AUSTRALIAN COMMISSION
ON SAFETY AND QUALITY IN HEALTH CARE

CLASSIFICATION TOOL
for health service organisations

A medicine incident classification system*

The Australian Commission on Safety and Quality in Health Care (the Commission) is an Australian Government agency that leads and coordinates national improvements in the safety and quality of health care based on the best available evidence. By working in partnership with patients, carers, clinicians, the Australian, state and territory health systems, the private sector, managers and healthcare organisations, the Commission aims to ensure that the health system is better informed, supported and organised to deliver safe and high-quality care.

The development of standardised taxonomies to describe clinical incidents related to EMM systems continues to be a challenge in Australia and internationally with a multitude of classifications available for implementation.

Australia required a standardised health IT-related incident classification system that provides a unified and consensus-based approach that can be readily applied during the EMM implementation process. This led to the development of **Guidance for hospitals: Classifying EMM-related adverse events and incidents** (the Guidance).

Classification of prescribing and medicine administration adverse events and incidents

This is a classification system that describes adverse events and incidents in both prescribing and administration of medicines. The classification is based on a system developed by Westbrook and colleagues.[1,2]

The classification is grouped into categories of error or incident type (clinical and procedural). These are defined in Tables 1 and 2 and have been adapted and consolidated within Table 3. Table 3 covers the two stages of the classification system:

1. Prescribing
2. Medicine administration.

The classification includes *procedural incident/failure* categories designed to be customised to reflect the procedures to be followed, underpinning local policies and protocols, and the potential focus for incident investigation.

The classification also includes some additional categories to facilitate incident classification (in contrast to error identification from chart review).[3]

Definitions for prescribing and medicine administration are included in a glossary contained within the Fact sheet: **Guidance for hospitals: Classifying EMM-related adverse events and incidents**.

Background: Two major teaching hospitals have used this classification system to determine the impact of EMM system introduction on the number and type of prescribing errors that occurred, and whether interruptions during medicine administration increased the likelihood of errors.[1, 2]

*based on Westbrook et al.

Table 1: Prescribing errors or incidents and definitions

Clinical	**Definition** (including some examples)
Duplicated therapy	Occurs when two orders have been prescribed for one medicine and both orders are active; there are two active orders for the same medicine on two different charts; or the same medicine is prescribed twice, as a single agent and as a combination product May also occur when two medicines are prescribed for the same indication when only one is necessary
Wrong strength	Occurs when the prescribed strength is incorrect; the concentration of an intravenous (IV) infusion is prescribed incorrectly; or a dose is prescribed that does not exist or would not be able to be obtained easily from the current dose forms
Wrong dose, volume or concentration	Occurs when the prescribed dose or fluid volume is higher or lower (including an incorrect infusion concentration) than that recommended for the condition, taking into account the patient's age, weight, renal and liver function May also occur when a dose is not altered in response to abnormal drug serum levels or laboratory tests
Wrong rate / frequency	Occurs when the prescribed frequency of administration of a drug or an IV rate falls outside the recommended range
Wrong route/site	Occurs when a medicine is prescribed via an incorrect route or site of administration E.g. the medicine is prescribed intrathecal (IT) rather than IV
Wrong medicine/ fluid	Occurs when an inappropriate medicine or parenteral fluid is prescribed E.g. the medicine prescribed is not indicated (or contraindicated) for the patient's condition; the patient is prescribed a medicine 'off label'; the medicine or parenteral fluid is contraindicated for a coexisting condition; or an IV medicine is prescribed with an incompatible diluent Note: Excludes generic substitution
Medicine not prescribed	Occurs when a medicine which is clinically indicated for the patient, is not prescribed; or the medicine is omitted when a patient is initially admitted; or the medicine is not reordered when the patient's medicines are recharted
Drug–drug interaction	Occurs if two of the medicines prescribed for a patient are known to have a clinically significant interaction and this interaction is not acknowledged and monitored
Not indicated	Occurs when a medicine which is not indicated is prescribed for the patient; a medicine is continued following a clinically significant allergy or adverse drug reaction (ADR); a medicine which is no longer indicated is reordered; or a medicine which should have been discontinued has not been ceased (and has not been assigned as a 'wrong duration') May also occur when a prescriber fails to cease/withhold a medicine in response to abnormal drug serum levels or laboratory tests
Wrong duration	Occurs when a medication order is not assigned a 'stop order' or the medicine is prescribed to continue for a length of time that is not in accordance with hospital guidelines E.g. antibiotics prescribed beyond 48 hours
Wrong timing	Occurs when a medicine is prescribed at the wrong time of day

Clinical	**Definition** (including some examples)
Wrong formulation	Occurs when the wrong dosage form of a medicine is ordered
Inadequate monitoring	Occurs when the prescriber fails to order appropriate and timely clinical or laboratory tests to assess the patient's response to prescribed therapy Note: if adequate lab tests are ordered, but the results are not acted upon accordingly, resulting in potential or actual compromised patient care, this may be classed as wrong dose/volume error
Allergy/ADR	Occurs when a medicine is prescribed for a patient with a known and documented clinically significant allergy (or ADR) to that medicine or class of medicines
Wrong patient	Occurs when a medicine is prescribed for the wrong patientw E.g. the prescriber writes a medication order intended for patient A on the medication chart belonging to patient B
Procedural	
Legal/procedural	Occurs when an aspect related to the prescription does not comply with the law, state or territory regulations/policy, or hospital policy (and has not been assigned as an 'unclear order') E.g. the allergy/ADR information has not been completed; or the strength, dose, route or frequency of an existing handwritten medication order has been altered (such a change legally requires the entire order to be recharted); medicine ordered on wrong section of the medication chart
Incomplete order	Occurs when the prescription or medication order does not include all the necessary information i.e. name; strength (if appropriate); formulation (if appropriate); dose; site or route of administration; frequency; the diluent for injectable; duration of time and/or rate of infusion (IV infusions); duration of time (IV fluids)
Unclear order	Occurs when the prescription or medication order is unclear or ambiguous E.g. the writing is illegible; or the order contains additional comments which appear to contradict or conflict with the medication order

