NSW TAG

Resource Kit for Measuring Strategies to Reduce Harm from Polypharmacy in Australian Hospitals: QUM Indicators, Patient Reported Experience Measures and Risk Stratification Tools

2020

NSW Therapeutic Advisory Group Inc.

Advancing quality use of medicines in NSW

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Foreword

The 'Resource Kit for Measuring Strategies to Reduce Harm from Polypharmacy in Australian Hospitals: Quality Use of Medicines (QUM) Indicators, Patient Reported Experience Measures (PREMs) and Risk Stratification Tools' was developed with funding support from NSW TAG and the NSW Health funded Translational Research Grants Scheme (TRGS) project 'Reducing Inappropriate Polypharmacy in Older Inpatients', led by Professor Sarah Hilmer.

The indicators have been designed as tools to evaluate processes involved in identification of medication-related harm in older hospitalised patients and the management of inappropriate polypharmacy. They will inform quality improvement initiatives targeting common areas of medication-related harm, such as inappropriate polypharmacy, falls, and impairment of cognitive and physical function, at the unit, department or facility level. The Patient Reported Experience Measures (PREMs) evaluate patients' experiences in the decision-making process for deprescribing in hospital.

The development of the QUM indicators has followed a rigorous and clinically meaningful process, which compares most favourably with the development of many other clinical indicators. Consultation with a broad range of clinicians and stakeholders and field testing in hospitals across Australia has ensured that the indicators meet necessary and important criteria for validity, measurability and usefulness.

A number of features accompany the Polypharmacy QUM Indicators to facilitate their uptake and use. A standardised data collection tool accompanies each indicator as well as newly developed risk assessment tools to stratify older patients at risk of medication-related harm. In addition, posters to prompt clinicians to consider medication related harm have been developed. NSW TAG also recommends that users of the indicators refer to the 'Using the National Quality Use of Medicines Indicators for Australian Hospitals' when considering the methodology for auditing and quality improvement activity. The indicators promote medication review and consideration of deprescribing in older hospitalised patients. The indicators are assisted and complemented by the deprescribing tools, (deprescribing guides and consumer information leaflets) which were also developed as part of the TRGS project 'Reducing Inappropriate Polypharmacy in Older Inpatients.

PREMs were developed for the first time as an accompaniment to QUM Indicators. They take the same format as the Australian Hospital Patient Experience Question Set (AHPEQS) questions and response options, and complement this set. They have been validated in 201 patients in a project led by geriatric medicine advanced trainee, Dr Keat Ngui, supervised by Prof Hilmer.

Improved performance in the aspects of care targeted by the Polypharmacy QUM Indicators and PREMs is expected to result in improved health outcomes and assist health service organisations meet requirements of the National Safety and Quality Health Service Standards version 2. Ideally these indicators will be automated and incorporated into everyday clinical practice such that data collection and feedback become routine and frequent.

We wish to thank the members of the Polypharmacy Indicator Steering Committee and investigators at the field testing hospitals for their valuable input. We encourage anyone interested in improving the safety and quality of medicines management in older patients in their health service to use this new indicator set.

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*Australian Commission on Safety and Quality in Health Care: Australian Charter of Healthcare Rights (second edition)

8.1 Percentage of older patients that are appropriately assessed for risk of harm from inappropriate polypharmacy.

Purpose

This indicator addresses the effectiveness of processes for identifying and managing inappropriate polypharmacy in older hospitalised patients.

Background and evidence

Medicines use in older people is a complex balance between managing disease and avoiding medicine-related problems. Medicine-related problems (MRPs) encompass any event involving treatment with a medicine that has a negative effect on a patient's health or prevents a positive outcome. MRPs include adverse drug reactions (ADRs) and use of inappropriate medicines, where the potential for harm outweighs the likelihood of benefit. MRPs not only significantly impact the quality of life of patients, but are costly and associated with significant burdens on the health care sector. It is estimated that in Australia during 2016 – 2017, 250,000 hospital admissions annually were a result of medication-related problems costing approximately $1.4 billion, and an additional 400,000 presentations to emergency departments were due to medication-related problems with 50% of this harm being preventable.[1] Numerous patient, clinical and medicine factors are associated with an increased risk of medicine-related problems in hospitalised patients (Table 1).[2]

Inappropriate polypharmacy in older people is common and imposes a substantial burden of adverse drug events, ill health, disability, hospitalisation and even death. The single most important predictor of inappropriate prescribing and risk of adverse drug events in older patients is the number of prescribed medicines.[3]
Given the limited resources for in-hospital medication review and the growing numbers of hospitalisations especially of older patients, there is a need to target patients thought to be at high risk of experiencing inappropriate polypharmacy or ADRs in order to prioritise timely medication-related interventions such as hospital-based medication review. Furthermore, the National Safety and Quality Health Service (NSQHS) Standards 2nd edition, requires health service organisations to have systems for managing and monitoring high-risk medicines.[4] This indicator has relevance for monitoring of hospital-acquired complications related to medication use, in particular use of antithrombotics, hypoglycaemics and respiratory depressants.[5]

Table 1: Factors associated with increased risk of medicine-related problems

Patient factors	Increasing age, recent and/or frequent hospitalisation, low socio-economic status, multiple prescribers, use of multiple pharmacies, poor English comprehension and/or health literacy
Clinical factors	Presence of renal impairment, frailty, dementia and/or polymorbidity; increased acuity of care such as admission to an intensive care unit
Medicine factors	Concurrent use of five or more medicines (polypharmacy), presence of high-risk medicines (HRMs) #; presence of 'red-flag' medicine classes^; previous ADR*

#*HRMs: High-risk medicines (also known as high-alert medicines) are those that have a high risk of causing significant patient injury or harm (including death) if they are misused or used in error. Medicines considered to be HRMs may vary between hospitals and other healthcare settings.*[4,6-8]

^*Red-flag medicine classes: these classes are commonly implicated in medicine-related hospitalisations. They include antiplatelets, anticoagulants, diuretics, non-steroidal anti-inflammatory drugs, opioids, antidepressants, renin-angiotensin system antagonists, beta-blockers, digoxin, diabetes medicines.*[9,10]

**ADR: An Adverse Drug Reaction is defined as "a response to a medicinal product which is noxious and unintended and which occurs at doses normally used in man for the prophylaxis, diagnosis or therapy of disease or for the restoration, correction or modification of physiological function". ADRs include interactions (medicine-medicine, medicine-disease, medicine-nutrient, medicine-laboratory test) and allergy or anaphylaxis.*[4,11]

Various tools to identify risk of harm from inappropriate polypharmacy are available for use in Australian hospitals; however, few categorise risk.[12] The Inappropriate Polypharmacy Risk Assessment Tool (IPRAT) developed by the NSW Therapeutic Advisory Group (TAG) can be used to stratify the degree of risk of harm from inappropriate polypharmacy and recommended actions according to risk category in the event health service organisations do not have a locally-approved tool.

Key definitions

Older patients refers to all patients aged 65 years and over.
Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills.[13,14]

Inappropriate polypharmacy is present, when one or more drugs are prescribed that are not or no longer needed, because:

- there is no current evidence based supporting indication; OR
- they fail to achieve the therapeutic objectives they are intended to achieve; OR
- one, or the combination of several drugs cause unacceptable ADRs, or put the patient at an unacceptably high risk of such ADRs; OR
- the patient is not willing or able to take one or more medicines as intended.[14]

Appropriately assessed for risk from inappropriate polypharmacy means that there is explicit documentation in the medical record (or in another designated place as determined by local policy), of the patient's risk of harm from inappropriate polypharmacy, including the degree of risk (high, moderate or low risk) and the rationale for assigning this risk category (Table 2).

Table 2: Requirements for appropriate assessment for risk from inappropriate polypharmacy

• Documentation of the risk category assigned to the patient after using a risk assessment tool for assessing risk of harm from inappropriate polypharmacy. Facilities may use a locally approved tool. Alternatively, an example of a risk assessment tool for inappropriate polypharmacy (IPRAT) can be found here.
AND • Documented rationale for risk category: o Hospitalisation due to a medicine-related problem*; OR o A count of medicines (includes regular, when necessary medicines and any that the patient has had temporarily withheld during hospital admission); AND/OR o The names of any identified HRMs (as designated by the local authority) and their indication(s) or lack thereof. All relevant information used for categorisation should be documented. (Note: a local risk assessment tool may use or include other reasons to determine risk categorisation).
AND • Completion by one or more health care professionals trained/credentialed (according to local policy) to identify inappropriate polypharmacy;
AND • Completion by the end of the next calendar day after admission.

* For the purposes of this indicator, medicine-related problems do not include intentional overdoses.

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital, and who have a length of stay in hospital greater than 24 hours from the time of hospital admission.

Exclusion criteria: Patients with length of stay less than 24 hours from the time of hospital admission, patients cared for in the emergency department.

Recommended data sources: Medical records, medication charts, medication management plans or reconciliation forms, if available.

As lists of HRMs may vary between health service organisations or change over time, it is recommended that prior to auditing, the auditor documents medicines against which they will audit.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.1 assists data collection and provides automatic indicator calculation.

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients that have a documented inappropriate polypharmacy risk assessment identifying degree of risk.

Denominator = Number of older patients in sample.

Limitations and interpretation

This indicator only measures assessment at one point in time (within approximately 24 hours of hospital admission). However, preventable risk of inappropriate polypharmacy may continue or increase during hospitalisation and repeat assessment and intervention may be required.

There may be variation in the location of documented risk assessments. It is recommended that sites determine useful local data sources prior to auditing and consider collecting data about the location of documentation to inform quality improvement projects as well as future repeat auditing.

This indicator does not measure the quality of the completed risk assessment of inappropriate polypharmacy, e.g. the documentation may not accurately identify medication-related admissions or HRMs. Results should be interpreted in the context of the overall performance in reducing the risk of medicine-related problems in older hospitalised patients at the organisational level.

Collecting data regarding identified HRMs or different patient groups (e.g. patients admitted to specific wards such as geriatric wards, orthopaedic wards; or patients admitted under a specific team/specialty; or those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

See NSW TAG QUM Indicators 8.2 *Percentage of older patients that are appropriately assessed for risk of medication-related falls* and 8.3 *Percentage of older patients that are appropriately assessed for risk of medication-related impairment of cognitive and/or physical function* for further information regarding the management of older patients at high risk of other types of medication-related harms. Available here: https://www.nswtag.org.au/qum-indicators/

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Inappropriate Polypharmacy Risk Assessment Tool (IPRAT)

This tool enables clinicians and health service organisations to categorise risk of harm from inappropriate polypharmacy and outlines recommended actions that should be taken as a result of risk categorisation.

