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Case Study: Using Simulation to Assist in the Reduction of Drug Errors and Improve Patient Safety

In 2013 the clinical skills and simulation team at the Pennine Acute Hospitals NHS Trust (PAHT) reviewed their existing training package regarding medicines management. Concerns were raised when some members of staff, who had made drug errors on the wards, were merely referred back to the same theoretical session they would have had previously. Impact evaluations revealed that existing theoretical sessions alone did not identify and challenge poor practice or reflect the drug errors happening in clinical practice. In response the team implemented a fundamental change to the format of training and introduced simulation to complement and augment the theoretical element of the training.

This pilot comprised sixteen members of qualified nursing staff, ranging from ward managers to newly qualified members of staff. It ran as two half day sessions with eight learners attending the first session and eight attending the second. The hypothesis was that by introducing a simulation element the gap between what is taught in the classroom and what they had to do on a ward could be narrowed, thus developing safe medicines management practice in existing staff and new learners alike. This has been evidenced in practice.

Key Outcomes

- **Positive feedback –** 100% of learners who took part in the pilot sessions either strongly agreed or agreed that the course improved their knowledge of the safe administration of medicines and that it was a suitable alternative to the theoretical session. Learners said that they felt that this training session bridged the gap between what they had been taught in the classroom and what they had to do on a ward. Therefore this practical approach to training consolidated the theoretical aspect of medicines management already being taught at PAHT. As the feedback was collated from an electronic format using numerical values there was no written feedback however below are a couple of verbal comments received after the pilot:

"It was good to have the opportunity to practice what I had learnt in the classroom in an environment similar to real life"

"the training today emphasised the importance of drug management issues and how simple mistakes have catastrophic consequences"

"These sessions were very useful and I hope you will be doing more in the future"
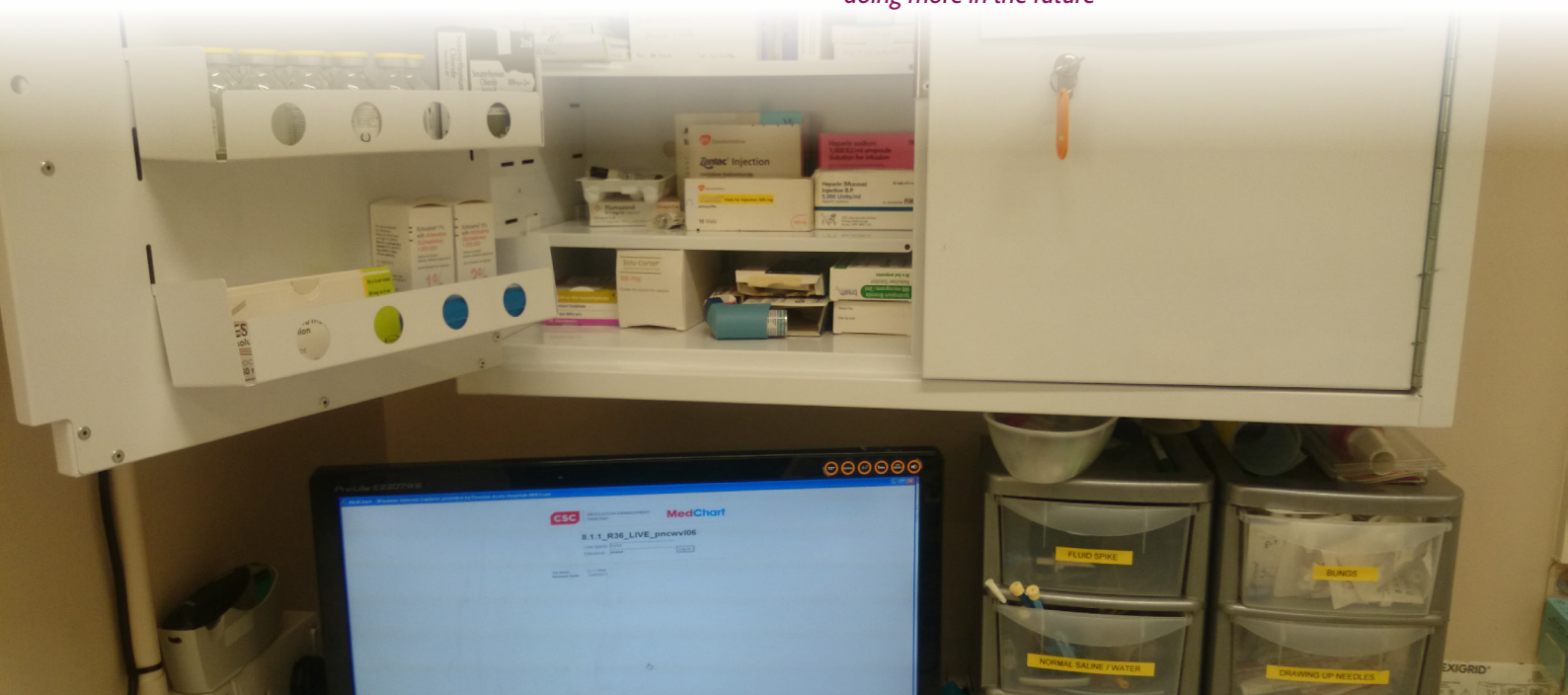
- A senior member of staff, who stated that they had never previously enjoyed their own involvement in simulated learning said *"I will go back to my clinical area and recommend this to other staff as I feel the programme was beneficial"*

