

# The safe preparation of injections in near-patient areas

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Syringe pump with flagged label attached

Practice advice on the safe preparation of injections in near-patient areas has been published by the Scottish Executive. This article looks at arrangements that have been introduced in Edinburgh's acute hospitals to comply with the guidance

**T**he Clinical Resource and Audit Group (CRAG) of the Scottish Executive Health Department published the "Good practice statement for the preparation of injections in near-patient areas, including clinical and home environments" in 2002.<sup>1</sup> The document, which contains a series of nine statements of good practice, covers aspects of prescribing, availability and administration in addition to preparation of injections. Associated with each statement are local actions that require implementation.

One of the statements of good practice (statement six) declares: "The preparation of injections in near-patient areas should be carried out by suitably instructed patients, carers or health care staff, in a suitable environment, using safe procedures." The local actions that require implementation cover the following principles:

- All required information is available in areas where injections are prepared

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- Standard operating procedures (SOPs) for the preparation of injections are introduced
- Injections are clearly identifiable during all stages of preparation and administration
- Only members of health care staff who have completed a competency-based training programme are permitted to prepare injections
- Patients and carers who prepare injections are given appropriate information and instruction

This article outlines the measures introduced at Edinburgh's acute hospitals to achieve compliance with the good practice statement.

## Training

Hospital policy requires all nurses to undertake a training programme that comprises theory sessions and a period of supervised practice before they may administer intravenous injections. The taught programme lasts a full day and includes teaching on accountability, medicine calculations, practical workshops on preparing medicines, anaphylaxis and pharmacy, and an open book examination (2h).

The supervised practice comprises at least four episodes of preparation and administra-

tion for each intravenous practice (additives, bolus injection and syringe preparation, etc) and completion of a competency form for each. The period of supervision depends on the availability of practice experience but it is recommended that it should be completed within three months of training (usually more quickly). The programme has recently been validated by NHS Education Scotland.

## Standard operating procedures

The training has been supported by the production of a SOP, "Preparation of injections in patient areas", displayed as an A3 size poster in all areas where injections are

## Reference materials

The Clinical Resource and Audit Group of NHS Scotland's document "Good practice statement for the preparation of injections in near-patient areas, including clinical and home environments" can be accessed via *PJ Online* ([www.pjonline.com/links/hp](http://www.pjonline.com/links/hp)). The poster detailing Lothian University Hospitals Division's standard operating procedure for the preparation of injections in patient areas can also be viewed at this site.

prepared. The content of the poster is based on an appendix of the CRAG document which contains a specimen SOP for the preparation of injections in near-patient areas in health care premises. It also takes local practice and infection control policies into account. One section of the poster describes the initial activities that are common to the preparation of all injections (eg, checking the formulation and the route of administration). Another section contains detailed instructions for the five most common procedures:

- Drawing liquid from an ampoule into a syringe
- Drawing liquid from a vial into a syringe
- Reconstituting a vial of medicine in powder form and drawing the liquid into a syringe
- Adding a medicine to an infusion
- Diluting a medicine in a syringe for use in a pump or driver

The poster also lists instructions on labelling the injection and correct transportation to the patient.

### Manual

The local manual, “The preparation and administration of parenteral medicines”, has been revised. This manual contains monographs for 100 of the medicines most commonly prepared in near-patient areas. Each monograph contains the classification of the drug, its presentation, reconstitution details, concentration of the final solution, methods of administration, compatibility with infusion fluids, stability in solution, administration rate, and any other relevant information specific to the drug. In addition to revision of the monographs, sections on good practice for the prescribing, preparation and administration of injections have been added. A copy of the poster and a sample of the standard label are also included in the manual.

### Labels

An adhesive label (66mmx90mm) has been developed for use on syringes and infusion bags (Figure 1). The details on the label comply with the requirements specified in the Medical Devices Agency bulletin “Infusion systems”.<sup>2</sup> These requirements include the use of the 24h clock for the expression of times and specify that the total amount of

drug, the total volume of diluent and the names of the persons preparing and checking the solution are shown on the label. The top half of the label contains the patient’s details. This space matches the size of the standard patient addressograph identification sticker to allow it to be used in conjunction with the label. The NHS Lothian logo and the words “University Hospitals Division” are included as a watermark to maximise the space available for the hand-written specific details. The label adhesive complies with the requirements specified in a recent safety action notice issued by Scottish Healthcare Supplies.<sup>3</sup>

Injections must be clearly identifiable at all stages during preparation and administration. To achieve this for a medicine in an infusion bag or bottle, a label is fixed directly to the container. For a syringe containing a medicine that is to be administered by bolus immediately after preparation, no labelling of the syringe is considered necessary as long as the injection is supervised at all times between preparation and administration. To ensure that the medicine is clearly identifiable at all times, the syringe is kept in a tray along with the original container. If a medicine in a syringe is not to be given by bolus or will be unsupervised at any time between preparation and completion of administration, a label is fixed to a flag which is attached to the syringe.

