Following the patient journey to improve medicines management and reduce errors

Examining one patient’s journey in hospital highlights where medicines management could be improved to help ensure patient safety.

**INTRODUCTION**

Patient safety has recently become a major concern for the NHS since the publication of key documents such as: *Seven Steps to Patient Safety* (National Patient Safety Agency, 2004); *Building a Safer NHS for Patients* (Department of Health, 2001); and *An Organisation with a Memory* (DH, 2000).

Lord Darzi said: “Continuously improving patient safety should be at the top of the healthcare agenda for the 21st century” (DH, 2008a).

Medicines management is defined as a system of processes and behaviours that determines how medicines are used by the health service and patients (National Prescribing Centre, 2008a). Reports have indicated that 6.5% of patients admitted to hospital and up to 9% of those who stay in hospital experience medication related harm (NPSA, 2007).

**BACKGROUND**

Adverse events have consequences for patients and their families, for healthcare professionals involved and present a financial burden to the health service. A study of 1,014 admissions to two London hospitals found 10% of patients experienced an adverse event and half were preventable. This resulted in an extra mean 8.5 days in hospital with additional costs (DH, 2004).

Medication errors account for 10-20% of all adverse events and cost the health service £200-400m per year (DH, 2004). Box 1 explains terms in patient safety incidents.

**PRACTICE POINTS**

- This patient journey shows a number of key events such as: the omission of an antibiotic; late administration of IV drugs; and the safety of the prescribing process.
- However, none of these were reported as adverse events or near misses. Some of the barriers to reporting events or near misses are a lack of awareness that an error has occurred, lack of awareness of the need to report, staff being too busy, or a perception that the patient is unharmed (Department of Health, 2004).

**BOX 1. TERMS FOR MEDICATION SAFETY**

- Medication safety incident: the NPSA (2007) defined a patient safety incident as any “unintended or unexpected incident which could have or did lead to harm”.
- Medication error: incidents in which there has been an error in the process of prescribing, dispensing, preparing, administering, monitoring or providing medicine advice regardless of whether any harm occurred.
- Near misses (potential harm): incidents that did not cause harm but which are judged to have had the potential to cause harm.
- Adverse events: medication incidents that result in harm.

**MEDECINES RECONCILIATION**

The green medicines bag is part of a national Medicines Management Collaborative scheme to improve medicines reconciliation, following NICE and NPSA (2007) guidance. Medicines reconciliation has been described as the process of identifying the most accurate list of patients’ current medicines (National Prescribing Centre, 2008b).

The aim is that patients put all their medicines, including creams and inhalers, in...
the bag, which ensures they take them all into hospital; when they are transferred between wards these go with them. It enables the admitting doctor to know at a glance which medicines have been prescribed and which ones need to continue while they are in hospital.

Mr Thomas had been in hospital five times in the last nine months and this was the first time he had been given a green medicines bag. Box 3 describes the admissions process.

**HANOVER**

Mr Thomas’ own drugs were not prescribed on the drug card. A number of errors related to medication occur at handover points; therefore effective communication is required as patients move from one setting to another. Accurate information about treatment is essential when patients are admitted to hospital (DH, 2004).

In this case there was no verbal handover from the admissions unit to the ward. There was a written handover pinned against Mr Thomas’ name on a board above the nurses’ station. It contained a brief note about the reason for admission, treatment received and list of tasks to be completed, including the administration of IV magnesium, but no time for administration was recorded.

On the admissions unit, Mr Thomas had complained of shortness of breath, for which a nurse asked him to take one of his inhalers. She did not come back to review him or sign for the drug on the chart. The problem of shortness of breath was not recorded or handed over to ward staff.

The nurse on the ward had not been informed Mr Thomas was due to arrive on the ward and a bed was not ready for him. He was sat in the day room with no call bell, accompanied by his wife.

The patient was receiving oxygen but this was not prescribed on the drug chart. The medical notes stated 28% oxygen to be delivered. Parameters for oxygen saturation were set at 92%. However, this was delivered on the ward at 4l through a normal Hudson mask and Mr Thomas had saturations of 95-96%.

British Thoracic Society guidelines (O’Driscoll et al, 2008) stated that all oxygen should be prescribed (except in an emergency) on a drug chart. The delivery device and target saturations must also be recorded on the drug chart and/or the observation chart. The oxygen must be checked and signed for at every drug round.

Mr Thomas had been prescribed magnesium 2g IV, but this had not been administered as the emergency assessment unit (EAU) did not have the relevant pump device available. It was eventually administered three hours and 45 minutes following admission to hospital, after arriving on the ward.

