

# Rapid Response Report

NPSA/2010/RRR019

From reporting to learning

16 December 2010

## Safer ambulatory syringe drivers

### Issue

Ambulatory syringe drivers are widely used in palliative care and for long term care in the community and in hospital. As a result they are often used to deliver opioids and other palliative care medication. Over-infusion of these medications can cause death through respiratory depression, while under-infusion can leave the patient in pain and distress.

While the majority of syringe drivers and pumps used in healthcare have rate settings in millilitres (ml), some older types of ambulatory syringe drivers have rate settings in millimetres (mm) of syringe plunger travel. This is not intuitive for many users and not easy to check. Errors include the wrong rate of infusion caused by inaccurate measurement of fluid length or miscalculation or incorrect rate setting of the device. Dose errors also occur because of different models using mm per hour or mm per 24 hours. Other issues include syringes becoming dislodged, inadequate device alarms and lack of internal memory (a technical issue which makes establishing the reason for any over or under-infusion difficult).

### Evidence of harm

Between 1 January 2005 and 30 June 2010 the NPSA received reports of eight deaths and 167 non-fatal reports involving ambulatory syringe drivers. Four of the deaths were reported in 2009. Many of these incidents described infusions that had either run through much quicker than expected or had not infused at all.

### Reducing the risk

Older types of ambulatory syringe drivers with rate settings in millimetres of syringe plunger travel have already been removed from the market in Australia and New Zealand. Some cancer centres and palliative medicine centres in the UK have replaced all their mm-calibrated ambulatory syringe drivers with ml-calibrated devices which include additional safer design features. Therefore a co-ordinated approach and timescale for the changeover will help to minimise additional risks arising from the introduction of safer equipment.

### For IMMEDIATE ACTION by all organisations in the NHS and independent sector who use ambulatory syringe drivers. Deadline for ACTION COMPLETE is 16 December 2011.

An executive director, nominated by the chief executive, working with the clinical users, chief pharmacist, and procurement and equipment management personnel should by 16 December 2011:

1. Develop a purchasing for safety initiative that considers the following safety features before ambulatory syringe drivers are purchased:
  - a) rate settings in millilitres (ml) per hour;
  - b) mechanisms to stop infusion if the syringe is not properly and securely fitted;
  - c) alarms that activate if the syringe is removed before the infusion is stopped;
  - d) lock-box covers and/or lock out controlled by password;
  - e) provision of internal log memory to record all pump events.
2. Agree an end date to complete the transition between existing ambulatory syringe drivers and ambulatory syringe drivers with additional safety features (as soon as locally feasible, and within five years of this RRR).
3. Take steps to reduce the risks of rate errors while older designs of ambulatory syringe drivers remain in use, based on a locally developed risk reduction plan which may include: raising awareness, providing information to support users with rate setting, and using lock-boxes.
4. Take steps to reduce the risks during any transition period when both types of design are in use, including:
  - a) reviewing and updating policies and protocols to include the safe operation of all designs of ambulatory syringe driver in local use;
  - b) revising user training programmes to include the safe operation of all designs of ambulatory syringe driver in local use.

### Further information

Supporting information on this RRR is available at [www.npsa.nhs.uk/rrr](http://www.npsa.nhs.uk/rrr). Further queries email [rrr@npsa.nhs.uk](mailto:rrr@npsa.nhs.uk) or telephone 020 7927 9500. The NPSA has informed NHS organisations, the independent sector, commissioners, regulators and relevant professional bodies in **England and Wales**.



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