

MEDICATION SAFETY

Celebrity high-risk harm events and medication safety



Linda Graudins^{1,2} BPharm, Dip Hosp Pharm, Grad DipClin Epid, Adv Prac Pharm, FSHP

1. Medication Safety Editor, Medication Safety Leadership Committee, The Society of Hospital Pharmacists of Australia, Collingwood, Australia
2. Medication Safety Lead, Alfred Health, Melbourne, Australia

Introduction

The Medication Safety Leadership group supports the World Health Organization safety challenge, Medication Without Harm, which aims to reduce severe, avoidable medication-related harm by 50%, globally.¹

Every patient harmed because of a medication error has a story to tell and from every error, there is a lesson to be learnt. Headline stories involving well-known celebrities serve as powerful examples that medication errors can affect anyone and they are preventable!

Look alike – sound alike (LASA)

The following is a high-profile case from 2007, involving look–alike medications causing a near fatality in a neonatal unit.

Actor Dennis Quaid’s newborn twins were being treated for staph infections in one of America’s prestigious hospitals. They were responding to antibiotics, until there was an error. Nurses had mistakenly given them 1000 times the recommended dose of heparin every 8 hours, until it was noticed that blood was oozing from the intravenous site. The twins spent 11 days in intensive care. Luckily, they recovered and are now healthy teenagers.²

The investigation that followed illustrated the series of errors leading to patient harm:

- 1) The medication: the concentrated heparin vial looked identical to the ‘flush’ dose vial
- 2) The staff: Pharmacy technicians mistakenly delivered and stored 50,000 units in 5mL heparin to the paediatric unit, instead of 50 units in 5mL. Nurses couldn’t recall reading the label on the vials before administration.

The patient/carer: Dennis Quaid stated: “When you go into a hospital, you become like a child, like an infant in a way”. “The names of the drugs, we can’t even pronounce (...). We put complete trust, and we are so vulnerable like a child, innocent and vulnerable in a hospital situation”.²

The Outcomes

The Quaid’s appeared in a variety of media³ and filed a lawsuit contending that the labelling and design of the product led to the medication error. The American pharmaceutical manufacturer has since changed the packaging

of their heparin products. The hospital invested more than \$100 million in new technology, including computer bar code scanning for medications and electronic medication order entry linked to automatic dispensing machines.

Considerations for Medication Safety:

- Has a similar problem led to actual or near miss patient harm in your hospital?
- How do you prevent LASA errors?

Hierarchy of intervention to prevent incidents

Using incidents that hit headlines can facilitate highlighting risks — even though they do not involve medications. The principles and management solutions are often similar (see Table 1 below).

Luckily, we don't use firearms in health care, but let's review this headline story from 2021 and see how it applies to harm avoidance in health care settings.

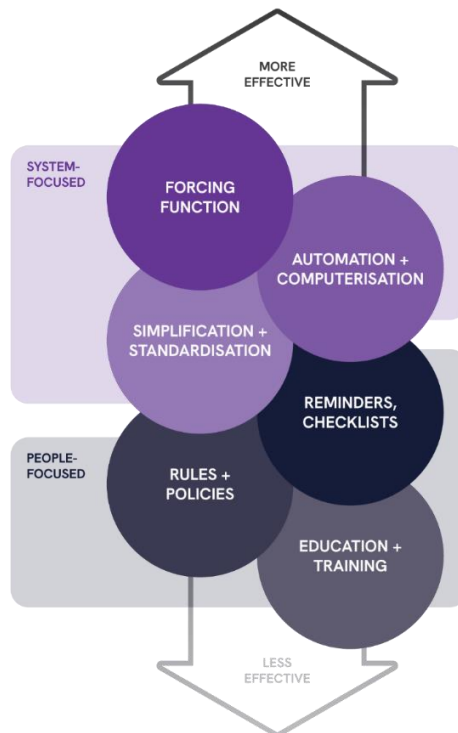
Alec Baldwin was rehearsing a scene on the film set of the western *Rust*. From three prop guns laid out on a cart, one was handed to Baldwin, who was assured it was safe to use because it didn't contain live ammunition. The gun he was holding fired a live bullet that killed cinematographer Halyna Hutchins.⁴

Despite all the controls available, a fatal error did happen.

In general, errors do not occur because a staff member is a bad person. Alec Baldwin did not mean to shoot Halyna Hutchins. The paediatric nurse did not mean to inject a neonate concentrated heparin and the pharmacy did not intentionally send the incorrect heparin amps.

Investigation of serious incidents usually identifies multiple system faults, which we can change or modify. To decrease risks, multiple strategies are needed requiring an integrated approach with nursing, pharmacy, and medical ownership.^{5,6} The Hierarchy of Intervention Effectiveness is a useful tool for medication safety investigation and can be adapted to suit different settings and risks (see Figure 1).⁷

Figure 1. Hierarchy of Intervention Effectiveness



Inspired by Carfazzo JA, St-Cyr O. *From Discovery to Design: The Evolution of Human Factors in Healthcare*. *Healthcare Q* 2012; 15: 24–9.