- **Improved communication skills –** this pilot demonstrated the successful use of simulation in promoting the effective use of communication within the healthcare setting. This is also shown in the feedback, as three quarters of the pilot group stated that they felt the session has enhanced their communication skills. This is extremely high considering that communication was not the main focus of the programme. The team is going to continue to monitor the link between communication issues and medicines management directly relating to patient safety. Learners commented that they now feel more confident communicating and explaining issues to patients when they; refuse medication or ask for information about their medication, and when they are enquiring about allergies to ascertain whether a patient is having an allergic reaction or experiencing a drug side effect. The fidelity of the course and the technology is so close to reality that it is possibly able to implement a variety of training and assessment strategies for medical students, nurses and even for experienced physicians and specialists (Dryden, 2006)

  This pilot also aided communication between colleagues when; looking at the electronic prescription to view information, documenting this to ensure colleagues are aware of issues, relaying information to other members of the team, and underpinning the effective use of the SBAR (situation, background, assessment, recommendation) communication tool.

- **Reduced drug errors –** it is too early in the pilot programme to assess whether drug errors have been reduced. However the team will continue to evaluate and monitor this as the programme continues. This will be achieved though communication with pharmacy, clinical governance and the undertaking of audits in the clinical areas.

Background

The Pennine Acute Hospitals NHS Trust is located in the North West of England and split over four sites (North Manchester General Hospital, Fairfield General Hospital, The Royal Oldham Hospital and Rochdale Infirmary). It currently employs approximately 9,000 members of staff on these various sites.

The clinical skills and simulation team at PAHT are responsible for the delivery of a wide range of learning events within the Trust. The team sits within the Learning and Organisational Development Department (run by Head of Learning- Lynda Spaven).

- The faculty involved in this pilot study are Katherine Robertson (Clinical Skills Manager), Toby Garrity (Curriculum Development Co-ordinator for Simulation), Janet Clegg (Curriculum Development Co-ordinator for Clinical Skills/ electronic prescribing medicine administration Trainer) and Bethan Maher (Simulation and Clinical Skills Technician).

Medicines Management

A frequent theme in the Francis Report (Francis, 2013) was the failure to address medication safety and it included hundreds of examples of failures in medicines management, for example:

- staff signing medication charts before the medicine was administered, leading to medicines not being given
- medicines not being given at all, despite being ordered on the medication chart
- medicines not being provided or available in a timely manner on discharge

These types of failings led to recommendation 242[1] which advocates that a frequent check needs to be done to ensure that all patients have received what they have been prescribed and what they need. This is particularly the case when patients are moved from one ward to another, or they are returned to the ward after treatment.

Medicines management has already been flagged as an area that requires immediate attention within this Trust by a recent Care Quality Commission (CQC) report which found the Trust non-compliant with the CQC's outcome 9[2]. This outcome is based on regulation 13 of the Health and Social Care Act 2008 which identifies the importance of correct recording, handling, dispensing and safe administrations of medicines. These factors led the clinical skills and simulation team to develop a new approach to educating staff in medicines management.