Although venous thromboembolism (VTE) prophylaxis was prescribed, there was no documented assessment and this treatment was never reviewed. The DH (2008b) introduced mandatory, documented assessment of VTE risk and produced a three step risk assessment, which is recommended for all patients on admission to hospital. They should be assessed on admission and periodically throughout their stay, after at least 48-72 hours (DH, 2008b).

**Deterioration**

Overnight Mr Thomas had deteriorated and was now receiving non-invasive ventilation (NIV). This was delivered through a tight fitting mask. A pot of drugs was seen on his table at 9.30am and according to the drug card they had been signed for at 8am. Mr Thomas said a nurse had put them on the table but left no instructions and he did not know what to do. The same nurse was asked to administer his drugs and he received his first dose of antibiotics since admission at 9.30am, 26.30 hours after being admitted.

Omitted medicines were the second most commonly reported type of medication incident in hospitals (NPSA, 2007). Ensuring medicines are not omitted is one of the seven key actions to improve medication safety (NPSA, 2007).

Following the consultant ward round, which finished at 10am, a number of actions were to be taken for Mr Thomas: prednisolone was to be increased to 60mg that day and then reviewed, and IV salbutamol to be prescribed. The prescription for prednisolone had been changed on two previous occasions and the doctors had written over the previous dose. It was therefore hard to see when the dose had changed and who had altered and prescribed the drug in question. Illegible prescriptions are a major cause of error as this forces the person reading the prescription to make their own interpretation (DH, 2004). The increase to 60mg of prednisolone was not transcribed onto the drug card and this was therefore never given.

The consultant requested IV salbutamol to be prescribed but left the ward to attend clinic. The junior doctor had not prescribed this drug before. She asked two colleagues what the dose should be and how to prescribe it. All three consulted the British National Formulary but this was not clear. They thought they should consult the pharmacist but had to wait for her to come to the ward. They asked the nurse in charge for a protocol. He gave them one but added he thought it may be out of date and requested they check with the pharmacist. The drug was prescribed after about 15 minutes of discussion but was not to be given until checked by the pharmacist when she came to the ward.

Salbutamol was actually administered at 5.50pm in the high dependency unit. In the hospital setting, most drugs are prescribed

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**BOX 3. ADMISSION TO HOSPITAL**

On admission to the emergency assessment unit (EAU), Mr Thomas was prescribed nebulisers, doxycycline 200mg (double dose from GP), a stat dose of prednisolone, continuous oxygen therapy and enoxaparin. He had been prescribed magnesium 2g IV at 8am for a continuing wheeze and shortness of breath.

Mr Thomas was transferred to the ward later that day. He deteriorated overnight and was transferred to the high dependency unit for 24 hours. He returned to the ward for a further seven days before discharge home.

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**BOX 2. THE PATIENT JOURNEY FROM HOME TO HOSPITAL**

Bob Thomas is a 63 year old man, diagnosed with chronic obstructive pulmonary disease (COPD) two years ago. He has been admitted to hospital five times in the last nine months, each time with a diagnosis of infective exacerbation of COPD.

Mr Thomas gave up smoking two months before his last admission. His regular medications included salbutamol, ipratropium and fluticasone (Seretide) and tiotropium (Spiriva) inhalers. Recently Mr Thomas felt unwell and visited his GP. He was diagnosed with a chest infection and prescribed doxycycline 100mg daily. The GP referred him to the community respiratory nurse. She visited him once at home and administered nebulised sodium chloride to aid expectoration.

Mr Thomas continued to feel unwell and called an ambulance two days later. In the ambulance he was given nebulised ipratropium and salbutamol and oxygen at 24% via a Venturi mask. His wife was given a green medicines bag for his medication.
by junior doctors who have the least experience, often in complex situations that are unfamiliar to them (DH, 2004). They have to make decisions based on the information available, which may not be complete or accurate. None of the junior doctors called the consultant and asked for advice.

Mr Thomas now had two drug cards but these were not labelled “one of two” and “two of two”, nor were they tied together. A second chart was needed as several drugs had been discontinued and if the charts had been completely rewritten all the drugs could have been accommodated on one chart.

Box 4 outlines the discharge process for Mr Thomas.

**POST-DISCHARGE INFORMATION**

Mr Thomas was given a written information sheet which included a list of his medications. All the correct drugs had been prescribed and he had been given sufficient amounts to take home.

He visited his GP the day after he was discharged. The GP had not received information about his recent admission as this was hand delivered by a relative a short while later. The GP made an assessment of inhaler technique and found this to be poor. This had not been checked in hospital, despite the fact Mr Thomas had told staff he did not like his inhalers. As a result different inhalers were tried and dispensed. A further appointment to be seen in four weeks was made.

In common with hospital figures, the NPSA’s (2007) review of medication incidents reported in the community found that errors relating to communication and documentation were prevalent throughout the medication process in primary care.