Health Service Organisations (HSOs) may have other approved tools to assess inappropriate polypharmacy and identify patients at high risk. This tool may be amended/adapted by HSOs that do not have their own risk stratification tool.

Risk category	Identification criteria	Action required
High	The patient's admission is due to a medication-related problem* **OR** The patient is prescribed: • 10 or more medicines; **OR** • 5 or more medicines where at least one is a locally designated HRM; **OR** • a HRM with no current supporting indication^.	Referral for a hospital-based medication review. Other further medication-related interventions may also be appropriate.
Moderate	The patient is prescribed: • 5 or more but less than 10 medicines; **OR** • less than 5 medicines where at least one is a locally designated HRM.	Medication-related interventions such as medication review may be appropriate.
Low	The patient is prescribed less than 5 medicines, none of which is a locally designated HRM.	Requirement and referral for medication-related interventions to be determined by treating clinicians.

*For the purposes of this risk assessment tool, medicine-related problems do not include intentional overdoses.

^A supporting indication for a HRM should be documented in the patient's past medical or surgical histories and/or history of their presenting complaint.

HRMs are those that have a high risk of causing significant patient injury or harm (including death) if they are misused or used in error.[1-3] Medicines considered to be HRMs may vary between hospitals and other healthcare settings. It is recommended health service organisations keep a list of locally designated HRMs.

If further risk stratification is required due to limited resources for intervention, the addition of risk factors such as frailty, age over 75 years, previous ADR, recent and/or frequent hospitalisation may be added to the risk assessment.

NSW TAG QUM Indicator 8.1 provides further information about inappropriate polypharmacy and the requirements for appropriate medical record documentation of the risk assessment related to inappropriate polypharmacy. Available here: https://www.nswtag.org.au/qum-indicators/

Abbreviations: HRM = High Risk Medicine; ADR= Adverse Drug Reaction; QUM = Quality Use of Medicines

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REDUCING HARM FROM MEDICATIONS
Targeting Inappropriate Polypharmacy Poster

Inappropriate polypharmacy occurs when one or more of a person's medications are no longer needed, because:

- × there is no current evidence supporting its use in the person; OR
- × therapeutic objectives have not been achieved; OR
- × the medication(s) cause(s) unacceptable side effects, or put(s) the patient at an unacceptably high risk of side effects; OR
- × the person is not willing or able to take the medication as intended.

Inappropriate polypharmacy is modifiable

- → Help reduce the burden of side effects, poor quality of life, disability, hospitalisation and even death from medicines.
- → Target people at high risk of experiencing inappropriate polypharmacy and prioritise interventions such as hospital-based medication review.
- → The **Inappropriate Polypharmacy Risk Assessment Tool** (IPRAT) can help identify risk of harm from inappropriate polypharmacy. It also gives recommended actions.

Is your patient at HIGH risk of MEDICATION-RELATED HARM from inappropriate polypharmacy

Admitted due to a medication-related problem?

OR

Prescribed 10 or more medications?

OR

Prescribed 5 or more medications where **at least one** is a **High Risk Medicine**?

OR

Prescribed a **High Risk Medicine** with no current supporting indication?

PRIORITY

If YES to any of the above, REFER your patient for a hospital-based medication review

ACTION

Common groups of HRMs are represented by the acronym APINCH

High Risk Medicines (HRMs) lists may vary slightly between hospitals & other healthcare settings. Refer to your local list of HRMs and for more information visit: https://www.safetyandquality.gov.au/our-work/medication-safety/high-risk-medicines/apinchs-classification-high-risk-medicines

***A**: antimicrobials and antipsychotics*
***P**: potassium & other electrolytes*
***I**: insulin products*
***N**: narcotics (opioids) & other sedatives*
***C**: chemotherapy*
***H**: heparin & other anticoagulants*

8.2 Percentage of older patients that are appropriately assessed for risk of medication-related falls.

Purpose

This indicator addresses the effectiveness of processes for identifying risk of and preventing medication-related falls in older hospitalised patients.

Background and evidence

Falls are major contributors to poor outcomes in older people, including trauma, serious injury, and accidental death. The incidence and prevalence of falls have grown in the past decade with the ageing of the global population, despite increasing implementation of strategies that focus on fall prevention.

A third of the community-dwelling population aged 65 years and older fall in any given year and a third of these fall again within the next year.[1] Older hospitalised patients have an especially high prevalence of falls, resulting in longer hospital stays and increasing costs for the individual and health care system.[2] The National Safety and Quality Health Service (NSQHS) Standards 2nd edition, in particular the Comprehensive Care Standard, require health service organisations providing services to patients at risk of falls to have systems that are consistent with best-practice guidelines for falls prevention.[3] Falls occurring in hospital which result in a fracture or intracranial injury are considered a hospital-acquired complication (HAC) by the Australian Commission on Safety and Quality in Health Care (ACQSHC).[4]

Falls are associated with polypharmacy (use of 5 or more medicines). Exposure to specific drug classes (mainly cardiovascular and psychoactive medications) has also been shown to increase falls risk and are commonly referred to as fall-risk-increasing drugs (FRIDs).[5,6]

Examples of FRIDs include antipsychotics, antidepressants, anxiolytics/sedatives, dopamine D2 agonists, opioids, anticholinergic drugs, antihistamines, antivertigo drugs, hypoglycaemics, beta-blocker eye drops, antihypertensives, antiarrhythmics, digoxin, nitrates and other vasodilators.[7]

There are a number of different validated Falls Risk Assessment Tools (vFRATs) used in Australian hospitals[8] but they do not adequately measure and categorise degree of risk of medication-related falls. Medication use is one of the most modifiable risk factors for falls. The Medication-related falls risk assessment tool (MFRAT) developed by the NSW Therapeutic Advisory Group (TAG) can be used to stratify the degree of risk of medication-related falls and recommended actions according to risk category in the event health service organisations do not have a locally-approved tool.

Key definitions

Older patients refers to all patients aged 65 years and over.
Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills.[9,10]

Appropriately assessed for risk of medication-related falls means that there is explicit documentation in the medical record (or in another designated place as determined by local policy) of the patient's risk of medication-related falls, including the degree of risk of falls (high, moderate or low risk) and the identified FRIDs.

Table 1: Requirements for appropriate assessment for risk of MEDICATION-RELATED falls

• Documentation of the risk category assigned to the patient after using a risk assessment tool for medication-related falls. An example of a risk assessment tool for medication-related falls (MFRAT) can be found at here. Alternatively, facilities may use a locally approved tool. (N.B. completion of a vFRAT alone does not assess risk of medication-related falls).
AND
• Documented rationale for risk category: o Documentation of the names of any identified FRID(s) (including those that the patient has had temporarily withheld during hospital admission) OR o Documentation of an absence of any FRIDs. All relevant information used for categorisation should be documented. (Note: a local risk assessment tool may use or include other reasons to determine medication-related risk categorisation).
AND
• Completion by one or more health care professionals trained/credentialed (according to local policy) to identify FRIDs
AND
• Completion by the end of the next calendar day after admission.

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital for greater than 24 hours.

Exclusion criteria: Patients with length of stay less than 24 hours from the time of hospital admission, patients cared for in the emergency department.

Recommended data sources: Validated falls risk assessment tools and management plans, medical records, medication charts and medication management plans or reconciliation forms, if available.

As lists of FRIDs may vary between and within health service organisations or change over time, it is recommended that prior to auditing, the auditor documents the medicines against which they will audit. The AMH Aged Care Companion has a section that discusses medicines that may contribute to risk of falls.[7] The NSW TAG MFRAT lists common FRIDs.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.2 assists data collection and provides automatic indicator calculation.

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients that have a documented medication-related falls risk assessment identifying degree of risk.

Denominator = Number of older patients in sample.

Limitations and interpretation

This indicator only measures assessment at one point in time (within approximately 24 hours of hospital admission). However, preventable risk of inappropriate polypharmacy may continue or increase during hospitalisation and repeat assessment and intervention may be required.

There may be variation in the location of documented risk assessments. It is recommended that sites determine useful local data sources prior to auditing and consider collecting data about the location of this documentation to inform quality improvement as well as any future repeat auditing.

This indicator focuses on falls risk related to medicines use and other risk factors identified in completion of vFRATs will still require intervention whether FRIDs are present or not.

This indicator does not assess the quality of the risk assessment e.g. documentation may not accurately identify relevant FRIDs and measures only one component of the strategies designed to reduce falls in hospitalised patients. Results should be interpreted in the context of the overall performance in falls prevention strategies at the organisational level.

Collecting data regarding the names of identified FRIDs and/or different patient groups (e.g. patients admitted to specific wards such as stroke rehabilitation wards, geriatric wards, orthopaedic wards; or patients admitted under a specific team/specialty; or those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

See NSW TAG QUM Indicators 8.1 *Percentage of older patients that are appropriately assessed for risk of harm from inappropriate polypharmacy* and 8.3 *Percentage of older patients that are appropriately assessed for risk of medication-related impairment of cognitive and/or physical function* for further information regarding the management of older patients at high risk of other types of medication-related harms.
Available here: https://www.nswtag.org.au/qum-indicators/

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Medication-related Falls Risk Assessment Tool (MFRAT)

This tool enables categorisation of falls risk related to medication use and outlines recommended actions that should be taken as a result of risk categorisation.

Health Service Organisations (HSOs) may have other approved tools to assess medication-related falls risk and identify patients at high risk. This tool may be amended/adapted by HSOs that do not have their own risk stratification tool. A list of common fall-risk-increasing drugs is provided on the following page.

Risk category	Identification criteria			Action required
High	Patient's vFRAT category or score is high **AND** The patient is prescribed (or has had temporarily withheld during hospital admission) **2 or more FRIDs.**			Referral for a hospital-based medication review. Other further medication-related interventions may also be appropriate.
Moderate	Patient's vFRAT category or score is high **AND** The patient is prescribed (or has had temporarily withheld during hospital admission) **1 FRID**.	OR	Patient's vFRAT category or score is NOT high **AND** The patient is prescribed (or has had temporarily withheld during hospital admission) **2 or more FRIDs**.	Medication-related interventions such as medication review may be appropriate.
Low	The patient is **NOT on any FRIDs** (nor is any FRID on a temporary withheld medication list).			Non-medication-related interventions for falls reduction may still be applicable.

