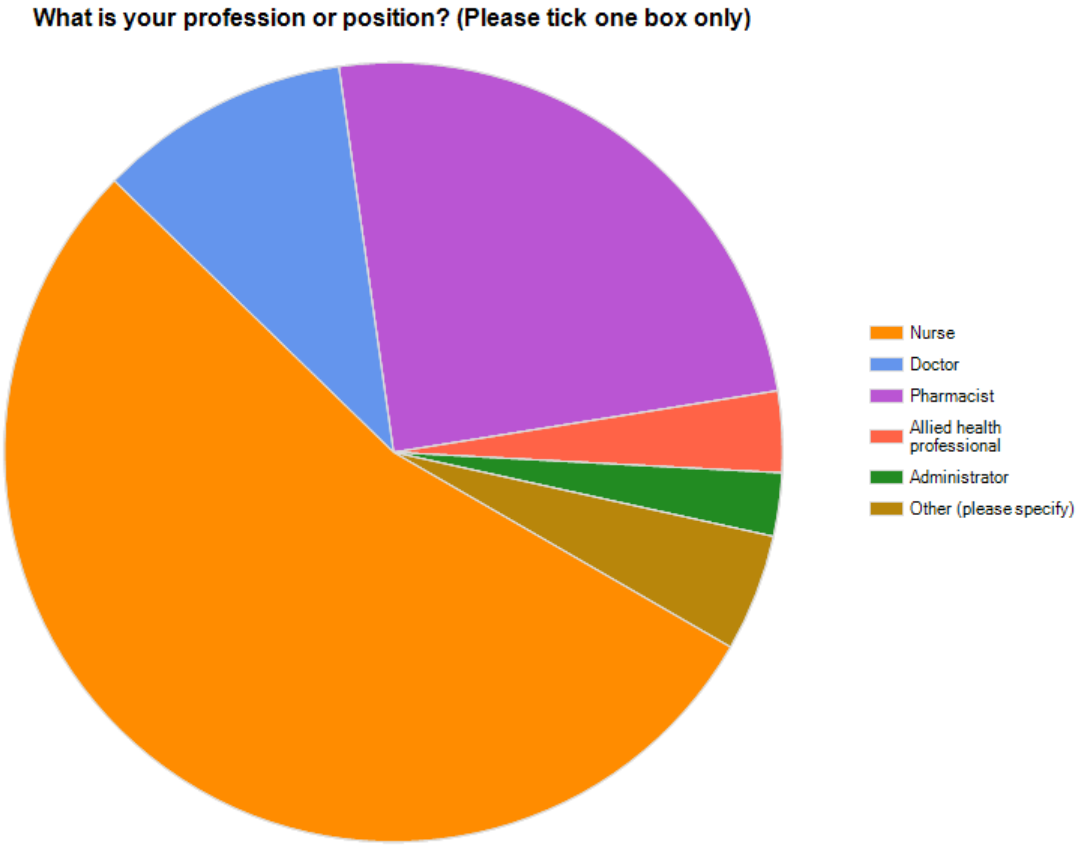
4. Survey results

Summary

There were 269 responses which was a smaller number than expected. Nonetheless it is large enough to form a sense of views in relation to the NIMC in the workforce.

Demographics

Over 50% of respondents were nurses, 10% of respondents were doctors and 25% pharmacists. These proportions reflect that of the clinicians who most directly work with the chart.



77% of respondents worked in public mental health services. 18% worked in private mental health services. These proportions match national workforce proportions (Department of Health and Ageing 2010). Overall the group responses were fairly similar. Areas of marked divergence are reported in detail below.

Though there was no specific question identifying in which jurisdiction respondents worked, respondents who provided their email addresses were located as follows:

Jurisdiction	Number
New South Wales	21
Queensland	12
Victoria	5

South Australia	13
Western Australia	10
Tasmania	8
ACT	6

This represents a reasonable distribution across the country.

Approval ratings

A majority of those who use the NIMC agreed it meets the needs for prescribing (55%), administering (58%) and ordering medication (56%). Conversely, those who disagreed that the NIMC met each of these functions totalled 33%, 34% and 25%.