Table 2. Medicine administration errors or incidents and definitions

Clinical	**Definition** (including some examples)
Wrong timing	Time of administration occurs more than 60 minutes after or before documented time on the medication chart If the medicine is ordered with meals: ■ Time of administration occurs more than 30 minutes after or before documented time on the medication chart
Wrong IV administration rate	Administration of the IV medicine at a faster rate than that recommended in hospital guidelines or manufacturers' instruction
Wrong dose	The medicine dose prepared or administered is different from that prescribed

Clinical	**Definition** (including some examples)
Wrong formulation	Administration of the correct medicine but in a different formulation from that prescribed
Wrong additive, solvent or diluent	Use of an additive, solvent or diluent that was not ordered or correct according to hospital guidelines or manufacturers' instruction
Wrong volume of additive, solvent or diluent	Using a volume of additive, solvent or diluent to prepare an injectable medicine that differs from hospital guidelines or manufacturers' instructions
Wrong route/site	The route or site of administration differs from the prescribed route or site of administration E.g. the medicine is administered intrathecal rather than IV
Wrong medicine	Administration of a medicine, which was not prescribed for that patient but is similar to the ordered medicine E.g. a medicine is incorrectly selected or mistaken for the ordered medicine Note: If a medicine is given that is not ordered for a patient it is an 'unordered medicine'
Wrong strength	The strength administered is not equivalent to the strength specified in the medication order or in any instructions documented by a pharmacist
Wrong patient	Occurs when a medicine is prescribed for one patient and given to another patient E.g. a medicine intended for patient A is administered to patient B (procedurally a 'failure to check patient identification')
Omitted dose	A dose of a prescribed medicine is not administered
Extra dose given	The administration of an additional dose of a prescribed medicine
Allergy/ADR	Occurs when a medicine is administered to a patient with a known and documented clinically significant allergy (or ADR) to that medicine or class of medicines
Unordered medicine	Medicine is given but not prescribed on the patient's medication chart (paper-based or electronic)
Incompatible additive, solvent or diluent	One medicine administered or mixed with another medicine or solution via the same IV, or same infusion bag, which is not documented to be compatible

Table 3. Revised Westbrook et al's classification of medicine adverse events and incidents

	Error or incident type	
Stage	**Clinical**	**Procedural**
Prescribing	Duplicated therapy	Legal/procedural
	Wrong strength	Incomplete order
	Wrong dose, volume or concentration	Unclear order
	Wrong rate/frequency	
	Wrong route/site	
	Wrong medicine/fluid	
	Medicine not prescribed	
	Medicine interaction	
	Not indicated	
	Wrong duration	
	Wrong timing	
	Wrong formulation	
	Inadequate monitoring	
	Allergy/ADR	
	Wrong patient	
Administration	Wrong timing	Failure to read medication label
	Wrong IV administration rate	Failure to check patient identification
	Wrong dose	Failure to store a medicine in a secure environment at all times
	Wrong formulation	Failure to record medicine administration on medication chart
	Wrong additive, solvent or diluent	Failure to use aseptic technique
	Wrong volume of additive, solvent or diluent	Failure to check pulse/blood pressure before administration (when applicable)
	Wrong route/site	Failure to check blood glucose level prior to administering insulin

	Error or incident type	
Stage	**Clinical**	**Procedural**
Administration (continued)	Wrong medicine	Failure to follow procedures for IV administration and 'accountable/recordable drugs' (Failure of 2 nurses to check preparation, witness administration, check infusion pump settings, sign accountable/ recordable drug register or sign medication chart)
	Wrong strength	Failure to apply appropriate techniques for administration of a medicine (administering an IV medicine too quickly and not according to hospital guidelines or manufacturers' instructions causing extravasation at injection site; modified release tablet is crushed and administered)
	Wrong patient	Failure to check if a medicine is expired before administration
	Omitted dose	Failure to apply labelling according to national, local or hospital procedures E.g. subcutaneous label affixed to medicine/fluid
	Extra dose given	
	Unordered medicine	
	Allergy/ADR	
	Incompatible additive, solvent or diluent	

References

1. Westbrook JI, Reckmann M, Li L, Runciman WB, Burke R, Lo C, Baysari MT, Braithwaite J, Day RO. Effects of two commercial electronic prescribing systems on prescribing error rates in hospital in-patients: a before and after study. PLoS Med 2012;9(1):e1001164.
2. Westbrook JI, Woods A, Rob MI, Dunsmuir WT, Day RO. Association of interruptions with an increased risk and severity of medication administration errors. Arch Intern Med 2010;170(8):683–90.
3. Victorian Therapeutics Advisory Group. Victorian Medication Incident Taxonomy. Melbourne. 2018.

Questions?

For more information, please visit: **safetyandquality.gov.au/electronic-medication-management**

You can also contact the eHealth and Medication Safety team at: **mail@safetyandquality.gov.au**