Medication errors caused by confusion between the syringe containing the medicine and the syringe containing the intravenous flush have been reported through the local incident reporting system. To ensure that medicines and flushes are selected correctly, small labels pre-printed with “Sodium chloride 0.9 per cent” are available for the labelling of syringes containing flushes.

### Label flags

When a label that is sufficiently large to accommodate all the required information is attached directly to a syringe, the scale on the plunger is obscured. To avoid such problems, a clear plastic film label flag (Midco Print & Packaging Ltd, Leicester, UK) has been introduced. After the details have been written on the label, it is folded in half and fixed over the wide end of the flag which is then attached to the syringe by the adhesive narrow end. When the syringe is placed in a pump, the label lies outside the syringe compartment and can be easily read.

Affix patient addressograph or complete		
Patient's name <b>NHS</b>		
DOB		
Hospital number <b>Lothian</b>		
University Hospitals		
Ward & hospital <b>Division</b>		
Medicine name	Dose	Concentration
1.		
2.		
3.		
Diluent		Volume ml
Date & time (24h clock) prepared		
Date & time (24h clock) expires		
Prepared by		Checked by

Figure 1: The standard label for use on syringes and infusion bags

To promote the new system of labels and flags, a leaflet, “New labelling system for medicines prepared for injection”, has been issued. It contains a description of how the labels and flags are to be used, an image of a label, a diagram of the flag and a photograph of a syringe pump containing a syringe labelled by means of a flag. The leaflet has been issued to wards and departments in order to increase staff awareness of the new system.

### Questionnaire

A questionnaire was sent out to every charge nurse to assess the standards of the environments used for the preparation of injections within the hospital, and to identify areas requiring improvement. The questionnaire was designed to establish that a designated area was used for the preparation of injections and that this area met the following standards:

- Is quiet and away from distractions
- Has adequate space
- Has a clear, uncluttered surface for preparation
- Has a surface that can be suitably cleaned
- Is near to hand-washing facilities
- Has easy access to information on the preparation of injections

The response was good with 70 per cent of the questionnaires being returned. The results were analysed and a report was prepared to

highlight clinical areas that did not fully meet the standards and to identify the particular standards that were not being met.

The report was sent to each directorate manager and the directorate managers prepared action plans to address the deficiencies and incorporated them into clinical improvement plans (forming part of the clinical governance strategy). The directorate managers were also asked to ensure that questionnaires were completed in areas where no return had been received, and to include the findings in the clinical improvement plans.

Although this method may not be as objective as using an independent auditor, the advantages were that all clinical areas could be assessed without the need for additional resources and awareness of the required standards was raised among the charge nurses. Also, some deficiencies highlighted by the questionnaire could be corrected immediately by introducing simple modifications to local environments (eg, clearing of cluttered areas).

### — Patients and carers

A policy describing the information and instruction that must be provided to patients and carers who need to prepare injections, either for self-administration in hospital or

for administration in the home environment, has been introduced. The principles of the policy are:

- The information and instructions are tailored to the needs of the individual patient
- A demonstration of how to prepare the injection is given (followed by adequate opportunity to practise under supervision until competence is achieved)
- Written information is provided (including storage requirements, the standard of the environment in which preparation should be undertaken, the technique to be used and a step-by-step procedure)

### — Launch

These new arrangements were launched as a package at a series of meetings with charge nurses, education co-ordinators and pharmacists. The sessions were interactive and included demonstrations of the new labelling systems and were repeated throughout the day to allow maximum attendance. Clinical pharmacists also raised awareness at ward meetings. This high profile approach was used to increase awareness and ensure integration of guidelines with

everyday good practice. Also, nurses will be given training in the preparation of injections as part of their induction and their competency will be reassessed every three years.

### — Conclusion

The good practice statement has led to the development of policies and procedures to ensure safe preparation of injections in near patient areas within the acute hospitals in Edinburgh. Adherence to these new standards of practice will be monitored by the medicines policy committee (a sub-group of the drug and therapeutics committee) through regular use of the questionnaire and through audit of the preparation of injections against the SOP.

### — References

1. Good practice statement for the preparation of injections in near-patient areas, including clinical and home environments. Edinburgh: Clinical Resource and Audit Group of NHS Scotland; 2002.
2. Infusion systems. London: Medical Devices Agency; 2003.
3. Plastic fluid bag labelling: reaction to adhesives/inks/solvents (safety action notice). Edinburgh: Scottish Healthcare Supplies; 2004.