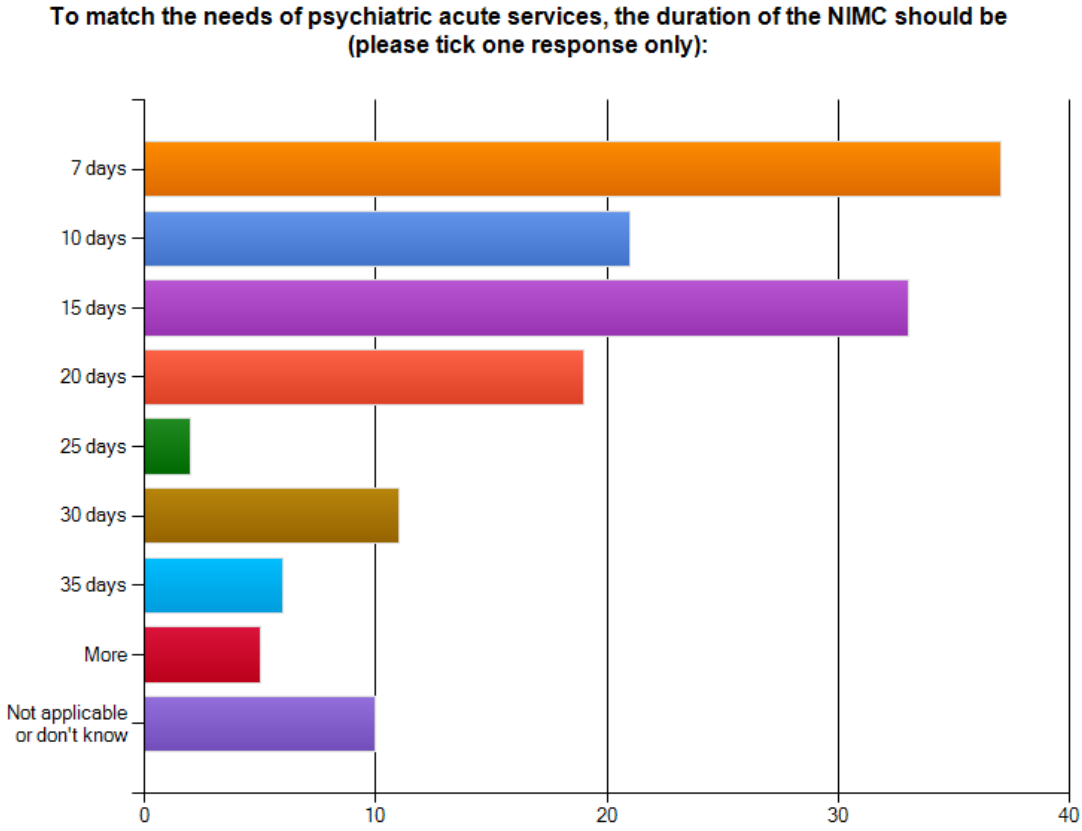
Similarly, the majority of people who use the NIMC long-stay version (LS) agreed it meets the needs for prescribing (52%), administering (52%), and ordering medication (50%). Those who disagreed that it met these requirements were: 38%, 40% and 35%.

5. Key issues from preliminary consultation

1. Length of stay

Over 50% of respondents agreed the NIMC should be of longer duration than 10 days to meet the needs of acute inpatient psychiatric services though 28% disagreed.

However there was no consensus as to the optimal duration for the chart:



The largest proportion of respondents actually opted for a duration shorter than the current chart.

Several respondents commented that their services used the NIMC long-stay (LS) rather than dealing with the risks inherent in frequent recharting. Note that the NIMC LS is designed for stable acute patients in long stay units such as spinal and rehabilitation.

Conversely, several comments noted that it is good clinical practice for the PRN section to be reviewed at least every five days, and charts of longer duration do not support this practice.

2. Therapeutic difference requiring more variable dose medications

83% of respondents agreed the NIMC should have a variable dose medication section and 61% agreed it should have more than one dedicated variable dose medication section, while only 16% disagreed.

A significant number of respondents commented that clozapine titration required variable dosing and more than one dose a day. The current format does not allow these to be clearly charted next to each other unless the warfarin box is used, leading some services to chart in different places which is a loss of standardised practice. A majority of respondents suggested a separate clozapine chart would be better and several services reportedly already use these including State-wide in Queensland public hospitals.

Other medications identified as requiring variable dosing were benzodiazepines for withdrawal symptoms and insulin.

3. Underutilised design aspects, including dedicated warfarin space

27.5% of respondents agreed the dedicated warfarin section should stay and an equal 27.5% disagreed it should not, with a further 18% neither agreeing nor disagreeing.

Comments ranged from '*Warfarin section must remain on the chart; we have huge issues as it is with warfarin administration with a dedicated and highlighted section on the drug chart, let alone removing it!*' to '*Get rid of the warfin* (sic) *section!!!*'

Other respondents made suggestions for redesigning sections that reflected local clinical practices e.g. add section for intermittent (depot) medications where 'once only' doses are currently charted. Several noted that 'medications taken prior to admission' were documented on a separate medication reconciliation sheet and therefore this space on the chart could be used for other purposes.

A frequent request was for more space. Items that respondents wanted more space for included prescriber signature, indications for use of medications and administering nurse initials. Several RNs pointed out that it is policy for administration of some medications to be countersigned by a second nurse and the NIMC has no space for this.

Respondents commented that they used the space in the margins to write notes. This is acceptable practice within the scope of the NIMC but not all users demonstrated awareness they could do this.

4. Patient identification requirements for mobile patients.

74% of respondents agreed the NIMC should have space for an identifying patient photograph. While only 9% disagreed with this proposal, they were strident in their comments suggesting that taking a photograph of an involuntary patient in an acutely paranoid state would be problematic practically and ethically.

6. Specific issues arising from survey responses

1. Clozapine

Clozapine prescribing, monitoring and administering were extensively commented on when respondents were asked to describe implemented or desired modifications to the NIMC for use in acute settings. Numerous respondents reported that they used a separate chart for clozapine with various types of information incorporated in these, from standardised dosing schedules to inclusion of monitoring protocols.

2. Intermittent medications (including depot injections)

There was no consensus regarding the charting of depot medications. 40.4% agreed or strongly agreed with the statement that the NIMC is able to accommodate intermittent medications in its current format, and an equal 40.4% disagreed or strongly disagreed.

Some services reported charting was done in the usual medications section, others on the front of the sheet. This lack of standard practice was identified as creating potential for errors either through transcription or nurses missing the dose. The majority of comments suggested a separate section on the NIMC be used with adequate room provided for two RN signatures, last given/next due information (particularly important if the dose does not fall within the chart period), and administration site used. A few respondents reported or suggested use of a separate chart but this was more widely regarded as prone to error.

3. PRN medications

70% of respondents agreed or strongly agreed that the PRN section on the NIMC meets PRN medication charting needs for the majority of patients.