Data suggests there are problems in communication and transfer at patient handover (NPSA, 2007). Problems occur in four key areas:

- **Incomplete or incorrect medication history on admission to hospital;**
- **Incorrect or incomplete discharge medicines;**
- **Poor information about medicine on discharge from hospital;**
- **Lack of monitoring or follow up on discharge (NPSA, 2007).**

**Discharge medication**

On discharge there had been several changes to Mr Thomas’ medications. He now had new drugs: budesonide with formoterol fumarate (Symbicort) (prescribed for asthma, which was diagnosed during this hospital admission); lansoprazole (to prevent gastric bleeding, a side effect of the steroids); and salbutamol was prescribed at regular intervals. In addition he had a reducing dose of prednisolone and a further eight days of antibiotics.

Mr Thomas was confused about his medications, and had several prescriptions from his GP, old and new. He was unaware of why his medicines had been changed and a possible diagnosis of asthma. He had no explanation about why salbutamol was now a regular prescription and he was therefore not compliant with it. Mr Thomas expressed concern that this drug gave him palpitations and he was worried about taking too much.

Between one-third and half of medicines prescribed for long term conditions are not used as prescribed. This usually results from a failure to agree the prescription with the patient in the first place and to support them once the medicine has been prescribed (NICE, 2009).

Involving patients in decisions about medicines requires good communication, involvement in decision making, providing information about their condition and treatment and understanding their perspectives (NPSA, 2007).

Mr Thomas had been given a discharge letter which outlined his medications, but he did not seem to fully comprehend this. When questioned, he did not understand the importance of reducing his steroids, why Seretide had been changed to Symbicort or why salbutamol was now a regular dose or how long to take lansoprazole.

Mr Thomas and his wife both said they received different messages from the hospital doctors and the GP, and they wished they would all give consistent advice about his medication. As with many patients, Mr Thomas was under the care of a number of healthcare specialists. Good communication between healthcare providers is needed to prevent fragmentation of care (NPSA, 2007).

**LESSONS LEARNT**

From Mr Thomas’ and his wife’s perspective, his hospital stay and care from his GP were positive patient experiences, and he had nothing but praise for the care he received.

His main concern was breathlessness. On admission he expressed concern that his inhalers were ineffective and his GP changed these to meet his preferences. Mr Thomas felt he had received excellent information about his condition from the practice nurse but was unaware of the diagnosis of asthma and what this meant. He was not compliant.
with one of his prescribed drugs (salbutamol) because the dosing was now different and he had not received any explanations from the hospital team.

Mr Thomas was confused about his medications and when questioned did not fully understand why he was receiving some drugs such as lansoprazole and he was not clear how long to take them for. While he understood he must reduce the dose of steroids he did not know why and therefore did not understand the importance of not stopping the drug abruptly. He was planning a trip abroad and there was a risk he may leave without an adequate amount of drugs.

Despite the clarity of the written discharge information, Mr Thomas had failed to understand clearly the instructions on his medications. He did not receive any verbal instructions.

There were some communication gaps between the hospital and community, as well as an assumption that Mr Thomas would contact key personnel for help such as the community respiratory nurse. However, he felt he did not know the nurse and therefore no relationship had been developed which enabled him to feel comfortable or confident contacting her.

Many practitioners said they had given Mr Thomas information about his condition and how to manage this, but he did not remember this.

A number of errors occurred in hospital which were never recorded, for example, omission of an antibiotic. These could be considered adverse events but the current system does not flag these up.

Oxygen was prescribed in medical notes and not on the drug card. It is known that nurses do not read medical notes and therefore, in this instance, they did not comply with the guidelines for administering oxygen.

The drug card was confusing and this leads to errors as it is difficult to see which drugs are to be given and which ones have been crossed off. There was a lack of adherence to hospital policy regarding writing prescriptions, for example, there was no recording of an assessment of VTE risk, overwriting of drug doses, no stop or review times for antibiotics, and a number of changes to antibiotic prescriptions.

Fig 1 shows Reason’s (1990) Swiss cheese model, where the slices represent barriers against an adverse event, and the holes represent individual weaknesses that, when aligned, lead to an adverse event. It shows how a series of weaknesses led to the omission of antibiotics in Mr Thomas’ case.

IV drugs were given some considerable time after being prescribed. There were no timings associated with these drugs. However, the discharge information to the GP was excellent.

**CONCLUSION**

This patient journey highlights areas for improvements in medicines management. While Mr Thomas rated his experience of care positively, it is of course vital to ensure effective care and safe care.

Nurses must work with other multidisciplinary team members to develop the safest prescribing processes possible. While patient information is vital, it is important to check they have understood this to improve compliance.

Following a patient through their healthcare journey is extremely valuable in terms of understanding quality issues and can be used as a tool to improve care.

REFERENCE