Within PAHT a medicines theoretical session followed by a competency-based assessment in the workplace has been ongoing for many years. The benefits of this include:

- giving learners the fundamentals of medicines management and how it should be conducted safely in the clinical area
- covering, in depth, the policies and procedures surrounding medicines management, both Trust wide and nationally
- giving learners the chance to ask questions and to use the expertise and knowledge of the trainer
- providing for those learners who learn best in a classroom-based session

However an impact evaluation has revealed that, whilst this has many benefits, practice is still poor and medication errors relatively high. Furthermore, difficulty exists in trying to create a uniform approach to assessment in a large trust. As such the clinical skills and simulation team reviewed and evaluated

their approach to ensure that staff and patient needs were being met. As there seems to be an issue with staff applying theory to practice the team decided to introduce simulation as an addition to current training. This took place following the classroom-based teaching to see if practitioners were correctly applying knowledge gained in the clinical area, and to provide an opportunity for error and reflection in a safe environment.

As both the General Medical Council (GMC) and the Nursing Midwifery Council (NMC) have promoted and encouraged the use of simulation within the medical/nurses (NMC 2010) educational field it was felt that it was a suitable teaching tool. The team recognised that learners have different learning styles (Fleming's 1995 VARK model) and it was expected that by incorporating simulation, learners of all types could be engaged.

Key Aims

- Develop best evidence-based practice to reduce drug errors within the Pennine Acute Hospitals NHS Trust

- Allow individuals who have performed a drug error to recognise and develop safe medicines management practice

- Increase staff engagement with the medicines management training package

- Bridge the gap between theory and practice

Key Stages of Setup

- Some of the clinical skills and simulation team were involved in the Trust-wide medicines management action group, where staff from all divisions within the Trust are represented
- At these monthly meetings issues, errors, policy changes and quality improvement are discussed

- In setting up these sessions meetings were held between the trainers in the clinical skills and simulation team on how to devise a programme that caters for the needs of the candidates
- It was also discussed how simulation as a training tool could be implemented

- The clinical skills and simulation team created simulation scenarios that mapped reported drug errors compiled from clinical governance information such as; *missing controlled drugs (CDs)*, *incorrect drug calculations* and *drugs administered inappropriately*

- The team then created all materials needed for the course i.e. controlled drug book, and mocked up medicines.

- A comprehensive feedback process was devised using Turning Point, an electronic system which collects feedback instantly and anonymously.

How It Works

The pilot comprised sixteen members of registered nursing staff ranging from ward sisters to newly qualified members of staff. The participants were selected to attend this pilot as they had made a drug error, lacked awareness of current drug policies and procedures or because they were newly qualified members of staff. All the learners also had to have attended the theoretical classroom-based medicines management course, to reinforce underpinning knowledge regarding medicines management.

It ran as two half day sessions with eight learners attending each session. For each session three staff facilitated the simulation and debrief sessions (Toby Garrity, Janet Clegg and Bethan Maher). The simulation suite was set up to mirror a ward environment with a simulated patient and various clinical equipment in order to emphasise realism and maximise relevancy.

For the pilot sessions five scenarios were developed by the clinical skills and simulation team, in collaboration with the electronic prescribing medicine administration (EPMA) training platform trainers. These scenarios were taken from reported drug errors within PAHT, and this bank of scenarios will grow to include more that encompass a range of medicine management issues. Bespoke scenarios can also be written for specific wards which have their own requirements because of specific medicines use or identified governance issues. The scenarios consisted of:

- controlled drug check discrepancy
- safe use of sharps bins and correct drug disposal
- ensuring prescribed medication is taken or omitted and documented correctly
- the use of pre-prepared IV gravity infusion by unidentified members of staff
- drug sensitivity

The training sessions started with an introduction to simulation and orientation to the simulation suite to ensure that the learners were comfortable and felt safe in the learning environment. The team then asked which system of prescribing the ward they worked on used to ensure that the scenario they were given would be relevant to their training needs.