Respondents were split in their comments about the adequacy of the chart for PRN medications. Several stated that there was not enough room for PRN and this lead to transcription errors, more than one chart needing to be used at the one time and pressure on nursing and medical staff to have charts updated.

Several stated that there should not be any more space for PRN as this would discourage regular review of the doses available and which they felt should occur every five days.

Some services reported using the NIMC PRN space simply for non-psychiatric medications e.g. analgesia and aperients because another specialist chart is used for PRN psychotropic medications and which includes stepped indications and directions for which class of drug to be used first.

4. Divergent responses from public and private sector health professionals

A majority of respondents (77%) work in the public health sector. While there was overall agreement on use of the NIMC and NIMC LS, areas of significant divergence included the following:

- While the proportion of nurse respondents was the same at 54%, proportionately more doctors in the private sector (23%) responded than those in the public sector (7%), with converse proportions for pharmacists (private 8%, public 29%);
- Over 70% of respondents in each sector worked in acute services;
- 60% of respondents in the public sector were using a version of the NIMC while only 43% in the private sector used this chart. 26% of public sector respondents were using the NIMC LS while 41% of private respondents used the NIMC LS;
- A majority of private sector respondents disagreed that the NIMC LS met requirements for prescribing (55%) and administering medication (64%) whereas those in the public sector rated these more positively;
- 58% of public health sector professionals agreed there was enough room on the variable dose section for a single daily dose whereas only 33% of private clinicians agreed, and 38% disagreed;
- 7 days was the most favoured duration of the chart for public sector health professionals whereas private sector health professionals were split equally between 15 and 20 days. This is a clear reflection of the longer average length of stay in private institutions; and
- 87% of private sector health professionals thought that inclusion of a photograph would improve identification of patients compared to 76% of public. This may be consistent with the voluntary status of patients in private sector facilities compared to public ones.

7. Discussion

Overall, response charts demonstrated a significant trend toward ‘double hump’ distributions, with small majorities of respondents registering ‘agree’ to questions, and large minorities registering ‘disagree’. Relatively few respondents opted for ‘strong’ agreement or disagreement and similarly few respondents used the ‘neither agree nor disagree’ option. A cautious interpretation of this trend suggests the survey accurately captures clinical opinion about the use of the NIMC in acute psychiatric settings with a majority of respondents agreeing the chart meets the needs of the service and with a minority dissatisfied with the chart.

A number of respondents commented that the NIMC worked well in their units and suggested that changes were not necessary. Several noted that creating a separate NIMC for use in psychiatric services would lose the important advantage of standardisation across units throughout health services. This is of course one of the rationales for the NIMC.

Some respondents outright rejected the chart but did not provide suggestions for ways to improve it or alternative methods to safely prescribe and administer medications.

Respondents frequently reported use of other charts alongside the NIMC. These included specific charts for clozapine titration, for use of PRN medications, with accompanying guidelines, and for depot medications. There is strong support for these often locally developed variants. Others note that use of more than one chart can lead to errors if the presence of more than one chart is not clearly signalled. Anecdotally, the tick boxes prompting attention to additional charts are not frequently used or, is used, noted.

Other respondents reported divergent local practices which were used conventionally e.g. intermittent medications charted in the ‘once only’ section rather than with other regular medications, clozapine charted in the warfarin section and PRN sections used for analgesia and aperients only. While these practices may work for regular staff, they will not necessarily be transparent to new or agency staff and so could lead to errors.

8a. Key issues from preliminary consultation

1. Length of stay

The survey results regarding optimal duration for the NIMC are not easy to interpret. More than 50% agreed it should be longer than 10 days but when asked to state the optimal length, a slight majority (26%) stated it should be seven days, with none of the longer period options garnering as much support.

Respondents reported divergent local implementations to manage the longer average length of stay for patients in psychiatric units, including using the NIMC LS in acute units, despite it not being designed for such use. This saves on recharting but significantly reduces the spaces available for different medications. The NIMC LS does not have a variable dose space except for the dedicated warfarin section, and so charting for clozapine titration is done in regular medication spaces.

Reflecting the longer average length of stay for patients in private psychiatric units, significantly more respondents from private settings opted for longer durations for the chart. One respondent stated that the chart should cover at least eight weeks.

2. Therapeutic differences requiring more use of variable dose medications

There was strong support for the provision of more than one section for variable dose medications, with titration of clozapine being the main reason cited for this. A number of respondents reported use of a separate chart for clozapine. They identified these charts as safer and clearer. Should a separate clozapine chart be used, there would be less demand for designated spaces for variable dose medications on the NIMC.

3. Underutilised design aspects, including dedicated warfarin space

Respondents were evenly split over whether to keep a dedicated warfarin space or not. Exact figures for use of warfarin for patients in psychiatric units are not available, though 14% of respondents estimated that between 3-8% of their patients were prescribed warfarin.

The dedicated space for warfarin on the NIMC is there to ensure safety even though only 0.5% of audited medication orders are for warfarin. Given that rates of warfarin administration in psychiatric units do not differ significantly from overall rates, and that the safety benefits of a dedicated warfarin space should not be removed from charts in psychiatric inpatient units. These benefits include standardised prescribing and recording of INRs and administration as well as reducing the risk of missed or duplicate doses from a dedicated warfarin space integrated into the general ward chart.

The question of space came up a lot, with respondents requesting more space for a range of items. In particular, space to enable nurses administering medications to comply with policies regarding countersignature by a second nurse is seen as an issue. In fact, if medications are charted in the regular medication spaces, there is already space for each nurse to use a box underneath to countersign. This could form part of an education package to support clinicians in effectively using the NIMC.

