Indicator 4: Use of nine or more medicines

Objective
To monitor the proportion of residents using nine or more different medicines and trends.

Recommended reference range
Nine or more medicines per 1,000 occupied bed days

<table>
<thead>
<tr>
<th>Measure</th>
<th>Lower target rate</th>
<th>Upper limit rate</th>
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</thead>
<tbody>
<tr>
<td>9+ medicines</td>
<td>2.1</td>
<td>3.5</td>
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</table>

Why monitoring medicine use is important
Polypharmacy is a considerable health issue among older people. People aged 65 years and over are the highest consumers of multiple medicines in Australia.

There are a number of outcomes that may be fully or partly attributable to polypharmacy, including:
- increased incidence of and susceptibility to adverse drug reactions and events
- increased risk of falls
- increased risk of weight loss
- non-adherence
- an inability to excrete and metabolise medicines.

There are several reasons why polypharmacy can occur in older people, including:
- inappropriate prescribing
- necessity to appropriately manage diseases
- medicine hoarding by residents, and non-disclosure of medicines they are already taking
- excessive duration of medicine use without review
- inappropriate use of medicines, such as taking medicines that are no longer necessary or are being taken from a stored stock.

Key facts
When using the common definition of nine or more medicines, the reported prevalence of polypharmacy in residential aged care facilities ranged from 13–75 per cent.

Polypharmacy increases the risk of hospitalisation and outpatients and in turn increases costs to the patient and to the healthcare system.

In some situations polypharmacy may in fact be necessary to ensure a quality health outcome for the individual.
How to collect and report this indicator

Data collection

• There is one measure to be collected through a quarterly audit of resident medication charts and/or administration records.

• Conduct an audit on one nominated week in the quarter.

• Repeat this at three-monthly intervals.

Exclusions

The following are excluded:

• lotions/creams/ointments used in wound care

• dietary supplements (see definition below), including those containing vitamins

• alcohol (even if it is written up on medication chart)

• short-term medicines, such as antibiotics, temporary eye drops

• PRN medicines (note: PRN medicines used regularly should be reviewed by the prescriber).

Make sure you include respite residents.

Quick tips for data accuracy

• This indicator requires that the medicines for each resident are actually counted.

• The audit should be conducted by a member of staff who has an understanding of the definition of a medicine and can interpret the medication administration chart and/or record for any exclusions.

• Staff must understand and use the same exclusions when counting the number of medicines that each resident is prescribed.

• PRN medicines are excluded, but if residents regularly take the same PRN, talk to the general practitioner to determine the need for ongoing regular administration and monitoring of effectiveness.

Definition of key data elements

Medicine is defined as a chemical substance given with the intention of preventing, diagnosing, curing, controlling or alleviating disease or otherwise enhancing the physical or mental welfare of people.

It includes prescription and non-prescription medicines, including complementary health care products, irrespective of the administered route.

Source: Australian Pharmaceutical Advisory Council 2005, Guiding principles to achieve continuity in medication management.

Dietary supplement is defined as a product intended for ingestion that contains a ‘dietary ingredient’ intended to add further nutritional value to supplement the diet.
Counting rule

- Count each different medicine that is ordered. Note that there are a number of exclusions (see below).
- Make sure that different doses or dosages of the same medicine are not counted as different medicines.
- Medicines can be administered by a number of different routes.
- Each medicine should be counted once, regardless of the route of administration, for example:
  - orally
  - nasally
  - ocular
  - aurally
  - inhalation
  - intramuscular
  - intravenously
  - subcutaneously
  - dermally (patches)
  - rectally
  - vaginally.

Important note

If the audit identifies a resident using nine or more medicines, this is a trigger to decide whether a review of the resident’s medication is needed.

This would need to be discussed with a resident’s general practitioner and family or advocate.
### Data recording sheet

<table>
<thead>
<tr>
<th>Name of service:</th>
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<tbody>
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<td></td>
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<table>
<thead>
<tr>
<th>Reporting quarter end date:</th>
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<table>
<thead>
<tr>
<th>Audit date:</th>
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**Measure: Number of residents using nine or more medicines**

<table>
<thead>
<tr>
<th>Number of residents whose charts were audited</th>
<th>Number of residents using nine or more different medicines</th>
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**Comments**

- **Optional** – any comments.
Use of nine or more medicines
Risk management framework

Risk identification

What is the risk of using nine or more medications.

The more medications an individual consumes the higher the risk of experiencing an adverse drug event.

Analysis

Associated factors:
- Inappropriate prescribing
- Disease management
- Medication hoarding and non-disclosure of medication use
- Excessive duration of drug use without review
- Inappropriate drug use

Identify if any of these factors are present. Implement appropriate management and examine causative factors in order to manage the risk of using nine or more medicines.

Adverse events

Potential impact:
- Adverse drug events
- Increase risk of falls
- Non-compliance with medication use
- Risk of weight loss
- Inability to excrete and metabolise medications

Factors associated with using nine or more medicines are investigated to manage the use of nine or more medicines.

Risk control

Monitoring

- Quality Indicator Process data and audit
- Regular GP review
- Independent pharmacist reviews
- Standing agenda item on Medication Advisory Committee

Indicator data and audit identifies risk potential and is also used to demonstrate improvements to managing risk.

There are a range of resources and information available to assist residential aged care services manage residents' medicines

Treatment
Resources

A range of resources are available to assist residential aged care services manage residents’ medicines.

