Medication Safety Forum

Improving the quality of oral medication administration in enterally fed patients

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Ward visits by a pharmacy technician and increased cooperation between the pharmacy and nurses resulted in fewer problems with nasogastric tube feeding in two Dutch hospitals.

Introduction

A substantial group of patients is (temporarily) dependent on nasogastric tube enteral feeding. Oral drugs are commonly administered through the feeding tube. So either solid dosage forms have to be crushed or a liquid oral dosage form or an alternative route of administration needs to be found. Nurses tend to choose crushing, as they are often not familiar with the alternatives and the pharmacist is usually unaware that the patient has a feeding tube, thus prohibiting proactive consultation. However, crushed tablets can cause problems. First, they are the most frequent cause of feeding tube obstruction. Second, crushing tablets destroys controlled release (CR) and enteric coated (EC) formulations. In the case of CR forms, this will lead to an initially increased blood level and an increased risk of side effects, then a lower blood level towards the end of the dosage interval and an increased risk of symptom recurrence. Depending on the reason for EC, destruction of such a dosage form may lead to irritation of the gastric mucosa (e.g. bisacodyl) or a loss of effect if the coating prevents destruction of the drug by gastric fluids (e.g. omeprazole). Finally, crushing mutagenic or teratogenic drugs may harm the nurse. In addition to these problems, errors can be made in administering drugs, for example not flushing the feeding tube before and after administration of each drug in order to prevent drug-food incompatibilities.

Figure 1: A 'do not crush' symbol is printed on unit dose labels

Several studies have shown that in practice all of these problems indeed occur and that nurses receive little training in this area of patient care. Measures to improve the quality of oral drug administration in patients with enteral feeding tubes include introducing guidelines, training nurses and/or patient-specific consultations by the pharmacist. The effect of a programme incorporating all of these measures was studied in two Dutch hospitals.

Methods

The key activity was a daily ward visit by a pharmacy technician. During this visit the technician meets the nurse in charge to find out which patients have recently started nasogastric tube enteral tube feeding. The technician checks their medication (and that of patients already on enteral feeding) and suggests alternatives for drugs that can not be crushed and advises on the right way to administer drugs that can be crushed. Finally, advice on compatibility with enteral feeding is given.

In addition, we developed three general tools. The pharmacy prescription management system is now automatically notified if a feeding tube is used and issues an alert if a CR or EC dosage form is prescribed. A pictogram prohibiting crushing is added to the label of unit doses of CR and EC drugs (Figure 1). Finally, we developed a web-based database showing administration possibilities (including alternatives) for each drug if enteral feeding is needed.

The effect of this integrated programme was examined by looking at tube obstructions (hospital I) and administration errors (hospital II).

Results

The integrated programme in hospital I resulted in a clear decrease in the number of tube obstructions (Hazard ratio 0.22; 95% CI 0.047-1.05). There was a significant decrease in the number of administration errors per nurse in hospital II (Odds ratio 0.003; 95% CI 0.0005-0.02).

Conclusion

A multidisciplinary programme to promote the correct administration of drugs through an enteral feeding tube can result in substantial improvements. To maintain this success, training in the administration of drugs through enteral feeding tubes has been added to the in-service training programme. Furthermore, by continuing their daily ward visits, pharmacy technicians provide a regular reminder of the intervention programme.

The complete methodology and results of this study are published in Qual Saf Health-Care 2006;15:44-7. The EJHP also recommends the excellent University of Tübingen website (in German): www.pharmatrix-extra.de/

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