FRIDs include medicines causing adverse effects such as postural hypotension, drowsiness, dizziness, blurred vision or confusion.[1] See accompanying table for a list of medicines commonly associated with falls risk.

If further risk stratification is required due to limited resources for intervention, the addition of risk factors such as frailty, age over 75 years, previous ADR, recent and/or frequent hospitalisation may be added to the risk assessment.

NSW TAG QUM Indicator 8.2 provides further information about identifying risk of and preventing medication-related falls in older hospitalised patients. Available here: https://www.nswtag.org.au/qum-indicators/

Abbreviations: vFRAT = validated Falls Risk Assessment Tool; FRIDs = Fall-Risk-Increasing Drugs; ADR= Adverse Drug Reaction; QUM = Quality Use of Medicines

Reference:
1. Australian Medicines Handbook Aged Care Companion [Internet]. Adelaide: Australian Medicines Handbook Pty Ltd; 2020 [cited 2020 Mar]. Available from: https://agedcare.amh.net.au/chapters/musculoskeletal/fall-prevention?menu=hints

Common Fall-Risk-Increasing Drugs (FRIDs)

Disclaimer: The list provided is not exhaustive; for a more comprehensive list or further detailed information, consult medicine reference texts such as the current Australian Medicines Handbook.
Hyperlinks to relevant Australian Medicines Handbook (January 2020 edition) information are provided.

Psychotropic medicines			
Antidepressants	Monoamine oxidase inhibitors SSRIs	SNRIs Other antidepressants	Tricyclic antidepressants Comparative adverse effects
Antipsychotics	All Comparative adverse effects		
Anxiolytics/ Sedatives/ Hypnotics	Benzodiazepines	Z-drugs	Other • Suvorexant
Cardiovascular medicines			
Antiarrhythmics	• Amiodarone • Digoxin	• Flecainide • Sotalol	
Antihypertensives	ACE inhibitors Sartans Beta-blockers	Calcium channel blockers Thiazide & Related Diuretics	Other antihypertensives • Clonidine • Methyldopa • Prazosin
Heart failure medicines	Aldosterone antagonists	Loop diuretics	Other HF medicines • Ivabradine • Sacubitril with valsartan
Nitrates and other vasodilators	Nitrates	Pulmonary hypertension medicines	Other vasodilators
Other medicines			
Anticholinergics	Numerous drugs have anticholinergic effects	• Hyoscine (butylbromide & hydrobromide)	• Inhaled bronchodilators
Antihistamines	Sedating antihistamines	Less sedating antihistamines	
Parkinsonism Medicines	Dopamine agonists	Monoamine oxidase type B inhibitors	Anticholinergics • Benzatropine • Trihexyphenidyl
Opioids	All, alone or in combination		
Beta-blocker eye drops	• Betaxolol	• Timolol	
Genitourinary	Selective alpha blockers	Phosphodiesterase inhibitors	Anticholinergics
Hypoglycaemics	Sulfonylureas	Insulins	
Other	• Prochlorperazine		

REDUCING HARM FROM MEDICATIONS
Targeting Falls Poster

Are medications putting your older patients at risk of falls?

Maximise safety for your patients at risk of falling during their health care journey by completing the **Medication-related Falls Risk Assessment Tool (MFRAT)**

on admission → during admission → on discharge

This tool assesses the risk of medication-related falls & gives recommended actions.

Fall-Risk-Increasing Drugs (FRIDs) include medicines that can cause postural hypotension, drowsiness, dizziness, blurred vision or confusion.

Your patient may be at greater risk of medication-related falls if they have other falls risk factors.

You can help lower this risk

Let's take a closer look

Consider the following medicine classes that increase the risk of falls

- **Antipsychotics**
- **Antidepressants**
- **Anxiolytics/sedatives/hypnotics**
- **Anticholinergics**
- **Antihistamines**
- **Antihypertensives, antiarrhythmics, nitrates & other vasodilators**
- **Antivertigo medicines**
- **Beta-blocker eye drops**
- **Hypoglycaemics**
- **Parkinsonism medicines**
- **Opioids**
- **Genitourinary medicines**
- **and more...See the MFRAT**

PRIORITY

ASSESS and REFER

for a hospital-based medication review (as per MFRAT)

ACTION

Falls

8.3 Percentage of older patients that are appropriately assessed for risk of medication-related impairment of cognitive and/or physical function.

Purpose

This indicator addresses the effectiveness of processes for identifying risk of and preventing medication-related impairment of cognitive and/or physical function in older hospitalised patients.

Background and evidence

Older people carry a high burden of illness for which medications are indicated, along with increased risk of adverse drug reactions. Prescribing for older people requires careful assessment of the potential benefits and harms of all the person's medications. Anticholinergic and sedative medications are commonly used in older adults and are associated with adverse clinical outcomes, including impairment of cognitive and/or physical function, such as delirium and impairment of mobility and balance.[1-5] Delirium, a clinical syndrome characterised by inattention, disorientation, memory loss and acute cognitive dysfunction, is common in hospitalised older people.[6] Delirium is a serious potentially preventable condition associated with increased mortality and significant morbidity that prolongs hospitalisation and may lead to long-term cognitive decline and premature residential care admission.[7] Delirium is poorly recognised during hospitalisation.[8,9]

The National Safety and Quality Health Service (NSQHS) 2nd edition, Comprehensive Care Standard, requires that relevant health service organisations have systems that incorporate best-practice strategies for early recognition, prevention, treatment and management of cognitive impairment.[10] Delirium episodes during hospitalisation are considered hospital-acquired complications (HAC) with funding ramifications for health service organisations.[7]

Studies have shown an association between polypharmacy and delirium; and, between increasing exposure to certain medication classes, particularly sedatives and anticholinergics, and impairment in physical and/or cognitive function in older people.[6,11-15] Some medications associated with delirium may not have anticholinergic or sedative properties, for example, corticosteroids.

Commonly used risk assessment tools recommended for assessing risk of harm in older people in hospital do not adequately assess medication-related risk or categorise risk of medicine-related cognitive and/or physical impairment.[16] A number of tools have been developed to identify older patients at risk of developing medication-related harm.[17] The Drug Burden Index (DBI) is a tool that measures the overall dose of exposure to medications with anticholinergic and sedative properties and has shown association with impairment of cognitive and/or physical function.[1-5,13] Identifying risk and then reviewing and reducing the use of anticholinergic drugs before people develop any cognitive problems may be an important way to prevent the risk of cognitive impairment, especially significant for people who have an elevated risk of developing Alzheimer's disease.[15] The Medication-Related Impairment of Cognitive and/or Physical Function Risk Assessment Tool (FUN-RAT) developed by the NSW Therapeutic Advisory Group (TAG) can be used to stratify the degree of risk of medication-related impairment of cognitive and/or physical function and recommended actions according to risk category in the event health service organisations do not have a locally-approved tool.

Key definitions

Older patients refers to all patients aged 65 years and over.
Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills.[18,19]

Appropriately assessed for risk of medication-related impairment of cognitive and/or physical function means that there is explicit documentation in the medical record (or in another designated place as determined by local policy), of the patient's risk of medication-related impairment of cognitive and/or physical function including the degree of risk of impairment (high, moderate or low risk) and the identified anticholinergic and/or sedative medications (see Table 1 for further information).

Table 1: Requirements for appropriate assessment for risk of medication-related impairment of cognitive and/or physical function

• Documentation of the risk category assigned to the patient after using a risk assessment tool for medication-related impairment of cognitive and/or physical function. Facilities may have the DBI calculator in use or may use a locally approved tool. Alternatively, an example of a risk assessment tool for medication-related impairment of cognitive and/or physical function can be found here.

AND
• Documented rationale for risk category:
  • Documentation of the names of any identified likely contributory medications (including those that the patient has had temporarily withheld during hospital admission)
OR
  • Documentation of an absence of any of these medications.
All relevant information used for categorisation should be documented.
 	
(Note: a local risk assessment tool may use or include other reasons to determine medication-related risk categorisation).

AND • Completion by one or more health care professionals trained/credentialed (according to local policy) to identify anticholinergic and sedative medications
AND • Completion by the end of the next calendar day after admission.

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital for greater than 24 hours.

Exclusion criteria: Patients with length of stay less than 24 hours from the time of hospital admission, patients cared for in the emergency department.

Recommended data sources: Medical records, medication charts and medication management plans or reconciliation forms, drug burden index (DBI) tools, if available.

As lists of culprit medications may vary between and within health service organisations or change over time, it is recommended that prior to auditing, the auditor documents the medicines against which they will audit. The AMH Aged Care Companion has a section that discusses medicines that may decrease cognition and worsen confusion and contribute to the risk of delirium.[20] The NSW TAG FUN-RAT lists common anticholinergic, central nervous system (CNS) and sedative drugs that may impair cognitive and physical function in older patients.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.3 assists data collection and provides automatic indicator calculation.

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients that have a documented medication-related impairment of cognitive and/or physical function risk assessment identifying degree of risk.

Denominator = Number of older patients in sample.

Limitations and interpretation

This indicator only measures assessment at one point in time (within approximately 24 hours of hospital admission). However, preventable risk of inappropriate polypharmacy may continue or increase during hospitalisation and repeat assessment and intervention may be required.

There may be variation in the location of documented risk assessments. It is recommended that sites determine useful local data sources prior to auditing and consider collecting data about the location of documentation to inform quality improvement and future repeat auditing.

Electronic DBI tools may assess risk using currently prescribed medications only.

This indicator focuses only on the medication component of cognitive and/or physical impairment risk and other identified risk factors will still require addressing whether there are anticholinergic and sedative medications present or not.

This indicator does not measure the quality of the completed risk assessment e.g. documentation may not accurately identify relevant medications and measures only one component of the strategies designed to reduce cognitive and/or physical impairment in hospitalised patients. Results from this indicator should be interpreted in the context of the overall performance in reducing the risk of cognitive and/or physical impairment at the organisational level.

