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COMMENTARY

Bridging the gap: improving safe prescribing from university to workplace

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Abstract One of the challenges for Foundation Year 1 junior doctors is to apply the theoretical pharmacology from their undergraduate years into practical prescribing. The EQUIP study in 2009 investigated the causes of prescribing errors by junior doctors. Respondents in the study reported deficiencies in their education for prescribing skills and error prevention. The study suggested more could be done during undergraduate education to link theory with practice. This article describes an initiative from a hospital clinical pharmacy team to address this gap in contextual prescribing skills. Final year medical students (FY0s) were allocated to the Belfast Trust for an 11 week placement. The Clinical Pharmacy team developed a 3 h FY0 workshop focusing on practical prescribing scenarios identified as high risk by local medicines safety teams. The workshops included simulated case studies requiring the FY0 student to discuss medicine use with patients, prescribe admission drug charts and use local guidelines to safely prescribe high risk medicines. Each student was assessed using direct observation of procedural skills (DOPS). Feedback was overwhelmingly positive. Students appreciated the practical elements of the workshop. Initially there was an over-reliance on written medication history without verbally engaging the patient. Following pharmacist feedback before the DOPS students demonstrated a clear improvement in patient communication. Feedback from the FY0 students also identified additional learning needs that formed the basis of further teaching.

Keywords Clinical pharmacy · Interprofessional education · Northern Ireland · Patient safety · Patient simulated teaching · Prescribing skills training · Quality improvement

Introduction

One of the challenges for foundation year 1 doctors (FY1) is to apply the theoretical pharmacology from their undergraduate years into practical prescribing [1, 2].

The EQUIP study was an in depth investigation into the causes of prescribing errors by foundation trainees and how this relates to their medical education. It reported a rate of 8.9 errors per 100 medication orders. Orders issued at the time of hospital admission were 70 % more likely to be associated with a prescribing error. Respondents reported deficiencies in their education relating to prescribing skills and error prevention. The study suggested more could have been done during undergraduate education to link theory with practice [3]. It also recommended more training in practical prescribing, with a focus on interactive scenarios involving common errors and patients on multiple drugs.

What was tried?

In 2009, the General Medical Council UK (GMC) published its updated guidance on medical education for the UK medical schools—Tomorrow's Doctors 2009 [4]. The Council recommended that the UK medical schools introduce, for the first time, a clinical placement in which a

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senior medical student, "assisting a junior doctor and under supervision, undertakes most of the duties of an F1 doctor" (Box 1).

In Northern Ireland, Queens University Belfast (QUB) developed their assistantship (FY0) programme. An 11-week final year placement for medical students was designed to provide hands-on experience and practice clinical skills. In preparation for this new placement in 2013, Belfast Hospitals Pharmacy Department developed a 3-h workshop focusing on practical prescribing scenarios identified as high risk by local medicines safety teams. This was delivered for all 106 medical students assigned to the Belfast Trust. The following topics were agreed between Trust and deanery to be covered within the 3-h workshop;

- Medicines reconciliation
- Venous-thromboembolism (VTE) risk assessment
- Warfarin/Direct Oral Anticoagulants (DOACs)
- Treatment of hyperkalaemia
- Treatment of hypomagnesaemia

The inclusion of these topics was based on a review of serious adverse events that had occurred locally and involved FY1 prescribing. The regional drug chart included a VTE risk assessment. Previous audits within the trust had identified that although thromboprophylaxis prescribing was appropriate, documentation of the VTE risk assessment required improvement. The workshop, therefore, was an opportunity to help achieve this standard.

The overall aim was to bridge the gap between theoretical instruction in pharmacology and practical prescribing. Groups of 6 FY0 students per workshop allowed for both group work and 1–1 feedback. Students were presented with simulated case-based scenarios.

In the 1st scenario, students were given a bag of medicines with a list from the GP and some background clinical information about a patient admitted to hospital. The pharmacist facilitating the workshop acted as the patient to encourage students to clarify medicine queries.

The first task was to decipher an accurate medication history by identifying the discrepancies between the written information and the patients own verbal account. Students then had to decide which medicines were appropriate to continue, stop or hold based on the clinical information provided. Following this, they were instructed to complete the drug chart including the VTE risk assessment and prescribe new treatments where necessary. Collective and individual feedback was given before the 2nd case study which had a similar structure.

For this case study an evaluation of the participants' knowledge and ability to prescribe safely was assessed by a Direct Observation of Procedural Skills (DOPS). (Box 2).