Following this the attendees were put into pairs for their scenario whilst the rest of the group watched in the debrief room via a streaming video link. The observers were provided with appropriate material and equipment mirroring those available in the scenario, so the session was also interactive for them. For example, in the controlled drug discrepancy scenario the learners in the debrief room had a copy of the controlled drug book. After each simulation scenario all learners participated in a reflective debrief session, where what happened and how it could have been managed better, was discussed in a non-threatening way. Each scenario was about twenty minutes long and the following debrief was about forty minutes to ensure time for a full and

interactive discussion. This process was completed four times throughout the course of the day, ensuring all attendees had a chance of participating in a simulated scenario.

At the end of the session the learners were asked to take part in an interactive and anonymous feedback using Turning Point. They were also asked to give verbal and written feedback on the session.

Resources

As this was a pilot no costs were incurred as the course was funded by PAHT through its Learning and Organisational Development Department. However there may be a need for discussion as future courses may have a cost implication. The development of the course did rely on input from numerous teams and departments e.g. pharmacy, EPMA, the clinical skills and simulation team, clinical governance.

Despite there being no physical cost it did take time for the clinical skills and simulation trainers to design and run the sessions. The design stage of this course took two initial meetings to decide on course content and how the course should run. It then took a trainer approximately a day and a half to formulate five scenarios for the course and then a morning for the preparation of associated material. The course itself took place over half a day with a small amount of time at the end to evaluate the pilot with the faculty. Each subsequent course would only require time to facilitate the course and half an hour to evaluate how the course went.

Key Challenges

- PAHT is currently transitioning between two systems of medicines prescribing – a paper version and an online electronic version. Eventually the entire Trust will be using the electronic prescribing system, but as this is still currently being cascaded throughout the Trust both systems are still in use. The simulation team ensured that the scenarios could be used for either system, and provided the right version for each learner.

- A key challenge was obtaining adequate access to EPMA's training platform to allow the learners to use the same system as they would on the wards. This was overcome by working closely with a EPMA trainer who set up a training environment with simulated patients for the scenarios.

- It was important to ensure that the scenarios were set at an appropriate level to allow each learner to work independently within their scope of practice, yet to be challenged. This was achieved by mapping the course against actual drug errors which had occurred in the Trust. The learners in the pilot had also attended a theoretical session on medicines management so the clinical skills trainer was more aware of the learner's level of understanding.

Next Steps

- This simulation session has been implemented for all newly qualified nursing staff and all nurses who have made a drug error on the ward within PAHT. This training is to be rolled out to all newly qualified starters within the Trust and to qualified staff who have made drug errors in practice. The team are currently looking at ways that this training could be implemented in the wider health community.

- There are also plans to create a larger bank of relevant scenarios to ensure that no learner repeats a scenario. This will also ensure that the scenarios that learners get are relevant to their particular clinical area or drug error.

- Potentially this training could be rolled out externally to other trusts that do not have the facility of a simulation suite. The simulation team at PAHT have been accredited by the North West Simulation Education Network (NWSEN) and after the pilot stage is complete they will look to use the resource of the network to roll this out across the region.

Further Links

- [Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry Volume 3: Present and future Annexes](#)
- [Department of Health Legislation pages (archived)](#)

References and Footnotes

- Fleming, 1995. *I'm different; not dumb. Modes of presentation (VARK) in the tertiary classroom*, in Zelmer,A., (ed.) Research and Development in Higher Education, Proceedings of the 1995 Annual Conference of the Higher Education and Research Development Society of Australasia(HERDSA),HERDSA, Volume 18, pp. 308 – 313
- Jim Dryden, 2006. Washington University, St Louis, Newsroom Dec 2006

Footnotes

1. In the absence of automatic checking and prompting, the process of the administration of medication needs to be overseen by the nurse in charge of the ward, or his/her nominated delegate. A frequent check needs to be done to ensure that all patients have received what they have been prescribed and what they need. This is particularly the case when patients are moved from one ward to another, or they are returned to the ward after treatment.
2. People who use services will have their medicines at the times they need them, and in a safe way; wherever possible having information about the medicine prescribed made available to them or others acting on their behalf.

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