Collecting data regarding identified anticholinergic and sedative medications and/or different patient groups (e.g. patients admitted to specific wards such as geriatric wards, orthopaedic wards; or patients admitted under a specific team/specialty; or those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

See NSW TAG QUM Indicators 8.1 *Percentage of older patients that are appropriately assessed for risk of harm from inappropriate polypharmacy* and 8.2 *Percentage of older patients that are appropriately assessed for risk of medication-related falls* for further information regarding the management of older patients at high risk of other types of medication-related harms. Available here: https://www.nswtag.org.au/qum-indicators/

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Medication-related Impairment of Cognitive and/or Physical Function Risk Assessment Tool (FUN-RAT)

This tool enables categorisation of impairment of cognitive and/or physical function risk related to medication use and outlines recommended actions that should be taken as a result of risk categorisation.

Health Service Organisations (HSOs) may have other approved tools to assess medication-related cognitive and/or physical function impairment risk and identify patients at high risk. This tool may be amended/adapted by HSOs that do not have their own risk stratification tool.

Risk category	Identification criteria	Action required
High	The patient is prescribed (or has had temporarily withheld during hospital admission) **2 or more anticholinergic and/or sedative medications** **OR** The patient has a calculated **DBI score greater than or equal to 1,** for those with a DBI tool.	Referral for a hospital-based medication review. Other further medication-related interventions may also be appropriate.
Moderate	The patient is prescribed (or has had temporarily withheld during hospital admission) **only 1 anticholinergic or sedative medication** **OR** The patient has a **DBI score greater than 0 and less than 1** (i.e. 0 < DB I < 1), for those with a DBI tool.	Medication-related interventions such as medication review may be appropriate.
Low	The patient is prescribed (or the list of temporarily withheld medicines during hospital admission contains): **No anticholinergic or sedative medications** **OR** **The patient has a DBI score of 0,** for those with a DBI tool.	Non-medication-related interventions for reducing the risk of cognitive and/or physical impairment may still be applicable.

See accompanying table for a list of anticholinergic and central nervous system (CNS) medicines commonly associated with impairment of cognitive and/or physical impairment risk. Some medicines have both anticholinergic and sedative properties. Some medications associated with delirium may not have anticholinergic or sedative properties, for example, corticosteroids.

If further risk stratification is required due to limited resources for intervention, the addition of risk factors such as frailty, age over 75 years, previous ADR, recent and/or frequent hospitalisation may be added to the risk assessment.

NSW TAG QUM Indicator 8.3 provides further information about risks of medication-related impairment of cognitive and/or physical function. Available here: https://www.nswtag.org.au/qum-indicators/

Abbreviations: DBI = Drug Burden Index; ADR = Adverse Drug Reaction; QUM = Quality Use of Medicines

Common Medicines Associated with Impairment of Cognitive and/or Physical Function in Older Persons

Disclaimer: The list provided is not exhaustive; for a more comprehensive list or further detailed information, consult medicine reference texts such as the current Australian Medicines Handbook.
Hyperlinks to relevant Australian Medicines Handbook (January 2020 edition) information are provided.

Antiepileptic medicines	• **Phenytoin**	• **Carbamazepine**	• **Valproate**
Antidepressants	Tricyclic antidepressants Comparative adverse effects	Other antidepressants • Mianserin • Mirtazapine	
Antihistamines	Sedating antihistamines	Less sedating antihistamines	
Parkinsonism Medicines	• Levodopa • Amantadine • Entacapone	Dopamine agonists • Bromocriptine • Rotigotine	Anticholinergics • Benzatropine • Trihexyphenidyl
Antipsychotics	All Comparative adverse effects		
Anxiolytics/ Sedatives/ Hypnotics	Benzodiazepines	Z-drugs	
Gastro-intestinal medicines	• Hyoscine (hydrobromide or butylbromide)	• Prochlorperazine	
Genitourinary medicines	• Anticholinergics		
Opioids	All, alone or in combination		
Other	• Orphenadrine	• Pizotifen	

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1. Australian Medicines Handbook Aged Care Companion [Internet]. Adelaide: Australian Medicines Handbook Pty Ltd; 2020 [cited 2020 Mar]. Available from: https://agedcare.amh.net.au/appendices/appendix-anticholinergic-drugs
2. Australian Medicines Handbook [Internet]. Adelaide: Australian Medicines Handbook Pty Ltd; 2020 [cited 2020 Mar]. Available from: https://amhonline.amh.net.au/

REDUCING HARM FROM MEDICATIONS
Targeting Cognitive & Physical Functioning Poster

Are medications putting your older patients at risk of harm?

Maximise safety for your patients at risk of impairment of cognitive or physical function during their health care journey by completing the **Medication-related Impairment of Cognitive and/or Physical Function Risk Assessment Tool (FUN-RAT)**

on admission → during admission → on discharge

This tool assesses the risk & gives recommended actions.

Anticholinergic & sedative medicines are associated with impairment of cognitive &/or physical function, such as delirium and impairment of mobility and balance.

Your patient may be at HIGH risk if they are on TWO or more anticholinergic or sedative medicines or have a calculated Drug Burden Index (DBI) score ≥ 1.

You can help lower this risk

Let's take a closer look

Consider the following medicine classes that increase the risk of impairment of cognitive &/or physical function

- **Antiepileptic medicines**
- **Antidepressants**
- **Antihistamines**
- **Antipsychotics**
- **Anxiolytics/sedatives/hypnotics**
- **Gastrointestinal medicines**
- **Genitourinary medicines**
- **Parkinsonism medicines**
- **Opioids**
- **and others...See the FUN-RAT**

PRIORITY

ASSESS and REFER

for a hospital-based medication review (as per FUN-RAT)

ACTION

Cognitive & Physical Functioning

NSW Therapeutic Advisory Group Inc.

Criteria to Identify Patients at High Risk of Medication-Related Harm

This tool provides criteria to identify patients at high risk of medication-related harm. These patients should receive a hospital-based medication review (HBMR). In the event that a HBMR cannot be undertaken, a post-discharge medication review recommendation or referral should occur. In some circumstances, both hospital-based and post-discharge medication reviews may be appropriate.

This tool assists identification of sample patients when undertaking audits using NSW TAG QUM Indicators 8.4 and 8.5.

Health Service Organisations (HSOs) may have other approved tools to assess inappropriate polypharmacy and identify patients at high risk. This tool may be amended/adapted by HSOs that do not have their own risk stratification tool.

Types of medication-related harm	High risk criteria	Comments
Inappropriate polypharmacy	The patient's admission is due to a medication-related problem* **OR** The patient is prescribed: • 10 or more medicines; **OR** • 5 or more medicines where at least one is a locally designated HRM; **OR** • a HRM with no current supporting indication^.	See NSW TAG QUM Indicator 8.1 & NSW TAG IPRAT
Medication-related falls	Patient's vFRAT category or score is high **AND** The patient is prescribed (or has had temporarily withheld during hospital admission) **2 or more FRIDs.**	See NSW TAG QUM Indicator 8.2 & NSW TAG MFRAT
Medication-related cognitive and/or physical functional impairment	The patient is prescribed (or has had temporarily withheld during hospital admission) **2 or more anticholinergic and/or sedative medications** **OR** The patient has a calculated **DBI score greater than or equal to 1,** for those with a DBI tool.	See NSW TAG QUM Indicator 8.3 & NSW TAG FUN-RAT

*For the purposes of this risk assessment tool, medicine-related problems do not include intentional overdoses.

^A supporting indication for a HRM should be documented in the patient's past medical or surgical histories and/or history of their presenting complaint.

If further risk stratification is required due to limited resources for intervention, the addition of risk factors such as frailty, age over 75 years, previous ADR, recent and/or frequent hospitalisation may be added to the risk assessment.

See NSW TAG QUM Indicators 8.1 – 8.3 for further information about risks of medication-related harm. Available here: https://www.nswtag.org.au/qum-indicators/

Abbreviations: HRM = High Risk Medicine; QUM – Quality Use of Medicines; FRIDs = Fall-Risk-Increasing Drugs; DBI = Drug Burden Index; ADR = Adverse Drug Reaction

8.4 Percentage of older patients at high risk of medication-related harms that receive a hospital-based medication review and, if applicable, a deprescribing plan.

Purpose

This indicator addresses the effectiveness of processes that ensure older patients at high risk of medication-related harms receive timely and appropriate intervention to mitigate potential medication-related harm during hospitalisation and post-discharge.

Background and evidence

Older people are at greater risk of medication harm due to the numbers of medicines they are taking for complex and often multiple medical conditions, and the reduced ability of the ageing body to metabolise and excrete medicines.[1] Hospitalised older adults are often living with, or at risk of frailty and present with acute diseases, which may increase their susceptibility to medication-related harms and intensify the severity of drug-related illnesses.[2] It is estimated that in Australia during 2016 – 2017, 250,000 hospital admissions annually were a result of medication-related problems costing approximately $1.4 billion, and an additional 400,000 presentations to emergency departments were due to medication-related problems with 50% of this harm being preventable.[3] Inappropriate medicines (where the risk of harm outweighs the likely benefit for the individual patient) are a major burden to older adults and the health system and are low value health care.[4] Supervised withdrawal of inappropriate medicines (deprescribing) is safe and may improve quality of life in older people.[5]

Medications commonly implicated in medication-related harm in older patients include:

- Those designated as high risk medicines (HRMs) by local and jurisdictional policies.[6,7] HRMs commonly include anti-infectives (especially aminoglycoside antibiotics), electrolytes, all insulins, opioids, chemotherapeutic agents, anticoagulants and antipsychotic medications.[6]
- Fall-risk-increasing-drugs (FRIDs)[†8,9]
- Those which may decrease cognition and worsen confusion and/or impair physical function[‡10,11]

Various interventions to reduce potentially inappropriate prescribing in older patients have been studied including medication reviews and the intervention of geriatric services.[1] Results of these studies suggest these interventions are most effective when delivered using a multidisciplinary team framework and conducted in partnership with the patient, carer or family member. The National Safety and Quality Health Service (NSQHS) Standards 2nd edition, Medication Safety Standard, requires health service organisations to have processes to perform medication reviews, enable prioritisation of medication reviews based on clinical need and minimising the risk of medication-related problems, and support documentation of medication reviews and subsequent actions.[12]

[†]Examples of FRIDs include antipsychotics, antidepressants, anxiolytics/sedatives, dopamine D2 agonists, opioids, anticholinergic drugs, antihistamines, anti-vertigo drugs, hypoglycaemics, beta-blocker eye drops, anti-hypertensives, anti-arrhythmics, digoxin, nitrates and other vasodilators. The AMH Aged Care Companion has a section that discusses medicines that may contribute to risk of falls. A table in the NSW TAG tool MFRAT lists common FRIDs.

