A drug trolley surveillance device can improve the security of medications for ward administration by sounding an alarm if a drug trolley is left unattended.

Using an alarm to improve drug trolley safety

In this article...

- Incidence of tampering and theft from drug trolleys
- Trial of a drug trolley alarm device
- Outcomes of introducing the alarm device

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Abstract

Leaving drug trolleys unlocked and unattended during drug rounds creates opportunities for drug theft and tampering. A new device was developed by our trust to detect when an open drug trolley is left unattended; it then sounds an alarm to remind staff to return to the trolley. This article describes use of the alarm on general hospital wards in one trust in the east of England. When the alarm was installed into drug trolleys on a hospital ward, it reduced the number of times unlocked trolleys were left unattended. The drug trolley alarm successfully changed the behaviour of staff on drug rounds and, in so doing, improved patient safety.

Recent cases include the well-publicised case of a staff nurse from Stepping Hill Hospital, Stockport, who admitted to stealing painkillers, including opioids, and antibiotics. During her Nursing and Midwifery Council fitness-to-practise hearing she claimed that members of staff regularly took medications (NMC, 2013a). There have been several other cases of drug theft by nurses that have resulted in disciplinary action (NMC, 2013b; 2009).

While the cases mentioned above are publicly documented, it is highly likely that in many others drug theft is dealt with in-house or simply remains undetected. Hospital workers are often presented with opportunities when they could steal or tamper with medications without being detected, particularly when drug trolleys are left open and unattended.

Despite alternatives being available, drug trolleys are still used for securing medications in clinical areas. The Care Quality Commission inspects UK healthcare providers to ensure they comply with Health and Social Care Act 2008 regulations on the safekeeping of medicines (CQC, 2010). In NHS hospitals it is mandatory for drug trolleys to be closely supervised when they are open; best practice is arguably for staff members to lock trolleys whenever they step away from them. However, given the many distractions experienced by nurses during drug rounds it is unsurprising that, in practice, this is often not the case.

This article describes an innovation in our trust – use of a device known as a Drug Guardian. This device allows us to:

- Measure and improve the security of medications for ward administration;
- Reduce opportunities for drug theft and tampering by using.

The device
At the start of the project we enlisted an electronic engineer to develop a device...
The Drug Guardian works.

» That could be fitted onto ward drug trolleys and would:
  » Measure when the trolley is left open and unattended;
  » Alert staff of the non-attendance with an alarm.

Box 1 gives a brief outline of how the Drug Guardian device works.

**Collecting data**

The Drug Guardian was fitted in the drug trolleys on general wards within the trust and used to collect data on the frequency and duration of episodes when the trolley was left open and unattended. The trolleys were considered to be unattended if no movement was detected for more than two minutes.

Data was collected in three phases:

» Phase 1 – the devices were installed with the alarm function disabled to collect baseline information. Staff were not told about the role of the device so their normal behaviour could be observed;

» Phase 2 – Ward staff were educated on the risks of leaving the trolley unattended, the CQC’s recommendations regarding medicines management and the role of the device. The devices were then used on the ward with the alarm disabled as before;

» Phase 3 – Fully functional devices were placed on the ward, with alarms that activated if the trolley was unattended for more than 45 seconds.

**Results**

During phase 1, drug trolleys were found to be left open without a nurse in attendance an average of 14 times per day. Each episode lasted, on average, three minutes – this means that for around 45 minutes every day there was an opportunity for drug theft or tampering.

Once staff had been educated about the device, the average number of episodes when a trolley was left unattended fell to fewer than two per day, amounting to 13 over one week of data collection. After installing fully operational drug trolley alarms, this decreased dramatically to three episodes over a two-week period.

**Discussion**

Wards are busy and often stressful places to work, presenting nurses with constant distractions and demands. Our trust has a policy that nurses on drug rounds should not be interrupted unless absolutely necessary; this allows them to concentrate fully on the task and minimise errors in drug administration. In spite of this, the first phase of our study confirmed that open drug trolleys were being left unsupervised for a significant period of time each day.

Trolleys were considered to be abandoned only after two minutes had passed, to allow staff time to leave the trolley, move to the bedside and administer the patient’s medication. In the first phase of the study there were, on average, 14 occasions each day when more than two minutes elapsed without the staff member returning to resume responsibility for the trolley. Removing or tampering with medication may only take a few seconds, so this posed a considerable safety risk.

Although staff education on the role of the drug trolley device and why it was needed improved trolley attendance, there were still 13 episodes of trolleys being abandoned over a one-week period. However, once the alarm function of the device was enabled, the number of episodes reduced to three during a two-week period.

The ability of the drug trolley alarm to change people’s behaviour is known as “operant conditioning”. This is a learning process in which the changes in an individual’s behaviour arise from the consequences of that behaviour. In this case, the consequence of trolley abandonment is an alarm that alerts the staff member to the error. This causes staff to modify their behaviour so trolley abandonment becomes an infrequent event.

**Conclusion**

Having shown the ability of the device to modify behaviour and improve the security of medications for ward administration, the Drug Guardian has been further enhanced by adding a panoramic camera. We are now carrying out further studies to investigate how the device might help us identify perpetrators of drug theft and tampering. The alarm-only model is currently beginning to be rolled out for use across the trust.

**References**

- Nursing and Midwifery Council (2013a) Conduct and Competence Committee Substantive Hearing. Bit.ly/NMCLeightonHearing
- Nursing and Midwifery Council (2013b) New Interim Order Hearing. Bit.ly/NMCSmithHearing

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