Department of Health and Ageing 2012, *Guiding principles for medication management in residential aged care facilities*, Commonwealth Government of Australia, Canberra:


Pharmacy Guild of Australia, ‘Residential Medication Management Review Programme and Quality Use of Medicines Programme’:  
Evidence to support this indicator

This indicator highlights the use of multiple medicines as a potentially major health concern for older people.

There is substantial evidence and research that demonstrates polypharmacy as having significant impacts for older people living in residential aged care.

Defining polypharmacy

Polypharmacy refers to either the use of multiple medicines, or the use of more medicines than are clinically indicated (Hajjar et al. 2007).

There is no universally accepted definition of polypharmacy.

A common definition of polypharmacy in community-based settings is use of five or more medicines (Gnjidic et al. 2012), whereas a common definition in residential aged care facilities is use of nine or more medicines.

Polypharmacy in aged care

Polypharmacy is highly prevalent in residential aged care (Elliot 2006). When using the common definition of nine or more medicines, the reported prevalence of polypharmacy in residential aged care facilities has ranged from 13–75 per cent (Bronskill et al. 2012; Dwyer et al. 2010; Field et al. 2001; Finkers et al. 2007; Gellad et al. 2012; Hanlon et al. 2009; Hosia-Randell et al. 2008, Lau et al. 2004, Moore et al., 2014, Monroe at al. 2011; Nguyen et al. 2006; Tamura et al. 2011).

A Tasmanian study, which defined polypharmacy as using ten or more medicines, reported that the prevalence of polypharmacy was 25 per cent among recipients of pharmacists’ residential medication management reviews (Stafford et al. 2012).

A retrospective audit of residents admitted to hospital from Australian residential aged care facilities found that 54 per cent used ten or more medicines (Lane et al. 2013).

A Victorian study conducted in four aged care facilities reported that 39 per cent of residents used nine or more medicines on a regular basis (Moore et al. 2014).

Polypharmacy is important to consider because minimising unnecessary medicine use in aged care facilities can help to maintain health-related quality of life and reduce hospitalisation (Pitkälä et al. 2014).

Adverse clinical events associated with polypharmacy

Polypharmacy has been associated with increased adverse drug reactions (ADRs), adverse drug events (ADEs), non-adherence, functional decline and geriatric syndromes including cognitive impairment, falls, urinary incontinence and poorer nutritional status in older adults (Shah and Hajjar 2012).

Between 2–3 per cent of all hospital admissions in Australia are estimated to be due to medicine-related events, rising to between 20–30 per cent in people aged 65 and over (Roughead and Semple 2009; Australian Commission on Safety and Quality in Health Care 2013).

Polypharmacy increases the risk of hospitalisation and outpatient visits and in turn increases costs to the patient and to the healthcare system (Shah and Hajjar 2012).

Causes of polypharmacy

There are a number of reasons why polypharmacy occurs.

One important reason is due to the continuation of long-term medicines for which the benefits no longer outweigh the risks. However, it should be noted that in some situations polypharmacy may in fact be necessary to ensure a quality health outcome for the individual (Holbeach and Yates 2010; Bolton et al. 2004; Anthierens et al. 2010).

As Corsonello et al. (2009) point out, ‘balanced and safe prescribing is difficult to achieve in frail older adults with multiple comorbid diseases’ (p. 31).

Authors such as Le Couteur et al. (2010), Holbeach and Yates (2010), Harugeri et al. (2010), Elliot (2006), Somers et al. (2010), Jyrkkä et al. (2009), and Simonson (2009) cite the following factors that influence polypharmacy:

- inappropriate prescribing
- increased morbidity
- non-disclosure
- medicine hoarding by residents
- excessive duration of medicine use
- inappropriate medicine use.
The table below provides a rationale to support why the previous mentioned factors influence polypharmacy in older people.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Relevance to use of medicines and residential aged care</th>
</tr>
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<tbody>
<tr>
<td>Inappropriate prescribing</td>
<td>The use of medicines that are ineffective or introduce a significant risk of an adverse drug-related event.</td>
</tr>
<tr>
<td>Increased morbidity</td>
<td>The prevalence of comorbidity increases with age, requiring the use of multiple medicines to manage them.</td>
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<tr>
<td>Non-disclosure</td>
<td>Older people may not disclose to the prescribing physician all current medicines due to either cognitive-related changes (that is, they cannot remember all medicines), an unwillingness to ‘part with’ long-term medicines which are no longer required, or a lack of understanding about what constitutes a medicine (for example, over the counter medicines and herbal preparations).</td>
</tr>
<tr>
<td>Medicine hoarding by residents</td>
<td>Older people may hoard and use previously prescribed medicines which have been discontinued or have expired.</td>
</tr>
<tr>
<td>Excessive duration of medicine use</td>
<td>Prescribed medicines may be inappropriately continued. For example sedatives and hypnotics.</td>
</tr>
<tr>
<td>Inappropriate medicine use</td>
<td>Older people may consume medicines that are no longer clinically required but have been prescribed over a long period of time, taken from a hoarded stock, or are not appropriate for the individual but are prescribed due to failure of the prescriber to review current medicines and consider the potential for adverse drug reactions and events.</td>
</tr>
</tbody>
</table>

Adapted from Ryan et al. (2008), Gallagher et al. (2007), Niwata et al. (2006), Pham and Dickman (2007), Kaur et al. (2009), Ruggiero et al. (2009), Corsonello et al. (2009), Elliot (2006).