[‡]The AMH Aged Care Companion has a section that discusses medicines that may decrease cognition and worsen confusion. A table in the NSW TAG tool FUN-RAT lists common medicines associated with impairment of cognitive and/or physical function in older persons.

Key definitions

Older patients refers to all patients aged 65 years and over.
Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills.[13,14]

At high risk of medication-related harms means that, due to the medications that they are on or that have been temporarily withheld, the patient has been assessed as being at high risk of adverse effects such as adverse drug reactions, falls, and impairment of cognitive and/or physical function. NSW Therapeutic Advisory Group's (TAG's) tool, *Criteria to Identify Patients at High Risk of Medication-Related Harm*, can be used to assist identification of sample patients for auditing of in the event that health service organisations do not have locally-approved tool(s) for risk categorisation of medication-related harm.

Hospital-based medication review (HBMR) is a multidisciplinary responsibility and refers to the following person-centred process:

- a comprehensive and systematic review of all a patient's regular, when necessary, complementary and over the counter medications, including those that are temporarily withheld during hospital admission;
- contains findings and recommendations to optimise the patient's medicines and outcomes of therapy (i.e. optimising effectiveness and minimising harms) and includes implementation of strategies to mitigate risk of medication-related harm such as changes in doses or dosage regimens, adherence education, initiation of deprescribing plans and/or commencement of medicines for unmet clinical needs and takes into account a patient's values and preferences;
    - documentation must include supporting evidence or rationale for any strategies recommended or implemented
- is undertaken by an *appropriate health care professional or team*. (See definition below); AND
- should be conducted during hospitalisation and documented no later than by the end of the third calendar day after hospital admission. If delayed past three days, the HBMR should be conducted at least one calendar day prior to planned hospital discharge.[12,15]

The findings and recommended actions from the HBMR, that may include initiation of a deprescribing plan, must be explicitly documented in the medical record or in another designated place as determined by local policy. If there are no findings and recommendations to be made as a result of the HBMR, this must be explicitly stated.

HBMRs may use telehealth platforms e.g. video, telephone or review of scanned/electronic medical record documents to obtain necessary information and appropriate health care professional involvement (see below).

In the event that a HBMR cannot be undertaken, a post-discharge medication review recommendation or referral should occur (See NSW TAG QUM Indicator 8.5 and further reading below). In some circumstances, both hospital-based and post-discharge medication reviews may be appropriate.

Appropriate health care professional or team for medication review refers to:

- A geriatric, general medicine or clinical pharmacology team, or other medical practitioner as determined by local policy; OR
- An HBMR-approved pharmacist**:** a pharmacist who has been endorsed by the Director of Pharmacy (or delegate) as having appropriate expertise and/or experience to conduct aged care HBMRs.

Deprescribing plan describes documented guidance on how to withdraw (wean or cease) any inappropriate medicines identified from the hospital-based medication review under the supervision of a health care professional with the goal of managing polypharmacy and improving outcomes.

The deprescribing plan should:

- take into account the patient's preferences and document their agreement with the plan.
- be clearly and consistently documented in the patients' medical record (as per local policy) with appropriate amendments on the patient's medication chart.
- be documented in the discharge summary (including any amendments already made to the medication regimen) and medicine list to ensure continuity of care.

Resources to support implementation of deprescribing plans including guides and consumer information leaflets are available via:
http://www.nswtag.org.au/deprescribing-tools/.

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital for greater than 24 hours who are at high risk of medication-related harm.

Exclusion criteria: Patients with length of stay less than 24 hours from the time of hospital admission, patients cared for in the emergency department.

Recommended data sources: Medical records, medication charts, hospital-based medication reviews, and discharge documentation such as the discharge summary and patient's medication list.

As lists of HRMs, FRIDs, and medicines that impair cognitive and physical function may vary between and within health service organisations or change over time, it is recommended that prior to auditing, the auditor documents the medicines against which they will audit.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.4 assists data collection and provides automatic indicator calculation.

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients at HIGH risk of medication-related harms that have a documented hospital-based medication review and, if appropriate, a deprescribing plan.

Denominator = Number of older patients at HIGH risk of medication-related harms in sample.

[§]Australian accreditation bodies: the Australian Association of Consultant Pharmacy (AACP) and The Society of Hospital Pharmacists of Australia (SHPA).

Limitations and interpretation

Formal medication reconciliation processes that include obtaining a best possible medication history (BPMH), are essential in providing the optimal platform for a patient-centred and accurate HBMR. In some instances, these processes may be completed at the same time as an HBMR.

There may be patients not categorised as high risk of medication-related harm (e.g. at moderate or low risk of medication-related harm or those with social or other risk factors) who may still benefit from an HBMR. Health service organisations may also wish to measure recommendations and outcomes for HBMR in these patients.

Other interventions for individual patients apart from medication review may be implemented to reduce medication-related harm such as dose administration aids. Health service organisations may also wish to measure these interventions in addition to medication review provision.

Criteria for appointment as an HBMR-approved pharmacist may vary between health service organisations. The following is a suggested framework that could be used to demonstrate appropriate expertise and/or experience:

- current accreditation to conduct home medicines reviews from an approved accreditation body[§];
- number of years of experience in aged care;
- assessed as competent to undertake hospital-based medication review by a Clinical Competency Assessment Tool (ClinCAT)[**] assessment; and/or,
- number of continuing professional development (CPD) activities in aged care in recent past.

This indicator does not measure the quality of the completed HBMR. Results from this indicator should be interpreted in the context of the overall performance in reducing the risk of medicine-related problems in older hospitalised patients at the organisational level.

There may be variation in the location of documented HBMRs. Some organisations may have documentation templates or handover tools locally developed to record useful patient information, such as organisational programs or reports identifying hospital readmissions or other high risk patient cohorts. It is recommended that sites determine useful local data sources prior to auditing and consider collecting data about the location of documentation to inform quality improvement as well as any future repeat auditing.

[**]**Clin**ical **C**ompetency **A**ssessment **T**ool: a competency framework that supports Australian pharmacists training and development. It includes activities defined by national standards of clinical pharmacy practice that may be expected of a pharmacist practising at the general level. https://www.shpa.org.au/shpa-clincat

Collecting data for different patient groups (e.g. patients admitted to specific wards such as geriatric wards, orthopaedic wards; or, patients admitted under a specific team/specialty; or, those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

It is recommended that this indicator be read and measured in conjunction with NSW TAG QUM Indicator 8.5 *Percentage of older patients at high risk of medication-related harms with a recommendation for a post-discharge medication review, when hospital-based medication review is not performed*. Furthermore, it may be desirable for health service organisations to consider measurement of indicators 8.1, 8.2 and 8.3 at the same time as indicators 8.4 and 8.5 to demonstrate the systematic process of optimal medicines management of older patients.

See NSW TAG QUM Indicators 8.1 to 8.3 (Assessing risk of medication-related harms) and 8.6 and 8 .7 (Discharge procedures/actions for patients at high risk of medication-related harms) for further information regarding the management of older patients at high risk of medication-related harms.
Indicators available here:
https://www.nswtag.org.au/qum-indicators/

Further reading

Health services may be using a local tool or a published tool such as the Clinical Excellence Commission's Guide to Medication Review. This resource provides health service organisations and clinicians with processes to develop and perform medication reviews for patients. The Guide is intended to form a basis for a common understanding of medication review and provides guidance on best practice.[16] The World Health Organisation also provides a step-by-step approach to conducting a patient-centred medication review.[4]

The Department of Health Medication Management Reviews business rules for Home Medicines Review (HMR) and Residential Medication Management Review (RMMR) services may apply for post-discharge medication reviews.[17] See also The Society of Hospital Pharmacists of Australia's (SHPA's) *Hospital-initiated medication reviews (HIMR): Hospital pharmacy practice update* for a framework of medication review pathways.[18]

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8.5 Percentage of older patients at high risk of medication-related harms with a recommendation for a post-discharge medication review, when hospital-based medication review is not performed.

Purpose

This indicator addresses the effectiveness of processes intended to ensure older patients who were identified as having a high risk of medication-related harms and who did not receive a hospital-based medication review, have potential medication-related harm addressed following hospital discharge.

Background and evidence

Older people are at greater risk of medication harm due to the numbers of medicines they are taking for complex and often multiple medical conditions, and the reduced ability of the ageing body to metabolise and excrete medicines.[1] Hospitalised older adults living with frailty often present with acute diseases, which may increase their susceptibility to medication-related harms and intensify the severity of drug-related illnesses.[2] It is estimated that in Australia during 2016 – 2017, 250,000 hospital admissions annually were a result of medication-related problems costing approximately $1.4 billion, and an additional 400,000 presentations to emergency departments were due to medication-related problems with 50% of this harm being preventable.[3]

Inappropriate medicines (where the risk of harm outweighs the likely benefit for the individual patient) are a major burden to older adults and the health system and are low value health care.[4] Supervised withdrawal of inappropriate medicines (deprescribing) is safe and may improve quality- of-life in older people.[5]

Medications commonly implicated in medication-related harm in older patients include:

- Those designated as high risk medicines (HRMs) by local and jurisdictional policies.[6,7] HRMs commonly include anti-infectives (especially aminoglycoside antibiotics), electrolytes, all insulins, opioids, chemotherapeutic agents, anticoagulants and antipsychotic medications.[6]
- Fall-risk-increasing-drugs (FRIDs)[††8,9]
- Those which may decrease cognition and worsen confusion and/or impair physical function[‡‡10,11]

Various interventions to reduce potentially inappropriate prescribing in older patients have been studied including medication reviews and the intervention of geriatric services.[1] Results of these studies suggest these interventions are most effective when delivered using a multidisciplinary team framework and conducted in partnership with the patient, carer or family member. The National Safety and Quality Health Service (NSQHS) Standards 2nd edition, Medication Safety Standard, requires health service organisations to have processes to perform medication reviews, enable prioritisation of medication reviews based on clinical need and minimising the risk of medication-related problems, and support documentation of medication reviews and subsequent actions.[12]

While a hospital-based medication review is considered best practice in older hospitalised patients at high risk of medication-related harm, this may not always be possible e.g. due to staffing and/or time constraints.[1] In the event that a hospital-based medication review cannot be undertaken, it is recommended that a comprehensive post-discharge medication review is conducted. In some circumstances, both hospital-based and post-discharge medication reviews may be appropriate.

