EMBARGO: 00:01 on Thursday 3 December 2020

Issued by the Healthcare Safety Investigation Branch (HSIB)

Safety body highlights challenges of implementing 'smart' pump devices across NHS

The latest report by HSIB charts the emerging patient safety risks that can come with the introduction of 'smart' infusion pump technology into hospitals.

Smart infusion pumps are the latest generation of programmable devices that administer medication. They are seen as a way of improving safety as the smart functionality aims to prevent underdoses or overdoses – they are equipped with features such as alerts or alarms to help detect problems.

The investigation was launched after one NHS Trust recorded three incidents where a smart infusion pump delivered an overdose of fentanyl, a powerful pain medication. The patients weren't harmed as it was swiftly picked up, however it emphasised the new risks that come with introducing new technology and the potential for serious medication errors.

HSIB's investigation focused on the barriers to implementing the technology effectively across the NHS, rather than on the technology itself. They examined these barriers through a 'ten key considerations' framework which looks at what is needed at each stage to ensure a successful implementation. This covers everything from clarifying why the change is needed to constant evaluation once system is in place. Using the framework, HSIB's investigation identified the safety risks that would need to be managed at each stage.

The investigation highlighted the main implementation challenges. This includes:

- *National consistency in drug libraries* – smart infusion pumps have an inbuilt dose error reduction system (DERS) which requires the use of a drug library. The investigation found that drug libraries were developed 'locally' and that there is no agreed national drug library for use in NHS. They also found that there is no national guidelines or standards on how to implement the libraries.
- *Significant changes in processes* – introducing the technology requires significant changes to prescribing and administration processes in trusts. The investigation found that procedure and guidance documents often needed updating, and variations in medication practice were 'locally managed' and were rarely shared within and between hospitals.
- *Provision of specialist IT support and infrastructure* – substantial IT infrastructure is needed to support the integration of smart pump technology. Software is needed to upload the drug library to smart pumps, download data logs (including any errors detected) and monitor the status of each smart pump. The investigation highlighted that maintaining the required IT infrastructure required specialist staff roles and often a new skill set.

The investigation found that the implementation of smart pump functionality would benefit from the use of risk management practices, as requirements are complex and similar to the introduction of a new IT system. Existing NHS Clinical risk standards could provide a basis for both manufacturers and trusts to work together to manage risks.

Scott Hislop, Principal National Investigator at HSIB said: *"The purpose of the investigation wasn't to endorse or examine the advantages or disadvantages of the technology but to understand why it can be difficult to implement in hospitals and where this might introduce some new risks to patient safety.*

"Our investigation identified that these risks have been seen in trusts of different sizes across England. We have worked closely with manufacturers, regulators and national bodies and its clear a system-wide approach is needed to share learning and manage those risks effectively.

"The ten key considerations framework which underpins the report helped us to see where there may have been gaps at a national level and this has been reflected in the safety recommendations we have made. Setting out what an effective implementation journey should look like will help NHS trusts to use smart infusion pump technology to its full benefit, reducing the risk of serious harm to patients."

ENDS

Media contacts

Please contact Carey or Karl for further details and interview requests:

Carey Taylor, HSIB Communications and Engagement manager Carey.Taylor@hsib.org.uk 07710 114 191
Karl Heidel, HSIB Associate Director of Communications and Engagement Karl.Heidel@hsib.org.uk 07596 334 927
Generic email: media@hsib.org.uk

Notes to editors

Recommendations

- It is recommended that NHS Supply Chain develops an agreed specification that defines an open standard format for the sharing of event log data, thus allowing dose error reduction systems (DERS) to be evaluated to establish patient safety benefits.
- It is recommended that the MEDUSA advisory board, in conjunction with other relevant multi-professional organisations, develops validated national drug libraries for smart infusion pumps

About HSIB

The formation of HSIB is a world-first and represents a landmark moment for the NHS in England. HSIB's purpose is to help improve safety in the healthcare system by developing recommendations and sharing

lessons from investigations. HSIB will improve patient safety through effective and independent investigations that do not apportion blame or liability. More details can be found at www.hsib.org.uk