PHARMACY PRACTICE

Implementation of Once or Twice Daily Dosing in a Long-Term Care Facility

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INTRODUCTION

At the time of implementation of once or twice daily dosing, Providence Centre was a 636-bed, multi-level facility which included a 292-bed Home for the Aged and a 344-bed chronic care hospital. The target patient care areas were five Home for the Aged units and four continuing care (hospital) units. There were approximately 500 patients on these units. The three short-stay units (Rehabilitation, Geriatric Assessment and Palliative Care) were not included since it was recognized that this specific dosage scheduling may not be applicable once these patients were discharged to a community setting. The centre was staffed by 4.5 FTE pharmacists (141 patients/FTE). The pharmacist involved in the pilot of once or twice daily dosing carried a caseload of 112 patients/0.6 FTE.

The scientific literature supported the concept of single daily dosing as a strategy for improving compliance.[1,2] While compliance is not an issue in institutionalized care, multiple dose administration requires more nursing time than does once daily administration leaving less time for other patient related activities.[3] By reducing the frequency of dosing (also known as dosage compression) it was anticipated that the system would meet individual needs, be more cost effective in terms of nursing time and not appreciably increase drug costs.

Description of Program

After discussion by the Pharmacy and Therapeutics and Medical Advisory Committees a pilot project on one Home for the Aged unit which provided care to 56 patients was approved. A team with representation from nursing, pharmacy, and medicine was responsible for developing the program. The team identified educational components for nursing, physicians, patients, and their families and identified the three-month medication review (TMMR) as the most efficient vehicle for changing medication orders by the attending physician and the pharmacist. The pharmacists enhanced their expertise in the area of pharmacokinetic principles particularly as it related to drug accumulation and elimination in the elderly.[4] The team also developed a quality assurance tool to measure outcomes and include risk management. Nursing staff, the pharmacist and the attending physician met to discuss the pilot and assign responsibilities.

Nursing determined the most satisfactory administration times for the unit. This was one of the most critical components of the task since it required the full support of nursing staff to make the necessary changes. Nursing documented the time spent administering medications pre- and post- dosage compression. The times of 0800 h and 2000 h were selected as they best suited the needs of the unit with respect to the arrival of meals, routine laboratory schedules, and recreational activities. Nursing also reassured patients and family members about the new medication program and observed the patients for any changes in their medical conditions which might be attributable to dosage compression.

The pharmacist reviewed the TMMR for the 56 patients, identified where dosage compression was achievable based on pharmacokinetic information and which regular dosage forms were suitable. Certain drug groups were identified as possible exceptions to dosage compression including antibiotics, analgesics, oral hypoglycemics and insulin, anticoagulants, nitrates, some anti-Parkinson drugs and some inhalation therapy.[4] The use of sustained release products was avoided, where possible, due to the additional cost associated with these formulations.

The physician assessed the recommendations for dosage compression, wrote new orders, informed

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the patient or family about the changes and, with the assistance of nursing staff, monitored the patient. If needed, the physician participated in a meeting with the patient's family. Alternately, an information letter was mailed. As well as determining whether dose compression could occur, the team reviewed each patient's TMMR using the following criteria for assessing medication needs: reason for the drug being ordered, goal of the therapy, therapeutic outcome achieved, impact on quality of care, appropriate dose, identification of adverse drug effects, drug interactions, PRN medications administered as ordered. On this basis, unnecessary medications, both PRN and maintenance, were discontinued.[5] The team recognized the importance of the interval between doses and the possible loss of therapeutic effect from missed doses.[6] Doses were more evenly spaced with twice daily dosing than with the facility's accepted TID or QID dosing intervals between 0800 - 2200 h. The new regimen was expected to be better in terms of therapeutic effect. The team also monitored for medication errors using the medication administration record and refill interval.

Program Evaluation

During the pilot project,nursing staff documented a saving of 2.5 hours per day of time previously spent on drug administration activities which could now be spent on more direct patient care activities. Nursing hours were not reduced as a result of this efficiency. Although not the primary focus of the pilot project, the impact on patient care also appeared to be positive. Patients had greater freedom to attend programs off the patient unit without having to take medication. Family and recreation staff were relieved of the added medication responsibility on day trips. Nursing staff, freed from administering medications at meal time, assisted with feeding. Meals were served more quickly and with fewer interruptions. Nursing staff were enthusiastic about the change to twice daily dosing citing that it was more efficient and less disruptive. Patients generally accepted the change quite favourably. Where the team and/or the patient identified a need not met to the satisfaction of both, individualized schedules were established. Also a reduction in the number of medications from an average of 7.4 per day to 6.4 per day per patient was noted as a result of the TMMR process. This reduction contributed to less time being spent on drug administration duties.

Using the facility's medication incident reporting program as a monitoring tool, there was no increase in medication errors nor any apparent adverse effects related to dosage compression, reduction or discontinuation of medications. There was no identifiable increase in the cost of medications associated with using sustained release products.

For the physician, the planning meetings, initial medication review, and patient/family education took additional time. Subsequent reviews due to the thoroughness of the initial review and the decrease in the number of medications prescribed took less time.

Following the pilot project, the program was implemented on the hospital and Home for the Aged units. Dosage compression, with medication pass times of 0800 h and 2000 h, was more difficult to achieve on the Special Care unit for patients with dementias of the Alzheimer type. Some of the patients wandered/paced, some had difficulty comprehending the task or participating effectively in taking medications outside of activities associated with meals, and it was sometimes not possible to achieve adequate control of agitated/aggressive behaviours with twice daily dosing of haloperidol or thioridazine. When appropriate, twice daily dosing was used at 0800 and 1700h to coincide with meals.[7] Eye drops were administered at 0600h while the patient was still in bed; PRN anxiolytics were given at the times identified by the team to be most effective (e.g., sun-downing).[8]

With limited staffing and no increase in clinical time, but by using the interdisciplinary care planning process already in place and refocusing the pharmacist's time on the TMMR during the implementation period, a more effective system of medication administration was adopted. This system decreased the number of medications per patient, decreased the amount of nursing time spent on administration of medications and appeared to improve the quality of care. Ongoing monitoring confirmed that the number of medications prescribed and the associated cost to the health care system remained stable.

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