[††] Examples of FRIDs include antipsychotics, antidepressants, anxiolytics/sedatives, dopamine D2 agonists, opioids, anticholinergic drugs, antihistamines, anti-vertigo drugs, hypoglycaemics, beta-blocker eye drops, anti-hypertensives, anti-arrhythmics, digoxin, nitrates and other vasodilators. The AMH Aged Care Companion medicines that may contribute to risk of falls. A table in the relevant NSW TAG tool MFRAT lists common fall-risk-increasing drugs.

[‡‡] The AMH Aged Care Companion has a section that discusses medicines that may decrease cognition and worsen confusion. A table in the relevant NSW TAG tool FUN-RAT lists common medicines associated with impairment of cognitive and/or physical function in older persons.

Key definitions

Older patients refers to all patients aged 65 years and over.
Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills.[13,14]

At high risk of medication-related harms means that, due to the medications that they are on or that have been temporarily withheld, the patient has been assessed as being at high risk of adverse effects such as adverse drug reactions, falls, and impairment of cognitive and/or physical function. NSW Therapeutic Advisory Group's (TAG's) tool, *Criteria to Identify Patients at High Risk of Medication-Related Harm,* can be used to assist identification of sample patients for auditing of in the event that health service organisations do not have locally-approved tool(s) for risk categorisation of medication-related harm.

Post-discharge medication review (PDMR) refers to a review undertaken by an accredited pharmacist involving the patient's general practitioner and according to relevant business rules.

An accredited pharmacist can be accessed through:
- Home Medicines Review (HMR) – for community-based patients; OR
- Residential Medication Management Review (RMMR) – for residents of aged care facilities; OR
- A hospital outreach service (this may include telehealth services).

The PDMR recommendation, referral or initiated arrangements must be explicitly documented in the discharge summary or letter or another designated place as determined by local policy which ensures continuity of medicines management information.

Best practice recommends including the rationale for the PDMR recommendation/arrangement in the discharge documentation.

The Department of Health Medication Management Reviews business rules for HMR and RMMR services may apply for PDMRs.[15]

Hospital-based medication review (HBMR) is a multidisciplinary responsibility and refers to the following person-centred process:
- a comprehensive and systematic review of all a patient's regular, when necessary, complementary and over the counter medications, including those that are temporarily withheld during hospital admission;
- contains findings and recommendations to optimise the patient's medicines and outcomes of therapy (i.e. optimising effectiveness and minimising harms) and includes implementation of strategies to mitigate risk of medication-related harm such as changes in doses or dosage regimens, adherence education, initiation of deprescribing plans and/or commencement of medicines for unmet clinical needs and takes into account a patient's values and preferences;
  - documentation must include supporting evidence or rationale for any strategies recommended or implemented;
- is undertaken by an *appropriate health care professional or team.* (See definition specified in NSW TAG QUM Indicator 8.4); AND
- should be conducted during hospitalisation and documented no later than by the end of the third calendar day after hospital admission. If delayed past three days, the HBMR should be conducted at least one calendar day prior to planned hospital discharge.[12,16]

Further information regarding HBMR is documented in NSW TAG QUM *Indicator 8.4 Percentage of older patients at high risk of medication-related harms that receive a hospital-based medication review and, if applicable, a deprescribing plan. Available here: https://www.nswtag.org.au/qum-indicators/*

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital for greater than 24 hours who are at high risk of medication-related harm and who do not receive a hospital-based medication review.

Exclusion criteria: Patients with length of stay less than 24 hours from the time of hospital admission, patients cared for in the emergency department.

Recommended data sources: Medical records (including but not limited to specific referral forms or correspondence letters) and discharge documentation such as the discharge summary.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.5 assists data collection and provides automatic indicator calculation.

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients at HIGH risk of medication-related harms, who do not receive a hospital-based medication review, that have a documented recommendation or referral for a post-discharge medication review.

Denominator = Number of older patients at HIGH risk of medication-related harms, who do not receive a hospital-based medication review, in sample.

Limitations and interpretation

In some circumstances, both hospital-based and community-based medication reviews may be appropriate. Health service organisations may wish to also measure the extent and appropriateness of patients who receive a HBMR and a recommendation for PDMR.

It is acknowledged that there may be various referral systems in place that facilitate PDMR. However, for best practice continuity of medicines management, a recommendation, referral or initiated arrangements for a PDMR should be included in communications to the ongoing primary care provider, such as the discharge summary. A recommendation or referral for a PDMR does not guarantee that such a review will occur. Although this is likely to be outside the influence of the health service organisation, national/jurisdictional policy and programs and/or modified business rules for HMR and RMMR may facilitate referral and follow up pathways.[17]

There may be patients not categorised as high risk of medication-related harm (e.g. at moderate risk of medication-related harm or those with social or other risk factors) who may still benefit from a PDMR. Health service organisations may also wish to measure recommendations for PDMR in these patients. Other interventions for individual patients apart from medication review may be implemented to reduce medication-related harm such as dose administration aids.

Health service organisations may also wish to measure these interventions in addition to medication review provision.

Collecting data for different patient groups (e.g. patients admitted to specific wards such as geriatric wards, orthopaedic wards; or patients admitted under a specific team/specialty; or those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

It is recommended that this indicator be read and measured in conjunction with *NSW TAG QUM Indicator 8.4 Percentage of older patients at high risk of medication-related harms that receive a hospital-based medication review and, if applicable, a deprescribing plan*. Furthermore, it may be desirable for health service organisations to consider measurement of indicators 8.1, 8.2 and 8.3 at the same time as indicators 8.4 and 8.5 to demonstrate the systematic process of optimal medicines management of older patients.

See NSW TAG QUM Indicators 8.1 to 8.3 (*Assessing risk of medication-related harms*) and 8.6 and 8 .7 (*Discharge procedures/actions for patients at high risk of medication-related harms*) for further information regarding the management of older patients at high risk of medication-related harms.
Indicators available here:
https://www.nswtag.org.au/qum-indicators/

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8.6 Percentage of older patients whose discharge summaries contain a current, accurate and comprehensive list of medicines, including explanations for any medication therapy changes and, if applicable, details of a deprescribing plan.

Purpose

This indicator addresses the effectiveness of processes that promote continuity of care in medication management in older patients, with the aim to minimise adverse medicine events when care is transferred.

Background and evidence

Communicating medicines information is one of the Australian Pharmaceutical Advisory Council's *Guiding Principles to Achieve Continuity in Medication Management*. This indicator provides a measure of compliance with these guidelines.[1]

Adverse medicine events are commonly caused by lack of effective communication about medicines, especially in the transition between the hospital and community settings and older patients are especially at risk of this harm due to the large number of medicines they are frequently prescribed.[2,3] When older patients are transferred between hospitals or to their home or residential care facility, healthcare professionals must ensure that the healthcare professional taking over the patient's care is supplied with an accurate and complete list of the patient's medicines, including explanations for any medication changes and, if applicable, details of a deprescribing plan.[1] However, studies have shown that unintended discrepancies in the medication information provided on discharge are common with one study showing only 1 in 5 changes made to the medication regimen during hospital admission were explained in the discharge summary.[2] Omitting one or more medicines from a patient's discharge summary exposes patients to nearly 2.5 times the usual risk of readmission to hospital.[4] The process of medication reconciliation reduces opportunities for medication discrepancies and helps to ensure that the information communicated to ongoing care providers at transitions of care is verified and accurate.[5,6]

The National Safety and Quality Health Service (NSQHS) Standards 2nd edition, Medication Safety Standard, specifically actions 4.6 and 4.12 require that health service organisations have processes in place to reconcile medications at transitions of care and also distribute the current medicines list including any reasons for changes to receiving clinicians at transitions of care (respectively).[4]

Key definitions

Older patients refers to all patients aged 65 years and over.

Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills. [7,8]

List of medicines refers to the list of the patient's ongoing medicines that will be communicated to the healthcare professional(s) taking over the patient's care after discharge.

Box 1: Details of the list of medicines that should be documented in the discharge summary/letter

- The active ingredient names of all on-going medicines to be taken by the patient, including
  - dose
  - frequency (including time, if applicable)
  - duration (if applicable)
  - route (note: medicines by all routes; i.e. oral, topical, parenteral etc. should be listed)
  - formulation (including brand, if applicable)
  - indication (if applicable)
- All prescription, over-the-counter, and complementary medicines
- All regular, intermittent and "when necessary" medicines
- Any allergies and intolerances (including if no known allergies).

Current, accurate and comprehensive means that the list of medicines in the discharge summary contains all the information required for the healthcare professional(s) taking over care after discharge to continue the patient's pharmaceutical care safely and effectively.

To determine whether the list of medicines in the discharge summary is current, accurate and comprehensive, the auditor should compare the summary's list with the:

- medicines prescribed on all current medication charts at the point of discharge. Due consideration should be given to the documented discharge plan, including medicines started, ceased or altered on discharge; AND
- medication management plan or reconciliation form (if used); AND
- patient's admission medication history/list of medicines taken prior to presentation to hospital to check that any medicines withheld during hospitalisation, are included as appropriate and that all changes are reconciled.

All medicines, doses and frequencies should match. Any discrepancies that cannot be reconciled by the auditor should be taken to mean that the list of medicines in the discharge summary is not current, accurate and comprehensive.

Medication therapy changes refers to changes to the patient's pre-admission medication regimen that are intended to continue after discharge. Differences between admission and discharge medicines should be assumed to represent medicine therapy changes.

Changes may include:

- any amendments to the dose, frequency, duration, form or route of a medicine taken prior to admission
- weaning of a medicine following a hospital-based medication review with a view to stopping the medicines following hospital discharge
- withholding of a medicine taken prior to admission
- cessation of a medicine taken prior to admission
- initiation of a new medicine
- recommencement of a medicine that was intentionally withheld prior to admission.

If there are no changes to the patient's pre-admission medication regimen as a result of hospital admission, this should be explicitly documented.

