APPENDIX

Table A1: Classification of prescribing errors (from[1,2])

CLINICAL ERRORS		
Error category	**Definition**	**Examples**
Wrong drug	Occurs when an inappropriate medication or IV fluid is prescribed e.g. the drug prescribed is not indicated for the patient's condition; the drug or IV fluid is contraindicated for a coexisting condition (drug-disease interaction); or an IV drug is prescribed with an incompatible diluent Note: Excludes generic substitution	e.g. hydrocortisone 25mg oral mane was prescribed instead of cortisone; chamomile lotion was ordered instead of calamine lotion
Wrong dose / volume	Occurs when the prescribed medication dose or IV fluid volume is higher or lower 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 Note: A dose may differ from normal recommended reference ranges and not be classed as an error where it is accepted practice to do so, i.e. the dose may have been queried by a pharmacist, but the specialist physician insisted on the prescribed dose, e.g. high dose flucloxacillin despite severe renal impairment in patients with severe infection when recommended by the infectious diseases team; low doses of tricyclic antidepressants initiated by the pain team.	
Wrong rate / frequency	Occurs when the prescribed frequency of administration of a drug or an IV rate falls outside the recommended range	
Wrong route	Occurs when a medication is prescribed via an incorrect route of administration	e.g. IV medication was prescribed orally; left eye was written instead of right eye
Wrong formulation	Occurs when the wrong dosage form of a medication is ordered	e.g. an immediate release tablet was prescribed when an extended release form was

		required
Wrong timing	Occurs when a drug is prescribed at the wrong time of day	e.g. simvastatin prescribed in the morning instead of the evening (it is more efficacious when taken at night)
Wrong strength	Occurs when the prescribed drug strength is incorrect; the concentration of an 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	e.g. mg was prescribed instead of micrograms (or vice versa) e.g. alendronate 75mg tab oral, take one tab once weekly (weekly dose only available as 70mg tablets)
Wrong patient	Occurs when a medication is prescribed for the wrong patient e.g. the prescriber writes a drug order intended for patient A on the medication chart belonging to patient B	
Not indicated	Occurs when a drug which is not indicated is prescribed for the patient; a drug is continued following a clinically significant adverse drug reaction; a drug which is no longer indicated is reordered; or a drug which should have been discontinued has not been ceased May also occur when a prescriber fails to cease/withhold a drug in response to abnormal drug serum levels or laboratory tests	e.g. fluticasone/ salmeterol inhaler prescribed for a patient without chronic obstructive airways disease e.g. an antibiotic which was not discontinued after completion of the course
Duplicated drug therapy	Occurs when two orders have been prescribed for one medication and both orders are active; there are two active orders for the same medication on two different charts; or the same drug is prescribed twice, as a single agent and as a combination product May also occur when two drugs are prescribed for the same indication when only one is necessary	e.g. one order was prescribed by generic and one by brand name e.g. ranitidine and omeprazole for gastro-oesophageal reflux disease
Drug-drug interaction	Occurs if two of the drugs prescribed for a patient are known to have a clinically significant interaction and this interaction is not acknowledged and monitored	
Allergy	Occurs when a drug is prescribed for a patient with a documented clinically significant allergy to that drug/class of drugs	
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	
PROCEDURAL ERRORS		
Unclear order	Occurs when the prescription is unclear or ambiguous e.g. the writing is illegible; or the order contains additional comments which apparently contradict the medication order	e.g. clotrimoxazole topical interdigital BD (the prescriber was confused between cotrimoxazole and clotrimazole)
Incomplete order	Occurs when the order does not include all the necessary information i.e. drug name; strength (if appropriate); formulation (if appropriate); dose; route of administration; frequency ; the diluent for injectables; duration of time and/or rate of infusion (IV infusions); duration of time (IV fluids)	
LEGAL ERRORS		
Legal/Procedural	Occurs when an aspect related to the prescription does not comply with the law, the NSW Department of Health or the hospital policy (and has not been assigned as an unclear order); the allergy field of the medication chart 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) Use of unapproved abbreviations[3] and brand names instead of molecule names falls within this category	e.g. 'q4h' to convey 'every four hours' or 'µg' to convey 'micrograms' are considered unapproved abbreviations

References

1. **Reckmann M, Li L, et al.** Protocol for Measuring Prescribing Errors Pre and Post Electronic Medication Management System Introduction. Unpublished Protocol, Kensington: Centre for Health Systems and Safety Research, University of New South Wales, 2011.
2. **Westbrook JI, Reckmann M, et al.** Effects of two commercial electronic prescribing systems on prescribing error rates in hospital in-patients: a before and after study. *PLoS Med*. 2012;9:e1001164.
3. **Australian Commission on Safety and Quality in Health Care**. Recommendations for Terminology, Abbreviations and Symbols used in the Prescribing and Administration of Medicines. Sydney: Australian Commission on Safety and Quality in Health Care - Government of Australia, 2011.