NATIONAL PATIENT SAFTY AGENCY

Draft Patient Safety Alert On
Safer Use of Injectable Medicines
Appendix 2

Multi-professional Safer Practice Standards: Prescribing, Preparation and Administration of Injectable Medicines in Clinical Areas

1. Introduction

1.1 Prescribing and preparation of injectable medicines and their administration by any route, pose risks to patients.
1.2 All human actions are prone to error. It is not possible to train humans to make no errors.
1.3 Safe systems of work are needed to minimise these risks.

2. The main risks

2.1 Non-availability to clinical staff at the point of use, of essential information about injectable medicines. Such information may not be included in the manufacturer's pack or in commonly available reference sources.
2.2 Incomplete and ambiguous prescriptions which don't include complete details of the solution to be used to dilute the injectable medicine (diluent), final volume, final concentration or intended rate of administration.
2.3 Presentations of injectable medicines that may require complex calculation, dilution and handling procedures before the medicine can be administered
2.4 Selection of the wrong medicine or diluent.
2.5 Use of a medicine or diluent or infusion after its expiry time and date.
2.6 Calculation errors made during prescription, preparation, administration of the medicine, leading to administration of the wrong dose and/or at the wrong concentration or rate.
2.7 Incompatibility between diluent, infusion, other medicines and administration devices.
2.8 Administration to the wrong patient.
2.9 Administration by the wrong route.
2.10 Unsafe handling or poor aseptic (non-touch) technique leading to contamination of the injection and harm to or infection of the patient
2.11 Health and safety risks to the operator or environment.
2.12 Variable levels of knowledge, training & competence amongst health care practitioners

3. Recommended Safer Practice

3.1 Prescribing

3.1.1 Medicines should be given by injection only when the use of no other route is possible and acceptable to the patient.

3.1.2 All prescription for injections must clearly specify the medicine name, dose, frequency and route of administration. In addition, the prescription or a readily available local protocol must specify, where relevant, the following: name and volume of diluent and/or infusion fluid, concentration of final infusion, rate of administration, duration, rate control pump or device to be used.

3.1.3 When two or more prescription charts are in use it is essential that they are cross referenced so that practitioners are aware of *all* prescribed medicines

3.2 Supply and Storage

3.2.1 Risk assessment of all injectable medicines must be undertaken by a pharmacist and senior practitioner to determine the safest presentation and location for storage and preparation.

3.2.2 Injectable cytotoxics and parenteral nutrition must be supplied to clinical areas for use only as ready-to-administer products.

3.2.3 Ready-to-administer or ready-to-use products should be stocked in all clinical areas in preference to products needing preparation for use. Concentrates should only be supplied where safer alternatives are not available.

3.2.4 Multiple use of unpreserved injectable medicines should be eliminated.

3.3 Preparation

3.3.1 Injections should be prepared only by healthcare staff who understand the risks involved, have been trained to use safe procedures, and have demonstrated their competence for the task. They must also have a prescription, Patient Group Direction or other written instruction, essential information about the product(s), and processes needed for safe preparation and administration. As a minimum this should consist of the information listed in the table on p.5.

3.3.2 Aseptic (non-touch) technique should be used during preparation and administration. Injectable medicines prepared in clinical areas must be used immediately after preparation : they should not be stored before use. Administration of infusions prepared in clinical areas should be completed within 24 hours of preparation. In exceptional circumstances where an administration of an infusion is intended to exceed 24 hrs, a risk assessment to determine the safest course of action should be undertaken, every effort should be made to use a ready to administer product.

3.3.3 All syringes, including flushes and infusions, must be labelled immediately after preparation by the person who prepared them, unless preparation and bolus (push) administration is one uninterrupted process and the unlabelled product does not leave the hands of the person who prepared it. Only one unlabelled medicine must be handled at one time.

3.3.4 Medical devices with luer connectors must be used only for preparation and administration of injections. Medicines for oral/enteral use must be prepared and administered using only devices with non-luer connections.

3.3.5 Risk assessment will have identified those products representing the highest risk to patients at the time of preparation. Consideration must be given to the use of safer products and systems e.g, double checking.

3.4 Administration

3.4.1 Injections should be administered only by healthcare staff patients who understand the risks involved, have been trained to use safe procedures, and who have demonstrated their competence for the task.