To determine preadmission medications in circumstances where there is no documented Best Possible Medication History available, the auditor should use the medication list documented by a clinician on admission, and if this is also not available then the first medications prescribed on admission may be used. It is recommended that auditors record the source of admission medications in these circumstances.

Note: Medication therapy changes do not include medications that are only prescribed while the patient is an inpatient such as venous thromboembolism prophylaxis and perioperative antibiotics.

Explanations for changes should include sufficient detail to inform future management decisions and should be explicitly documented in the discharge summary or discharge letter.

Specific details should be provided on the:

- medicine(s) involved;
- intended action to be undertaken regarding these medicine changes (e.g. wean, cease etc.);
- time frame of when these actions should occur/over what time period;
- rationale for these changes; and
- patient or carer consent or agreement (if applicable).

Deprescribing plan describes documented guidance on how to withdraw (wean or cease) any inappropriate medicines identified from the hospital-based medication review under the supervision of a health care professional with the goal of managing polypharmacy and improving outcomes.

The deprescribing plan should:

- take into account the patient's preferences and document their agreement with the plan.
- be clearly and consistently documented in the patients' medical record (as per local policy) with appropriate amendments on the patient's medication chart.
- be documented in the discharge summary/letter (including any amendments already made to the medication regimen) and medicine list to ensure continuity of care.

Resources to support implementation of deprescribing plans including guides and consumer information leaflets are available via:
http://www.nswtag.org.au/deprescribing-tools/.

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital for greater than 24 hours who are taking one or more medicines at discharge.

Exclusion criteria: Patients transferred to another acute care facility; patients cared for in the emergency department.

Recommended data sources: Medical records, medication charts, medication management plans or reconciliation forms, hospital-based medication reviews, discharge summaries and discharge prescriptions.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.6 assists data collection and provides automatic indicator calculation.

A summary of documentation requirements for the list of medicines to meet NSW TAG QUM Indicator 8.6 is shown below in Box 2 to assist data collection.

Box 2: Requirements to meet NSW TAG QUM Indicator 8.6 specifications

The list of medicines in the discharge summary should explicitly document:
• the active ingredient names of all on-going medicines to be taken by the patient and relevant details (see Box 1); AND
• allergies and intolerances (including if no known allergies); AND
• medication therapy changes OR absence of medication therapy changes; AND
• explanations for any medication therapy changes (if applicable); AND
• a deprescribing plan (if applicable).

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients taking medicine(s) at discharge whose discharge summaries contain a current, accurate and comprehensive medicines list, including explanations for any medication changes and, if applicable, details of a deprescribing plan.

Denominator = Number of older patients taking medicines at discharge in sample.

Limitations and interpretation

There may be a number of ways to identify a sample of patients taking medicines at discharge. Certain sampling methods may lead to inadvertent exclusion of some patients. For example, the use of pharmacy dispensing records will exclude those patients who did not have their discharge medicines dispensed by the health service organisation. It is recommended that patients be identified using inpatient medication charts and/or medication management plans in combination with the medical record.

Performance against this indicator is likely to be improved if medicines lists in discharge summaries undergo a process of medication reconciliation. Medication reconciliation is an essential component of effective clinical handover and involves matching the medicines that the patient should be prescribed with those that are actually documented and resolving any discrepancies. This process helps to prevent harm by improving continuity of care and reducing the opportunity for medication errors. Sites may wish to collect data for the number of discrepancies that cannot be reconciled by the auditor.

Documenting reasons for all medication therapy changes is facilitated by a process of medication reconciliation at discharge. This, in turn, is facilitated by having an accurate medication history (e.g. Best Possible Medication History, BPMH). To determine preadmission medications in circumstances when there is no documented BPMH available, the auditor should use the medication list documented by a clinician on admission, and if this is not available then the first medications prescribed on admission may be used. It is recommended that auditors record the source of admission medications in these circumstances. It may be useful to collect this indicator concurrently with *National QUM Indicator 3.1 Percentage of patients whose current medicines are documented and reconciled at admission.*

Collecting data for different patient groups (e.g. patients admitted to specific wards such as geriatric wards, orthopaedic wards; or patients admitted under a specific team/specialty; or those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

It is recommended that this indicator be read and measured in conjunction with NSW TAG QUM *Indicator 8.7 Percentage of older patients who receive a current, accurate and comprehensive medication list, including explanations for any medication changes and, if applicable, details of a deprescribing plan, at the time of hospital discharge.* Available here: https://www.nswtag.org.au/qum-indicators/

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8.7 Percentage of older patients who receive a current, accurate and comprehensive medication list, including explanations for any medication changes and, if applicable, details of a deprescribing plan, at the time of hospital discharge.

Purpose

This indicator addresses the effectiveness of processes intended to ensure that patients and their carers receive adequate medicines information for safe and effective medication management after hospital discharge, and to promote continuity of care in medication management, with the aim to minimise adverse medicine events when care is transferred.

Background and evidence

Communicating medicines information is one of the Australian Pharmaceutical Advisory Council's *Guiding Principles to Achieve Continuity in Medication Management*. This indicator provides a measure of compliance with these guidelines.[1]

Adverse medicine events are commonly caused by lack of effective communication about medicines, especially in the transition between the hospital and community settings and older patients are especially at risk of this harm due to the large number of medicines they are frequently prescribed.[2,3] When older patients are transferred between hospitals or to their home or residential care facility, healthcare professionals must ensure that the healthcare professional taking over the patient's care is supplied with an accurate and complete list of the patient's medicines, including explanations for any medication changes and, if applicable, details of a deprescribing plan.[1] However, studies have shown that unintended discrepancies in the medication information provided on discharge are common with one study showing only 1 in 5 changes made to the medication regimen during hospital admission were explained in the discharge summary.[2] The process of medication reconciliation reduces opportunities for medication discrepancies and helps to ensure that the information communicated to ongoing care providers at discharge is verified and accurate.[4]

The National Safety and Quality Health Service (NSQHS) Standards 2nd edition, Medication Safety Standard, specifically actions 4.6 and 4.12 require that health service organisations have processes in place to reconcile medications at transitions of care and also distribute the current medicines list including any reasons for changes to receiving clinicians at transitions of care (respectively) as well as provide patients on discharge with a current medicines list and the reasons for any changes.[5]

Key definitions

Older patients refers to all patients aged 65 years and over.
Note: Other age definitions may be appropriate for some high risk patient groups e.g. 50 years and older for Aboriginal and Torres Strait Islander people, residents of aged care facilities or patients with low literacy skills.[6,7]

Medication list refers to a list of the medicines provided to the patient or carer that includes the information outlined in Box 1.

Box 1: Details of the medication list that should be documented

- All on-going medicines to be taken by the patient by all routes i.e. oral, topical, parenteral etc., including for each medicine the:
  - dose
  - frequency (including time if applicable)
  - indication
- All prescription, over-the-counter, and complementary medicines
- All regular, intermittent and "when necessary" medicines
- Any allergies and intolerances (including if no known allergies).

The active ingredient name should be provided for each medicine and brand names should be listed as appropriate. The list must be in a format that is easily understood by lay persons and should not contain medical terminology or jargon.

Current, accurate and comprehensive means that the discharge medication list contains all the information required for the patient or their carer to understand their medication regimen and effectively and safely manage their medicines after hospital discharge.

To determine whether the medication list is current, accurate and comprehensive, the auditor should compare the patient discharge medication list with the:

- medicines prescribed on all current medication charts at the point of discharge. All medicines, doses and frequencies should match up, taking into consideration, the documented discharge plan, including medicines started, ceased or altered at time of discharge (i.e. medication therapy changes, see below for definition); AND
- patient's admission medication history/list of medicines taken prior to presentation to hospital to check that any medicines withheld on or during admission have been included where appropriate and that all changes can be accounted for.

All medicines, doses and frequencies should match. Any discrepancies that cannot be accounted for by the auditor should be taken to mean that the discharge medication list is not current, accurate and comprehensive.

Medication therapy changes refers to changes to the patient's pre-admission medication regimen that are intended to continue after discharge. Differences between admission and discharge medicines should be assumed to represent medicine therapy changes.

Changes may include:

- any amendments to the dose, frequency, form or route of a medicine taken prior to admission
- weaning of a medicine following a hospital-based medication review with a view to stopping the medicine following hospital discharge
- withholding of a medicine that was taken prior to admission
- cessation of a medicine that was taken prior to admission
- initiation of a new medicine
- recommencement of a medicine that was intentionally withheld prior to admission.

If there are no changes to the patient's pre-admission medication regimen as a result of hospital admission, this should be explicitly documented.

To determine preadmission medications in circumstances where there is no documented Best Possible Medication History available, the auditor should use the medication list documented by a clinician on admission, and if this is also not available then the first medications prescribed on admission may be used. It is recommended that auditors record the source of admission medications in these circumstances.

Note: Medication therapy changes does not include medications that are only prescribed while the patient is an inpatient such as venous thromboembolism prophylaxis and perioperative antibiotics.

Explanations for changes should include sufficient detail to inform future management decisions and should be explicitly documented in the discharge summary or discharge letter.

Specific details should be provided on the:

- medicine(s) involved;
- intended action to be undertaken regarding these medicine changes (e.g. wean, cease etc.);
- time frame of when these actions should occur/over what time period;
- rationale for these changes; and
- patient or carer consent or agreement (f applicable).

Deprescribing plan describes documented guidance on how to withdraw (wean or cease) any inappropriate medicines identified from the hospital-based medication review under the supervision of a health care professional with the goal of managing polypharmacy and improving outcomes.

The deprescribing plan should:

- take into account the patient's preferences and document their agreement with the plan.
- be clearly and consistently documented in the patients' medical record (as per local policy) with appropriate amendments on the patient's medication chart.
- be documented in the discharge summary/letter (including any amendments already made to the medication regimen) and medicine list to ensure continuity of care.

Resources to support implementation of deprescribing plans including guides and consumer information leaflets are available via:
http://www.nswtag.org.au/deprescribing-tools/.

At the time of means the medication list is produced and provided to the patient within 24 hours prior to or at the patient's discharge.

Hospital discharge means transfer of care from an inpatient facility to home or another site of community-based care, such as a residential aged care facility, but not transfer to another acute care facility.

Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital for greater than 24 hours who are taking one or more medicines at discharge.

Exclusion criteria: Patients transferred to another acute care facility; patients cared for in the emergency department.