For the high risk medicines, students were presented with problem-based scenarios requiring contextual knowledge and skills to safely prescribe. For example the warfarin case had students prescribing a series of warfarin doses based on INR, counseling patients and planning discharge arrangements.

The causes and risks associated with medication errors were prominent features throughout the workshop. For the hypomagnesaemia case study students were asked to prescribe IV magnesium infusion using local guidelines. This scenario encouraged them to work through IV calculations, describe how the infusion would be prepared and administered, and to recognize the risks associated with different dose units, for example, in this scenario the product used was Magnesium sulphate 50 % where 10 ml = 20 mmols = 5 g.

What did we learn? (2015 data)

Communication with patients

For the 1st simulated case study students were reluctant to verbally engage the patient (pharmacist acting) to discuss medicine use. Initially there seemed to be an over-reliance on written medicine information which may be indicative of lack of clinical experience engaging with patients. With their own clinical experience the pharmacists involved in the workshop identified this lack of verbal engagement as a barrier to accurate medicines reconciliation and were able to offer encouragement for the students to ask the patient about their medicines. Following these prompts there was a clear improvement in the second case study. This is reflected in the DOPS results which showed that only 1 out of 106 students required further assessment following the initial DOPS.

Box 1 Glossary

FY1 (Foundation Year 1)

FY1 is a grade of medical practitioner in the UK undertaking the Foundation Programme—a 2-year, general postgraduate medical training programme which forms the bridge between medical school and specialist/general practice training

FY0 (Assistantship)

According to the General Medical Council (UK) assistantship is a type of clinical placement for final year medical students. It should be designed to increase the preparedness of the medical student to start practice as an F1. Although some direct care of patients is implicit and necessary, it is primarily an educational experience which should provide a number of hands-on learning experiences that allow the medical student to gain experience of working within clinical settings and practise clinical skills

Box 2 Knowledge and skills tested in workshop DOPS

Cross-referencing multiple sources of information to obtain an accurate medication history
Venous thromboembolism risk assessment
Prescription of drugs including: Once weekly medication, once only, as required, and regular medications on the standard inpatient drug chart with clear documented plan for medicines suitable for holding or stopping
Titrating warfarin dose based on INR during inpatient stay, detailing discharge plan including communication of information to the GP and patient information

Box 3 Qualitative feedback from students undergoing the course

Sample of quotes
"Really useful practical information. Enjoyed interactive format"
"Cleared up a number of questions I had from first few weeks on the ward"
"Great help and advice- only improvement would be to get more teaching like this!"
"Incredibly helpful session- very much appreciated individual feedback"
Themes
Appreciated interactive nature and small group numbers
Need for more teaching in this format
Helped to link with experiences students were having on the wards
Benefitted from 1–1 feedback on prescribing mistakes

Positive steps

Student feedback indicates that pharmacists can play a role in formative assessment of practical prescribing. Ninety-eight percent found the case studies either helpful or very helpful. Ninety-nine percent responded that the quality of teaching was very good. Students were also asked to comment on the workshop (Box 3). These results confirm that discussion of errors and constructive feedback are an invaluable component of any educational programme [5, 6].

Collaboration

Hospitals designing this type of teaching need to work closely with their local university to avoid duplication with the undergraduate syllabus. The development of the workshop series has coincided with a QUB initiative to map all undergraduate medical training relating to safe prescribing. Data from the university medical course, hospital and GP placements has been collated to ensure key messages are reinforced and developed without repetition.

Challenges

One of the main challenges relates to the placement of the FY0 student as a junior doctor once they qualify. Due to the national placement schedule FY0 s can be assigned to a different Trust once they qualify. It is therefore important that Trusts collaborate to ensure their local course prepares the student in the core topics regardless of where the FY1 will practice.

Identifying additional learning needs

During the workshop students were also asked to identify prescribing topics they felt they required further training. Two key areas emerged; Opioids and insulin prescribing. To respond to these concerns, another 3-h workshop was developed which focused on the practical aspects of safe opioid prescribing. The Clinical Pharmacy team are currently developing a ward based training session which will involve clinical pharmacists supporting FY1 insulin prescribing. During the session the ward pharmacist will discuss practical guidance relating to the different insulin products available, how to safely prescribe insulin and how to access local guidelines.

Conclusion

This pharmacist-led teaching for final year medical students was well received and has now become a permanent component of the final year assistantship programme. Students appreciated the interactive, practical design and were encouraged to engage with patients about their medicines. Clinical pharmacists can have an important role in the formative development of safe prescribing for junior doctors.

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