3.4.2 Before administering an injection, a practitioner must have a prescription or Patient Group Direction or other written instructions, essential technical information and a prepared and labelled injectable medicine. A method must be used confirm the patient's identity and details.

3.4.3 When the person administering the medicine is also the prescriber they should personally make a record of administration as soon as possible after the event.

3.4.4 Risk assessment will have identified those products representing the highest risk to patients at the time of administration. Consideration should be given to the use of safer products and system or double checking systems and to the use of "smart" infusion pumps or controllers and similar technologies for these high-risk products.

3.4.5 Infusions should be monitored according to local policy to ensure safe administration of prescribed treatment

4. Annual injectable medicine report

Organisations should produce an injectable medicines report each year that summarises risk assessment results, incident reports, compliance with NPSA recommendations, in-year actions. This should describe an action plan to improve poorly performing aspects of the system. The report should be communicated to Clinical Governance and Drugs and Therapeutics Committees each year and this information should also be used as part of the performance management process by external organisations.

Glossary

Aseptic technique (non-touch technique)	Handling technique designed to minimise the risk of microbial contamination of a sterile medicine during preparation.
Administration devices	Medical devices designed to regulate or control, mechanically or electronically, the administration of injections or infusions of medicines.
Bolus (push)	Administration from a syringe of a small volume of a single dose of a sterile solution directly into a tissue, organ or vein, over a short time of, usually, between 30 seconds and 10 minutes.
Closed system	Packaging and presentation of an injectable medicine, and/or procedures followed to prepare doses for use, which are designed to ensure that the injection solution never comes into direct contact with the open air.
Diluent	Any sterile injection solution, such as water for injection or sodium chloride 0.9%, commonly used to dissolve (reconstitute) or dilute a medicine immediately before administration.
Flush, flushing solution	A sterile solution of diluent such as sodium chloride injection 0.9%, used to purge (flush) access devices (e.g. cannulae) before and/or after injection of a medicine or between injections of different medicines.
Hazard, risk	Any factor, such as a difficult procedure or a complex calculation, with the potential to cause harm if carried out wrongly.
High risk products	Those (medicinal) products whose preparation and/or administration that have been identified by risk assessment as most likely to pose a significant risk to patients.
Infusion	Administration, from a syringe, or other rigid or collapsible container e.g. plastic bag, of a volume of sterile solution of an injectable medicine directly into a tissue, organ, vein or artery, at a constant rate, under gravity or by means of an electronic or mechanical pump or other means of rate control, over a defined period usually of at least 10 minutes.
Injectable medicines	Sterile medicines intended for administration by bolus injection, perfusion or infusion by any of the following routes : intravenous, intramuscular, intrathecal, intra-arterial, subcutaneous, intraventricular, epidural, intravesicular, intravitreal, intrapleural, intraocular
Low Risk products	Those (medicinal) products whose preparation and/or administration that have been identified by risk assessment as least likely to pose a significant risk to patients.
Luer	A type of connection used to allow connection of syringes and similar medical devices to catheters, cannulae and other access devices
Multi-professional	Doctors, nurses, pharmacists and all other healthcare professionals involved with prescribing, preparation or administration of injectable medicines.
Near-patient areas, clinical areas	Wards, clinical departments, operating theatres, clinics, GP surgeries. In the context of homecare, the term may also be considered to include the patient's home.
Open systems	Packaging and presentation of an injectable medicine, and/or procedures followed to prepare doses for use, which do not prevent the injection solution from coming into direct contact with the open air. Excludes a single withdrawal of solution from an open ampoule into a syringe.

Patient Safety Incident	Any unintended or unexpected incident which could have, or did lead to harm for one or more patients
Practitioner	Any healthcare professional carrying out the task of medicines preparation or administration
Preparation	The manipulation & combination of a medicine and a diluent or of two or more medicines to make a ready-to-administer injection.
Presentation	The way in which an injectable medicine is presented e.g. in a syringe as a "ready-to-administer" product rather than in an ampoule
Ready-to-administer	An injection which needs no preparation before administration. The exact dose volume needed is presented in the container from which it is to be administered and requires only connection to a needle or giving-set.
Ready-to-use	An injection which needs no preparation before administration. The exact dose volume needed is presented in a single pack but is not in the container from which it is to be administered. It has only to be drawn up into a syringe before administration.
"Smart" infusion devices	Electronic infusion devices offering "error-limiting" functionality.