Local adaptations, such as designated sections being crossed through, were frequently reported. As these practices diverge from standardised practice, they risk errors being made, especially by clinicians entering the local setting, either as new staff, or as agency or casual employees.

4. Patient identification requirements for mobile patients

Nearly 80% of respondents agreed that including a patient photograph on the NIMC would improve identification of psychiatric patients. A number of respondents advised that this was a modification of the NIMC they had already implemented. It is noted that it is not standard practice in psychiatric inpatient units for patients to wear identification bracelets (cf. *National Safety and Quality Health Service Standard 5. Patient Identification and Procedure Matching*). A photograph would assist non-regular staff to identify patients accurately before administering medication.

While they were very much in the minority, respondents who strongly disagreed that a photograph of the patient should be on the medication chart expressed concerns about a breach of privacy, and also concerns that being photographed without giving consent would exacerbate paranoia in people currently experiencing acute psychosis.

8b. Specific issues arising from survey responses

1. Clozapine

A majority of respondents reported that the NIMC does not adequately meet the requirements for safely prescribing and administering clozapine in the titration period. There are two main issues. The first is that clozapine is charted twice daily as a variable dose. The NIMC only has one variable dose space which is designed for once daily dosing and is located above the dedicated warfarin space. The *NIMC User Guide* suggests using a second 'regular medication' space, and replicating the variable dosing format from above, but this can be difficult with the warfarin space in between and may risk misreading errors.

The second issue is that many clinicians believe that guidelines on monitoring for clozapine should be incorporated into the chart.

Some services have specialist charts that incorporate monitoring guidelines. Queensland Health commissioned a report outlining human factors that would influence use of the chart (Horswill, Hill et al. 2011) and have completed a chart that is now used throughout the state.

A separate clozapine chart used in addition to the NIMC does carry the risk associated with patients having more than one chart in use, specifically doses being missed when the second chart is not noticed or, in some cases, medication being charted twice on two different charts. The risk is reduced by the fact that clozapine initiation is only done in specialist psychiatric services (almost invariably inpatient services, though some community services are trialling initiation in the community) and it is a significant process that will be extensively and repeatedly communicated in multidisciplinary meetings and at handover.

Currently there are prompt boxes on the NIMC for additional medication charts including 'Other'. However it would also be possible to amend the NIMC to contain a prompt box on the front page alerting clinicians to the concurrent use of an additional clozapine chart and this could be recommended if use of a clozapine chart becomes national policy.

2. Intermittent medications (including depot medications)

The lack of standard practice on charting intermittent medications on the NIMC and the number of different strategies reportedly adopted in different services points to a safety issue.

When the NIMC was introduced, it was suggested that depot medications be charted in a regular medication slot, with the box for the due date highlighted and the other days crossed out by the prescriber. The majority of respondents report this is not the way that depots are being charted so NIMC supporting materials need to be refined and recommunicated to provide a clear standardised process for charting depots.

Another charting issue is that it is possible that, in any charted period, the patient's depot will not fall due as most depots are administered every two weeks and the chart usually only covers 10 days. The 'correct' procedure in this case would be for the medication to be charted in a regular medication space with the due date noted, and all the boxes crossed out. This problem will potentially worsen in the absence of a standard practice as more patients are prescribed the newer atypical antipsychotics in depot form which are frequently administered once every four weeks.

Other issues raised by respondents included the need for adequate space to document which injection site was last used and space for a second nurse to countersign administration of the injection.

Several respondents suggested the need for a designated space on the NIMC for intermittent medications. Other services report use of a separate sheet for depot injections but this, again, carries greater risk that the dose will be missed as the second chart may not be noted.

The NIMC is designed so that, as much as possible, prescribing and administering practices are standardised to reduce the risk of error. It incorporates human factor principles which include standardising processes to reduce cognitive error and highlighting the unusual e.g. a medication which is regular but not administered every day.

A separate, highlighted section for intermittent medications including specific prompts to provide requisite information (due date, last injection site) is an option that could reduce errors in prescribing and administering these medications. However, the addition of such a section would entail the creation of a specialist NIMC for psychiatric services and lose the previously identified benefits of a standardised chart across health settings.

Further education about a standardised method for documenting prescribing and administering of intermittent medications using the NIMC should enable clinicians to effectively and safely perform these functions.

3. PRN medications

With the majority of respondents agreeing the NIMC in its current form meets the needs for PRN medications for the majority of patients, it is reasonable to maintain it as it is currently conceived.

Problems that respondents identified regarding indications for use, and guidelines for which medication to use first, can be solved by prescribers using spaces provided or writing additional instructions in the margins. It has been noted before that this space is available but not utilised by all practitioners. Highlighting these practices in any additional NIMC educational or awareness resources for clinicians would further standardise practice and communication of medications information.

The issue of maximum daily dose remains problematic. While the *NIMC User Guide* states that the responsibility for ensuring PRN options do not exceed maximum allowable daily dose when combined with regular dosing rests with the prescriber, in practice nurses report there is still ambiguity. Current procedures that support safe and effective use of PRN medication include encouraging use of the PRN 24 hour maximum dose box by prescribers, encouraging use of the pharmacy box by pharmacists and adding notes in the chart margins by either prescribers or pharmacists to highlight additional issues.

4. Education

Education and other implementation resources were provided to clinicians on use of the charts when the NIMC and NIMC LS were being introduced into clinical practice. The implementation resources detailed standardised methods for charting second variable dose medications, maximum daily doses for PRN medications, indications and ‘stepped’ instructions for use of PRN medications, and charting of intermittent medications, specifically depot injections in psychiatric settings. This information remains available in the *NIMC User Guide* and could benefit from review and re-communicating to health

professionals working with the NIMC and from being incorporated into an education resource specifically targeting health professionals working in acute psychiatric services.

