How a pharmacy team of varied skill mix has prioritised pharmaceutical care based on the complexity of individual surgical patients is described in this SHORT COMMUNICATION

Evaluation of a team-based clinical service for surgical inpatients

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Objectives
To assess the effects of implementing a surgical pharmacy team ward service on the pharmaceutical care provided to surgical patients. To optimise pharmaceutical care by ensuring that the most appropriate team member reviews each individual patient based on his or her clinical parameters, type of surgery, comorbidities and perioperative medicines.

Methods
At Manchester Royal Infirmary (MRI), a pharmacy team was formed comprising one clinical ward technician, Agenda for Change band 5, and four pharmacists, bands 6, 7 (two) and 8b. Elective and emergency surgical patients on two general surgical wards were reviewed and assigned to an appropriate team member according to their clinical status, type of surgery, comorbidities and perioperative medicines.

Pre-study work was done to define clinical parameters, comorbidities, surgical procedures and medicines that were appropriate to each level — see Box 1 (p288) for categorisation of levels. This system ensured that the most senior pharmacist reviewed patients with the most challenging pharmaceutical issues (level 8) and, conversely, that the clinical ward-based technician provided care for patients with no significant medical history undergoing minor surgery (level 5).

During the course of their stay, patients were reviewed by different members of the team according to their clinical status. There was also the facility for pharmacists to refer patients to the technician for monitoring. Patients were also prioritised to be seen by the respective pharmacy team member according to the following order: clinical deterioration; imminent surgery; new admission; discharge; change to medication.

The study was conducted over one month. An audit was conducted for a week before the change in practice to obtain baseline data and in the final week of the study period to assess the efficacy of the team-based service. The audit focused on the following parameters:

- Number of patients who had accurate medicines reconciliation completed
- Number of patients whose medicines were reviewed perioperatively and annotated in accordance with trust perioperative drug management guidelines

Patients’ perceptions of the pharmaceutical care they received during their stay were assessed via a questionnaire, asking the following questions:

- Have you seen the pharmacist and/or pharmacy technician yet?
- Has the pharmacist and/or technician asked you about your regular medication that you were taking before you came into hospital?
- Have you been asked by the pharmacist/technician if you have any questions/problems with your medication?
- Have you been counselled about any aspect of your medication during your hospital stay by the pharmacist?
- Is there anything that you would like your ward pharmacist/technician to do for you that hasn’t been done?

All team members had clinical commitments to other wards concurrently.

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at the time of the team-based study and there was no increase in number of hours of pharmacy service provided to the two general wards in either the baseline or study period.

Results
Eighty-one and 90 patients were reviewed respectively during the baseline and pilot audit periods. All patients had accurate medicines reconciliation completed in both baseline and study audits.

There was an 89.5% increase in the number of drug charts annotated in accordance with trust guidelines in the team-based study, compared with baseline.

Using the team-based service, there was a 210% increase in the number of patients counselled preoperatively about changes to their medication and a 40.5% increase in the number of patients counselled at discharge, compared with at baseline.

There was a 100% increase in the number of pharmaceutical care plans written and reviewed daily in the study audit, compared with baseline.

A 50% reduction in the number of retrospective pharmaceutical interventions was observed in the team-based study compared with baseline. The nature of interventions was similar before and during the study period and interventions were mainly related to inaccurate medicines reconciliation, perioperative drug management, antibiotics and thromboprophylaxis prescribing.

There was a 228% increase in favourable responses to the patient perception questionnaires in the team-based study, compared with baseline.

In the study period the distribution of patients between the four different levels of team members was as follows:

- Band 5 clinical ward technician reviewed 12% of patients
- Band 6 pharmacist reviewed 36% of patients
- Band 7 pharmacists reviewed 45% of patients
- Band 8b pharmacist reviewed 7% of patients

In the baseline audit, band 7 pharmacists reviewed 100% of the patients.

Conclusions
The team-based pharmacy ward service resulted in an improvement in the pharmaceutical care delivered to surgical patients, which was reflected in the positive responses from patients via the evaluation forms. The team approach highlighted that the traditional system of one pharmacist visiting a ward might not necessarily match the needs of patients.

For example, if a band 6 pharmacist had been covering these wards 32% of the patients might have been too complex for him or her to provide an optimal pharmacy service. If a band 8b pharmacist had been covering these wards, 93% of the patients could have been cared for by lower-graded staff. If a band 7 pharmacist had been covering these wards, 48% of the patients could have been reviewed by lower-graded staff. Equally, a band 7 pharmacist might have found 7% of the patients too complex to provide optimal pharmaceutical care.

The team-based service therefore minimised risk to patients and better employed pharmacy resources by ensuring that the most appropriately experienced team member reviewed each patient.

Work is currently being undertaken at MRI to assess the exact skill mix needed to carry out this model of care with the intention of rolling it out across all of the surgical wards in the hospital. The reduction in retrospective pharmaceutical interventions during the team-based study suggests that the team worked proactively with prescribers and influenced decisions at the point of prescribing.

The team-based approach used was modified from a system initiated at Guy's and St Thomas' NHS Foundation Trust in which all patients were seen sequentially by three different grades of pharmacist. The MRI model ensures that patients are only reviewed by the most relevant member of the team.

Further studies are needed to assess the effect of the pharmacy team service on clinical outcomes such as length of patient stay, hospital-acquired infection rates, venous thromboembolic event rates and postoperative pain management.

Reference

Box 1: Categorisation of patients

Patient characteristics used to assign level of care are as follows:

**Level 5**
- No regular medicines
- Minor elective surgery
- No significant past medical history

**Level 6**
- Elective major or minor surgery
- Grade 6 pharmacists can provide sole pharmaceutical care to any patient whose surgical journey does not involve any of the clinical scenarios or parameters stated in Level 7 or 8

**Level 7**
- Drug history includes regular use of any of the following drugs: clozapine, loop diuretic, angiotensin-converting enzyme inhibitor, antiplatelet, warfarin, corticosteroid (equivalent to >10mg prednisolone daily within previous three months), lithium, monoamine-oxidase inhibitor, methotrexate, metformin, sustained-release opioid preparations
- Anticipated intraoperative fluid loss >2L
- Moderate cardiopulmonary function
- Emergency surgery
- Respiratory optimisation required preoperatively (BTS level 4 or 5)
- Recent myocardial infarction (MI) or unstable angina requiring optimisation preoperatively
- Decompensated left-ventricular failure requiring optimisation preoperatively

**Level 8**
- Severe cardiopulmonary function — input required pre- and postoperatively
- Drug-eluting coronary stent sited within previous six months
- Acute LVF with systolic BP <90mmHg
- Perioperative MI with no enteral access and cardiovascular instability
- Profound fluid imbalance with electrolyte disturbance (ie, Na <125mmol/L)
- Deteriorating HAP or AP (FiO2 >60%)
- EWS >4
- Adrenergic shock
- Cardiogenic shock
- Septic shock
- Hypovolaemic shock