The most effective intervention is the **forcing function** which prevents the user from taking an action, often by disrupting the flow of work. For example, by not having concentrated heparin on the ward, the nurse is ‘forced’ to use the correct heparin concentration, which is readily available. Having no bullets (or guns) on a set removes the risk of firing a loaded gun.

Institutions are moving towards **automation and computerisation**. Advantages are decreasing transcribing errors, linking storage in automated dispensing cabinets to medication orders and supply chain, bar code scanning to provide a second check for selecting medication and patient identification.

Simplification and standardisation can occur by removing redundant steps and so, processes are simplified. For example, having the same medication storage layout and standard concentrations of high-risk medications throughout a hospital network can make locating particular medications simpler and reduce dosing errors.

Reminders, and checklists enhance medication safety by prompting staff to complete checks and tasks that might be easily overlooked. For example, checking off components of complex chemotherapy protocols, reminders about LASA products at the point of dispensing, pop up screens and allergy alerts, electronic system checklists for dosing and monitoring of high-risk medications.

Rules and policies are essential for training staff and as a reference point, ensuring a consistent and standardised framework for medication management.

Education and training is what we do most often, yet is the least effective intervention for change. Although it is essential to ensure staff are aware of risks and for credentialing of staff, training alone does not eliminate error. In the case of the Quaid twins, Pharmacy Technicians were instructed on how to fill imprest cupboards using the correct product, yet the incorrect concentration of heparin was still supplied. Even though everyone on the set of *Rust* knew loaded guns were not to be used, one was available.

Considerations for Medication Safety:

Always consider forcing functions first. On the film set, by having no live ammunition, there is zero risk of a fatal shooting. However, medications cannot always be removed from health care areas. In these high-risk areas, a suite of interventions can assist to make health care safer — reducing avoidable medication-related harm.

Let’s compare the fatal *Rust* incident with the heparin incident to apply the Hierarchy of Intervention Effectiveness and determine interventions which may result from an in-depth incident review.

Table 1. Set of controls

Control	Firearms on the set ⁴	Concentrated heparin in the ward
Education and training	The safe use of firearms on set is dependent on the strict guidance of a trusted theatrical armorer operating in line with the industry’s safety protocol	Trained staff, credentialed in medication management. For example, technician training includes high risk and LASA medications

Policies and procedures	Responsibilities are clearly set out including the need for firearms and any ammunition to be under the control of a licensed armourer at all times.	Policies and procedures in place for Medication Management against accreditation standards and hospital procedures
Checks	Standard safety protocols, including gun inspections, were not strictly followed on the <i>Rust</i> set	Quality assurance that processes are being followed. For example, Medication Safety Walk Rounds, external accreditation survey, checklists during ordering and administering medications
Safety culture	Crew members were concerned about two accidental prop gun discharges. A colleague was so alarmed by the misfires he sent a text message to the unit production manager.	Encourage reporting incidents and near misses. Having a safety culture in the workplace Medication safety review and action on reports, with regular meetings to feedback, discuss and address issues. Support from hospital leadership
Staff safety	The movie set had been dogged with industrial unrest. The crew were frustrated, including complaints of long hours and pay.	Facilitate tasks by ensuring a safe work environment, functioning equipment, staff safety including breaks, reasonable working hours
Automation	“Corners were being cut”	Ensure staff can use electronic safety checks, such as bar code scanning
Forcing function	There are calls to ban ammunition from all film production.	Restriction of supply of high-risk medications to wards. Remove concentrated heparin from imprest areas
<p>“The real question that needs to be answered is how live rounds (concentrated heparin) got on the set (ward) in the first place”.</p>		

Quotes taken from Bella T, England W. Two set workers handled gun before Alec Baldwin pulled trigger in fatal shooting. *The Age*. 24 October 2021.

References

1. World Health Organization (WHO). *Medication without Harm*. WHO/HIS/SDS/2017.6. Geneva: WHO; 2017. Available from <<https://apps.who.int/iris/rest/bitstreams/1083775/retrieve>>.
2. Ornstein C. Quails recall twins' drug overdose. *Los Angeles Times*. 16 September 2014. Available from <<https://www.latimes.com/local/la-me-quaid15jan15-story.html>>.
3. Oz M. Dennis Quaid's Medical Nightmare. Oprah.com. 10 June 2009. Available from <<https://www.oprah.com/health/how-a-medical-mistake-almost-killed-dennis-quaid-twins/all>>.
4. Bella T, England W. Two set workers handled gun before Alec Baldwin pulled trigger in fatal shooting. *The Age*. 24 October 2021. Available from <<https://www.theage.com.au/world/north-america/husband-of-cinematographer-shot-by-alec-baldwin-on-film-set-our-loss-is-enormous-20211024-p592kw.html>>. [source of quotes in Table1].
5. WHO. *Patient safety curriculum guide: multi-professional edition*. Geneva: WHO; 2011. Available from <<https://www.who.int/publications/i/item/9789241501958>>.
6. WHO. *Medication Safety in High-risk Situations*. WHO-UHC-SDS-2019.10. Geneva: WHO; 2019. Available from <<https://apps.who.int/iris/rest/bitstreams/1232860/retrieve>>.
7. Carfazzo JA, St-Cyr O. From Discovery to Design: The Evolution of Human Factors in Healthcare. *Healthcare Q* 2012; **15**: 24–9.