Comments in the survey and in focus groups conducted by Queensland Health indicate that there is significant confusion regarding standardised charting of these items and with a subsequent variety of practice. This variety diminishes the benefits of a standardised chart and risks harm to patients.

Processes for charting PRN medications and intermittent doses could be improved by further awareness and education to ensure that new practitioners commence clinical practice with clear understanding of how to use the charts and that existing practitioners remain familiar with the NIMC design and the most effective ways of using it.

The NPS-hosted, online NIMC training module was developed in conjunction with ACSQHC and provides high quality, self-paced learning for health professionals using the NIMC. The aim of the online module is to familiarise learners with the NIMC, to raise awareness of safe prescription writing and administration practices and to assist in further reducing errors in medication management. This course is designed for all health professional staff and students involved in medication management (either prescribing or administering) in a hospital setting.

Additionally, one of the benefits of standardisation is that the standardised process or resource can be reflected in health professional education as is the case increasingly with the NIMC. Education in preparatory courses at university for doctors, nurses, pharmacists and allied health professionals should incorporate safe use of the NIMC and the principles of medication safety.

It has been suggested that demonstrated competency should be mandatory before clinicians commence employment, in line with other competencies (e.g. cardio-pulmonary resuscitation, fire training, etc). This proposal will need further consideration by national representatives and content experts.

9. Recommendations

1. That the NIMC be used in acute psychiatric services. This will:
    a. Maintain advantages from standardisation across units;
    b. Reduce the likelihood of error as the patient journey traverses care settings; and
    c. Assist staff prescribing and administering medications in generalist and mental health settings.
2. That the designated NIMC warfarin section should remain in the chart for use in mental health services. The safety issues that led to its incorporation in the initial design affect a small but significant minority of patients in psychiatric care settings. Psychiatric nurses have less, rather than more, experience than generalist colleagues in safely and effectively managing this medication and will benefit from standardised prescribing information.
3. That a separate chart be used in acute psychiatric settings for initiation, titration and administration of clozapine. This will not affect non-psychiatric services as use of a separate chart for initiation of clozapine is only ever likely to be used in specialist mental health settings. Work on a separate clozapine chart already completed in Queensland may be circulated for wider implementation across the country and for potential inclusion in a standardised national mental health medication safety improvement initiative (Horswill, Hill et al. 2011). ACSQHC could undertake to coordinate this initiative.
4. That existing NIMC educational resources be reviewed and recommunicated to psychiatric health professionals and institutions
5. That a new NIMC educational resource be developed specifically for acute psychiatric services addressing practice issues identified including charting of:
    d. Intermittent (depot) medications;
    e. PRN medications; and
    f. Twice-daily variable dose medications.
6. Further consultation should occur with consumers and with legal advisors prior to the introduction of a space for an identifying patient photograph. Though considerable support was found for such an innovation, the issues raised by opponents need further consideration.

10. References

Australian Commission on Safety and Quality in Health Care (2011). National Safety and Quality Health Service Standards. Sydney, Australian Commission on Safety and Quality in Health Care.

Department of Health and Ageing (2010). National Mental Health Report 2010: Summary of 15 Years of reform in Australia's Mental Health Services under the National Mental Health Strategy 1993-2008. D. o. H. a. Ageing. Canberra, Commonwealth of Australia.

Horswill, M. S., A. Hill, et al. (2011). A preliminary human factors investigation into the design of the Queensland Health Clozapine Titration Chart, University of Queensland.

Appendix A

National Inpatient Medication Chart Summary Rationale



Ensuring hospital patients receive the best therapy in a safe and effective manner is a complex process involving many health professionals often working in teams. One critical component of this process is the communication of prescriptions to allow safe and accurate dispensing, administration and reconciliation of medicines. Evidence suggests that communication can be made safer through education of safe prescribing and administration principles and with standardisation of best practice to reduce the potential for errors.

Additional potential benefits in patient safety are derived from:

- Standardisation of best practice throughout the medication management cycle, within and between healthcare organisations; and
- Standardisation of undergraduate, postgraduate and continuing professional education in the medication management cycle.

2a. Key principles

1. When a medication chart is first written up, the patient's name should always be handwritten at the top of the chart by the prescriber. This acts as a double check for pre-labelled charts and reduces the risk of ordering medication for the wrong patient.
2. When subsequent new prescriptions are written, the chart should be checked to ensure it is for the correct patient.
3. A medication chart should include a section for recording adverse drug reaction information. This section should enable documentation of whether a reaction has previously occurred, the nature of the reaction (if one has occurred previously), the date the reaction occurred and the signature of the healthcare professional recording the information. If no previous reactions have occurred, this should be explicitly documented (e.g. 'nil known'). If no information is available about previous reactions (e.g. if the patient is unable to communicate), this should also be documented (e.g. 'unknown'). This section should be clearly visible where most regular prescriptions are written to reduce the risk of inadvertent exposure to a drug to which the patient is allergic.
4. A single chart should include a section for 'once only' and premedication orders so that they are neither on a separate chart nor included with regular orders. This minimises the risk of doses being missed or orders being continued inadvertently, as well as providing a more complete medication history on a single chart.
5. Telephone orders should be discouraged, unless essential due to work practice restrictions (for example, hospitals with no resident medical staff). Where telephone

orders are unavoidable, the medication chart should contain a section that facilitates the safe practice of two staff independently receiving and reading back the order to the prescriber. These orders should allow no more than four doses to be administered before being signed by the prescriber.