Recommended data sources: Medical records, medication charts, medication management plans or reconciliation forms, hospital-based medication reviews, discharge summaries, discharge prescriptions, copies of medication lists issued (if applicable). Differences between admission and discharge medicines should be assumed to represent medicine therapy changes.

The data collection tool (DCT) for NSW TAG QUM Indicator 8.7 assists data collection and provides automatic indicator calculation.

A summary of documentation requirements for the medication list to meet NSW TAG QUM Indicator 8.7 is shown below in Box 2 to assist data collection.

Box 2: Requirements to meet NSW TAG QUM Indicator 8.7 specifications

The discharge medication list provided to patients or carers should explicitly document:
• all on-going medicines to be taken by the patient, including the dose, frequency and indication for each medicine (see Box 1); AND
• allergies and intolerances (including if no known allergies); AND
• medication therapy changes OR absence of medication therapy changes; AND
• explanations for any medication therapy changes (if applicable); AND
• a deprescribing plan (if applicable).

Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

Numerator = Number of older patients who received a current, accurate and comprehensive medicines list, including explanations for any medication changes and, if applicable, details of a deprescribing plan, at the time of hospital discharge.

Denominator = Number of older patients taking medicines at discharge in sample.

Limitations and interpretation

There may be a number of ways to identify a sample of patients taking medicines at discharge. Certain sampling methods may lead to inadvertent exclusion of some patients. For example, the use of pharmacy dispensing records will exclude those patients who did not have their discharge medicines dispensed by the hospital. It is recommended that patients be identified using inpatient medication charts and/or medication management plans in combination with the medical record.

There may be variation in local practices regarding medication lists e.g. the location of documented evidence regarding distribution of medication lists or whether copies of patient medication lists are kept for record keeping purposes. It is recommended that sites determine useful local data sources prior to data collection and consider collecting data about the location of this documentation to inform quality improvement as well as any future repeat auditing.

When it is not possible to provide discharge patient medicine lists to all discharged patients, patients should be prioritised according to their risk. Health service organisations should implement policies to determine which patients are provided with discharge medication lists, for example, patients over 65 years of age, taking multiple medicines, with changes to their medicines during the admission, suspected of non-adherence or

taking high-risk medicines or as identified by a an appropriate health professional as requiring one on discharge. When using this indicator, organisations may wish to select specific patient groups to audit in accordance with their local policy. Reasons why a patient medicine list is not supplied may be collected for further information.

The patient medicine list should also document the indication, intended duration of treatment (if applicable) and specific administration advice for each medicine. Although equally important, these additional details are not audited in this indicator. The indicator does not assess the patient's understanding of the information provided in the medicine list.

Performance against this indicator is likely to be improved if patient discharge medicine lists undergo a process of medication reconciliation. Medication reconciliation is an essential component of effective clinical handover and involves matching the medicines that the patient should be prescribed with those that are actually documented and resolving any discrepancies. This process helps to prevent harm by improving continuity of care and reducing the opportunity for medication errors. Sites may wish to collect data for the number of discrepancies that cannot be accounted for by the auditor.

Documenting reasons for all medication therapy changes is facilitated by a process of medication reconciliation at discharge. This in turn is dependent on having an accurate medication history and list of current medicines at admission. It may be useful to collect this indicator concurrently with *National QUM Indicator 3.1 Percentage of patients whose current medicines are documented and reconciled at admission.*

Details of (or reference to) the deprescribing plan should also be provided in the medicine list. This may include provision of a separate patient specific deprescribing plan in conjunction with the medicine list (e.g. consumer information leaflets available via: http://www.nswtag.org.au/deprescribing-tools/).

Collecting data for different patient groups (e.g. patients admitted to specific wards such as geriatric wards, orthopaedic wards; or patients admitted under a specific team/specialty; or those admitted due to medication-related harm) may inform post-audit interventions (this may be documented in the 'Comments' column of the DCT).

Some performance monitoring and/or quality improvement projects may wish to include additional risk criteria or limit the patient sample e.g. patients with specific conditions, prescribed certain medication classes, or under the care of a specific specialty.

It is recommended that this indicator be read and measured in conjunction *with NSW TAG QUM Indicator 8.6 Percentage of older patients whose discharge summaries contain a current, accurate and comprehensive list of medicines, including explanations for any medication therapy changes and, if applicable, details of a deprescribing plan.*
Available here: https://www.nswtag.org.au/qum-indicators/

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Patient Reported Experience Measures on Deprescribing and Medication Changes

Purpose

To obtain patients' views and observations, in particular their awareness of, involvement in and information provision on deprescribing and medication changes during health care services they have recently received.

Background and evidence

Polypharmacy is common among older patients in Australia and is associated with adverse outcomes.[1] Several studies have reported high prevalence of potentially inappropriate medications among older patients in hospital.[2,3] Recent studies have indicated that older patients are willing to have one of their medications deprescribed if their clinician indicates it is possible.[4-6] Hospitalisation provides an opportunity for specialist input into medication review to individualise and rationalise therapy for older patients, which often involves deprescribing.

Adverse medicine events are commonly caused by a lack of effective communication about medicines, and commonly occur in the transition between the hospital and community settings. Older patients are especially at risk due to the large number of medicines they are frequently prescribed.[7,8] Whenever possible, shared decision-making regarding any proposed medicine changes should occur during hospitalisation. This process, together with timely transfer of accurate and comprehensive medication documentation at hospital discharge, including explanations for any medication changes and, if applicable, details of a deprescribing plan should reduce adverse events caused by ineffective communication.[9]

The National Safety and Quality Health Service (NSQHS) Standards 2nd edition, Partnering with Consumers, specifically actions 2.6 and 2.7, require that health service organisations have systems, to support the delivery of care to the individual patient, that are based on partnering with that patient.[10] Patients can be partners in their own care to the extent that they choose. Moreover, the health service organisation is expected to support its workforce to form partnerships with patients and carers so that patients can be actively involved in their own care.

Healthcare is changing in line with the expectations and needs of people accessing care. Patient-reported experience measures (PREMs) are used to obtain patients' views and observations on aspects of health care services they have received. The Australian Charter of Healthcare Rights outlines the right to partnership in care and information provision.[10] Increased patient and/or carer involvement can encourage greater patient and/or carer empowerment and participation in personal care, adherence to recommended treatment and monitoring of prescriptions and medication doses.[11]

The Australian Commission on Safety and Quality in Health Care (ACSQHC) developed the Australian Hospital Patient Experience Question Set (AHPEQS) in 2017 as a tool to assess the quality of patient experiences during a recent hospital stay or visit to a healthcare service.[12] The PREMs in this document were developed using the same format as the AHPEQS for ease of use and potential incorporation into existing patient-based surveys.

Data collection for local use

Please refer to the *Technical specifications for Australian Hospital Patient Experience Question Set (AHPEQS) use* for guidance on preparing a survey, sample selection, sample size, survey collection modes and other considerations.[13]

Inclusion criteria: Patients aged 65 years and over, or other ages for high risk groups as appropriate, admitted to hospital, and who have a length of stay in hospital greater than 24 hours from the time of hospital admission and are taking at least one regular medicine at admission.

Exclusion criteria: Patients with length of stay less than 24 hours from the time of hospital admission; patients cared for in the emergency department only; patients admitted for more than 24 hours and are not taking a regular medicine at admission.

Recommended data sources: Patients (or carers) on day of discharge or within 3 days of discharge. (If possible, reconciled discharge medication list and accompanying medication information in the discharge summary to check accuracy of information).

Data collection for inter-hospital comparison

The PREMs may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

Calculation of PREMs

Calculate proportion of responses to each question.

Limitations and interpretation

Patient's responses to questions may be inaccurate although an accurate reflection of their perception. If possible, check the accuracy of their response by checking a reconciled discharge medication list. However, it may also be challenging to retrospectively check the accuracy of a patient's response. It is suggested that if the auditor, is able to check accuracy, that they also collect data regarding accuracy for all patients in the sample.

Consider the information collected for Questions 2 and 3 separately as different interventions may be required for improvement.

Related information and further reading

Translators may be required to ensure true representation of a hospital's casemix.

The Australian Charter of Healthcare Rights, describes the rights that consumers, or someone they care for, can expect when receiving health care.

The Australian Hospital Patient Experience Question Set (AHPEQS) is a patient experience survey question set developed by the (ACSQHC).

The *Technical specifications for Australian Hospital Patient Experience Question Set (AHPEQS) use* provides guidance for survey administrators in health organisations and healthcare services on best practice implementation of the AHPEQS.

PREMs Questions

Question 1
Do you know whether any of your medicines were reduced or stopped while you were in hospital?

Response options
- ☐Yes
- ☐No
- ☐Unsure

[if answer is No or Unsure, then no further questions; if answer is Yes, then answer Questions 2 and 3]

Question 2
I was involved as much as I wanted in making decisions about reducing or stopping one or more of my medicines while I was in hospital.

Response options
- ☐Yes
- ☐No
- ☐Unsure

[only for those answering Yes to Question 1]

Question 3
I am satisfied with the level of information provided to me about reducing or stopping one or more of my medicines while I was in hospital.

Response options
- ☐Yes
- ☐No
- ☐Unsure

[for those answering Question 2, regardless of answer to question 2]

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  - NSW TAG MedSMART Support Group
  - The Society of Hospital Pharmacists of Australia Committee of Specialty Practice in Geriatric Medicine
  - The Society of Hospital Pharmacists of Australia Committee of Specialty Practice in Transitions of Care

Field Test Hospitals

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- Calvary Mater Newcastle, NSW
- Canterbury Hospital, NSW
- Concord Repatriation General Hospital, NSW
- Cooma Hospital, NSW
- Corowa District Hospital, NSW
- Deloraine District Hospital, TAS
- Dubbo Health Service – Dubbo Hospital, NSW

- Flinders Island Multipurpose Centre, TAS
- Goulburn Base Hospital, NSW
- John Hunter Hospital, NSW
- Midlands Multi-Purpose Health Centre, TAS
- Redcliffe Hospital, QLD
- Royal Brisbane and Women's Hospital, QLD
- Royal North Shore Hospital, NSW
- Shoalhaven District Memorial Hospital, NSW
- Smithton District Hospital, TAS
- South East Regional Hospital, NSW
- The Tweed Hospital, NSW
- Young Hospital, NSW

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