6. There should be a section on the medication chart for recording medicines taken by the patient prior to admission, except when a facility uses a dedicated medication reconciliation chart that accompanies the current medication chart. The inclusion of this information on or with the medication chart, or on a dedicated chart, facilitates reconciliation of pre-admission medication with medications prescribed whilst the patient is in hospital and at transfer. It also aids communication of changes to medication regimens made during admission to patients and primary care clinicians.

7. A medication chart must include a specific section for prescribing variable doses of drugs. This section should facilitate ordering and documentation of drug levels, as appropriate, to assist selection of suitable subsequent doses. It is recommended that this variable dose section be on the inside of the chart with other regular orders to reduce the risk of dose omissions.

8. A medication chart should include a specific section for prescribing warfarin. Warfarin is associated with adverse events both through underdosing and overdosing. The warfarin section should enable documentation of both the International Normalised Ration (INR) target range and INR results to facilitate dosing decisions. Ideally, warfarin should be prescribed at 4pm to ensure morning results are reviewed and the next dose is ordered by medical staff familiar with the patient's medication management, rather than by 'after-hours' medical staff.

9. A medication chart should have a separate section for 'when required' (PRN) medications in order to distinguish them from medicines that need to be given regularly. The PRN orders should be unambiguous, with clearly defined doses or dose ranges, minimum hourly frequency of administration and a recommended maximum dose in 24 hours, together with the indication for use.

10. A medication chart should include a specific section for nurse-initiated medication, in accordance with state regulations and hospital practices.

11. The chart should encourage prescribing using generic drug names. This is to reduce the risk of duplicate orders of the same drug being made because of unfamiliarity with different trade names. In addition, medication is usually stocked on the ward alphabetically by generic name, therefore generic prescribing facilitates location of the drug.

12. The chart should discourage the use of abbreviations, particularly those known to be error-prone. This reduces the risk of misinterpretation.

13. The chart should facilitate recording of the administration times by the prescriber, based on a hospital agreed standard. This reduces the potential for nurses to misinterpret prescribed administration frequency instructions.

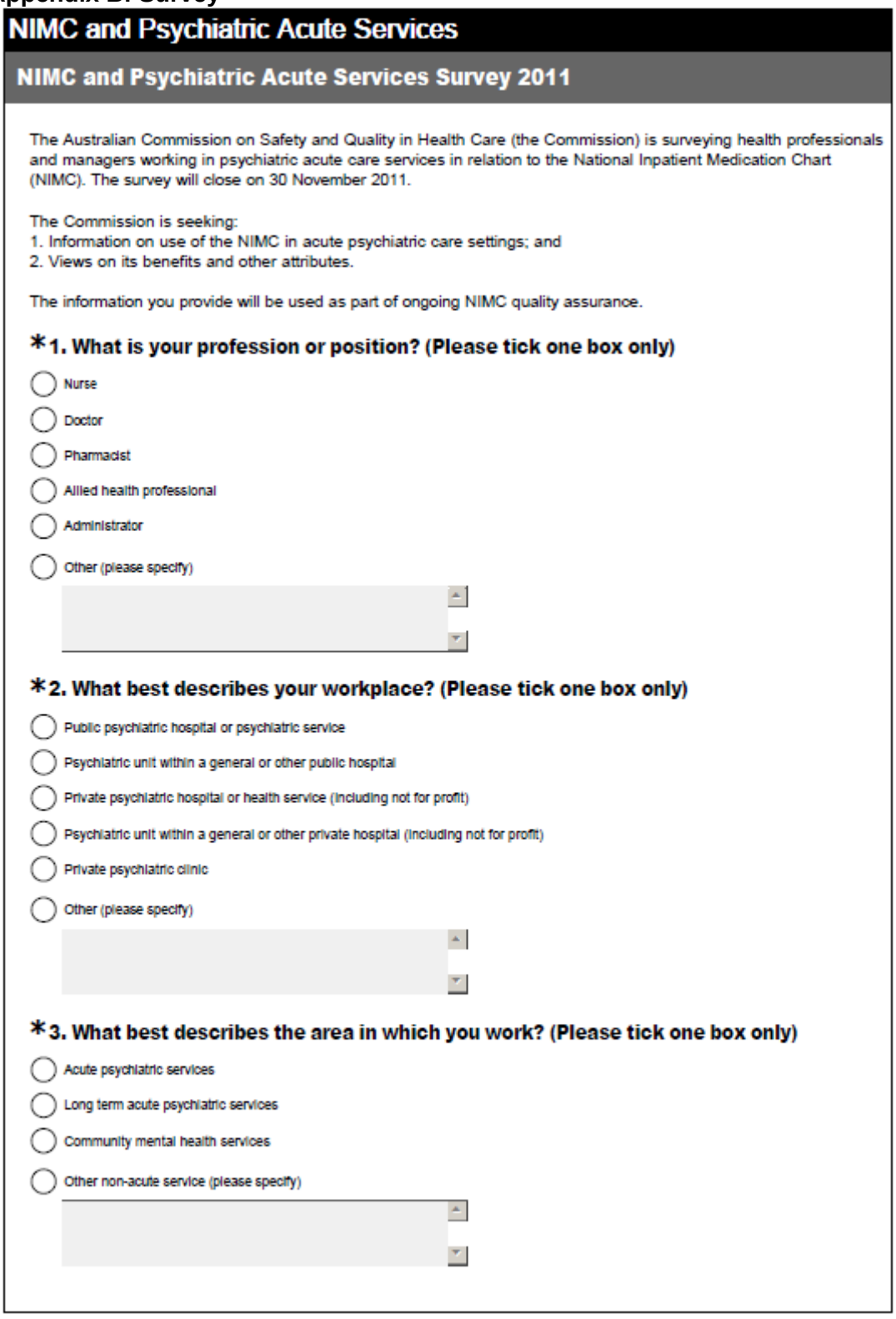
14. The chart should include a section for clinical pharmacist annotation regarding optimal supply and administration. In addition, a section enabling pharmacists to sign the chart following pharmaceutical review facilitates peer review and improves communication with pharmacists covering the same ward.

15. The chart should facilitate dispensing of discharge medication directly from the medication chart, to avoid transcription errors. This may not be applicable for those sites using the PBS for discharge medications or where separate discharge

prescriptions are used. In such cases, local procedures should be developed to ensure that transcription errors are minimised and full medication reconciliation at discharge is facilitated.

16. The chart should include a section for prescriber contact details (for example, pager number), so that they can be easily contacted.

Appendix B: Survey



NIMC and Psychiatric Acute Services

NIMC and Psychiatric Acute Services Survey 2011

The Australian Commission on Safety and Quality in Health Care (the Commission) is surveying health professionals and managers working in psychiatric acute care services in relation to the National Inpatient Medication Chart (NIMC). The survey will close on 30 November 2011.

The Commission is seeking:
1. Information on use of the NIMC in acute psychiatric care settings; and
2. Views on its benefits and other attributes.

The information you provide will be used as part of ongoing NIMC quality assurance.

***1. What is your profession or position? (Please tick one box only)**

- ◯ Nurse
- ◯ Doctor
- ◯ Pharmacist
- ◯ Allied health professional
- ◯ Administrator
- ◯ Other (please specify)

***2. What best describes your workplace? (Please tick one box only)**

- ◯ Public psychiatric hospital or psychiatric service
- ◯ Psychiatric unit within a general or other public hospital
- ◯ Private psychiatric hospital or health service (including not for profit)
- ◯ Psychiatric unit within a general or other private hospital (including not for profit)
- ◯ Private psychiatric clinic
- ◯ Other (please specify)

***3. What best describes the area in which you work? (Please tick one box only)**

- ◯ Acute psychiatric services
- ◯ Long term acute psychiatric services
- ◯ Community mental health services
- ◯ Other non-acute service (please specify)

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NIMC and Psychiatric Acute Services

***4. Which medication chart is used in your health service for psychiatric patients? (Please tick one box only)**

- ◯ National Inpatient Medication Chart (NIMC) or a modified version of the NIMC
- ◯ National Inpatient Medication Chart (NIMC) long-stay version or a modified version of the NIMC long-stay
- ◯ Mostly the NIMC but also the NIMC long-stay version
- ◯ Mostly the NIMC long-stay but also the NIMC
- ◯ Mostly the NIMC but also a specialist clozapine chart
- ◯ Mostly the NIMC long-stay version but also a specialist clozapine chart
- ◯ A local medication chart
- ◯ Other (please specify)

NIMC and Psychiatric Acute Services

***5. The NIMC meets the requirements for prescribing all psychiatric medicines used in our service. (Please tick one box only)**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

***6. The NIMC meets requirements for assisting and recording the administration of all psychiatric medicines used in our service. (Please tick one box only)**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

***7. The NIMC meets all other medication chart requirements for psychiatric patients in our service (e.g. medication history, monitoring, 'phone orders). (Please tick one box only)**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

***8. The NIMC long-stay version meets requirements for prescribing all psychiatric medicines used in our service. (Please tick one box only)**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

***9. The NIMC long-stay version meets requirements for assisting and recording the administration of all psychiatric medicines used in our service. (Please tick one box only)**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

***10. The NIMC long-stay version meets all other medication chart requirements in our service for psychiatric patients e.g. medication history, monitoring, 'phone orders. (Please tick one box only)**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

***11. To your knowledge, what is the main reason why your service doesn't use the National Inpatient Medication Chart (NIMC) for psychiatric patients? (Please tick one response only)**

- ◯ We never considered it
- ◯ We looked at the NIMC but did not consider it appropriate for our service
- ◯ We looked at the NIMC long-stay version but did not consider it appropriate for our service
- ◯ We implemented the NIMC but stopped using it
- ◯ We implemented the NIMC long-stay version but stopped using it
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

***12. Some of the benefits of using the NIMC long-stay version for psychiatric patients that we identified included: (Please tick all responses which are applicable)**

- [ ] Using it met a policy or other directive
- [ ] Doctors, nurses and pharmacists were familiar with the NIMC
- [ ] Free support materials were available for NIMC education and implementation
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***13. Some of the problems with using the NIMC long-stay version for psychiatric patients that we identified included: (Please tick all responses which are applicable)**

- [ ] We frequently have patients who take more regular medicines than the number of spaces allowed for on one chart
- [ ] We frequently have patients who take more PRN medicines than the number of spaces allowed for on one chart
- [ ] Doses are missed because multiple charts are in use
- [ ] The chart had to be rewritten too frequently
- [ ] No variable dose section
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***14. Would you like to respond to more detailed questions about the NIMC long-stay version and its use in psychiatric acute care settings? (Please tick either yes or no)**

- [ ] Yes
- [ ] No

NIMC and Psychiatric Acute Services

***15. Some of the benefits of using the NIMC for psychiatric patients that we identified included: (Please tick all responses which are applicable)**

- [ ] Using it met a policy or other directive
- [ ] Doctors, nurses and pharmacists were familiar with the NIMC
- [ ] Free support materials were available for NIMC education and implementation
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***16. Some of the problems with using the NIMC for psychiatric patients that we identified included: (Please tick all applicable responses)**

- [ ] We frequently have patients who take more regular medicines than the number of space allowed for on one chart
- [ ] We frequently have patients who have more PRN medicines than the spaces allowed for on one chart
- [ ] Doses are missed because multiple charts are in use
- [ ] The chart has to be rewritten too frequently
- [ ] The dedicated warfarin section would only be used rarely
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***17. Would you like to respond to more detailed questions about the NIMC and its use in psychiatric acute care settings? (Please tick either yes or no)**

- [ ] Yes
- [ ] No

NIMC and Psychiatric Acute Services

***18. We implemented the NIMC for psychiatric patients but stopped using it because: (Please tick all applicable responses)**

- [ ] The chart had to be rewritten too frequently for a large number of patients
- [ ] It was not easy charting variable dose medicines that are used commonly by our service
- [ ] We rarely used warfarin for psychiatric patients
- [ ] The decision was taken by hospital management
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***19. Some benefits of using the NIMC for psychiatric patients that we found included: (Please tick all applicable responses)**

- [ ] Using it met a policy or other directive
- [ ] Doctors, nurses and pharmacists were familiar with it
- [ ] Free support materials were available for NIMC education and implementation
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***20. Would you like to respond to more detailed questions about the NIMC and its use in psychiatric acute care settings? (Please tick either yes or no)**

- [ ] Yes
- [ ] No

NIMC and Psychiatric Acute Services

***21. We implemented the NIMC long-stay version for psychiatric patients but stopped using it because: (Please tick all applicable responses)**

- [ ] The chart had to be rewritten too frequently for a large number of patients
- [ ] It was not easy charting variable dose medicines that are used commonly by our service
- [ ] We rarely used warfarin for psychiatric patients
- [ ] The decision was taken by hospital management
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***22. Some benefits of using the NIMC long-stay version for psychiatric patients that we found included: (Please tick all applicable responses)**

- [ ] Using it met a policy requirement or other directive
- [ ] Doctors, nurses and pharmacists were familiar with it
- [ ] Free support materials were available for NIMC education and implementation
- [ ] Not applicable or don't know
- [ ] Other (please specify)

***23. Would you like to respond to more detailed questions about the NIMC long-stay version and its use in psychiatric acute care settings? (Please tick either yes or no)**

- [ ] Yes
- [ ] No

NIMC and Psychiatric Acute Services

***24. The NIMC we use for psychiatric patients has been modified for our own purposes. (Please tick one response only)**

- ◯ Yes
- ◯ No
- ◯ Not applicable or don't know

If yes, please describe how it has been modified:

NIMC and Psychiatric Acute Services

***25. The NIMC long-stay version we use for psychiatric patients has been modified for our own purposes. (Please tick one response only)**

- ◯ Yes
- ◯ No
- ◯ Not applicable or don't know

If yes, please describe how it has been modified:

NIMC and Psychiatric Acute Services

26. Including a patient photograph on the NIMC would improve identification of psychiatric patients.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

27. The NIMC variable dose medicine section is suitable for the majority of psychiatric medicines.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

28. Are there specific psychiatric medicines for which the NIMC variable dose section is NOT suitable. (Please tick one response only)

- ◯ Yes
- ◯ No
- ◯ Not applicable or don't know

If yes, please list:

29. Where variable dose medicines are ordered as a single daily dose, there is enough space on the NIMC to meet the needs of the average psychiatric inpatient.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

30. If you think the variable dose medicine section of the NIMC can be improved for psychiatric medicines, what changes would you suggest?

31. Overall, approximately what percentage of psychiatric inpatients in your service have warfarin ordered on the NIMC?

- ◯ <2%
- ◯ 3%-8%
- ◯ 9%-14%
- ◯ 15%-20%
- ◯ >20%
- ◯ Not applicable or don't know

32. The PRN section on the NIMC meets the PRN medicines needs for the majority of our psychiatric inpatients.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

33. If you think the PRN section of the NIMC can be improved for psychiatric medicines, what changes would you suggest?

34. The NIMC is able to accommodate intermittent (e.g. depot) medications in its current format.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

35. If you think the NIMC can be improved to accommodate intermittent medications more easily, what changes would you suggest?

NIMC and Psychiatric Acute Services

36. To match the needs of psychiatric acute services, the NIMC should be of shorter duration (e.g. 5 days) as there would be more room, for example, for variable or PRN doses.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

37. To match the needs of psychiatric acute services, the NIMC should have longer duration (e.g. more than 10 days) even though that may mean patients having multiple active medication charts.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

38. To match the needs of psychiatric acute services, the duration of the NIMC should be (please tick one response only):

- ◯ 7 days
- ◯ 10 days
- ◯ 15 days
- ◯ 20 days
- ◯ 25 days
- ◯ 30 days
- ◯ 35 days
- ◯ More
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

39. To match the needs of psychiatric acute services, the NIMC should have a dedicated warfarin section.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

40. To match the needs of psychiatric acute services, the NIMC should have a dedicated variable dose medication section.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

41. To match the needs of psychiatric acute services, the NIMC should have more than one dedicated variable dose medication section.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

42. To match the needs of psychiatric acute services, the NIMC should have space for an identifying patient photograph.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Not applicable or don't know

NIMC and Psychiatric Acute Services

43. Is there anything further you would like to add about the National Inpatient Medication Chart or about its use in psychiatric acute care services?