



Medication Aide Fact Sheet – May, 2007

Resident Safety and Medication Errors

1. It is **difficult to quantify** medication errors for many reasons:
 - There are varying definitions of medication errors – i.e., “inappropriate use of a drug whether or not harm occurs;” “medication errors that have the potential to produce harm;” “clinically significant errors that produce harm,” etc.
 - Studies of medication errors also focus typically on one particular state of the medication use process (i.e., prescribing, dispensing, administering, monitoring, etc.).
 - Incidence of medication errors depends on the type/methods used to detect errors (i.e., direct observation, chart review, computerized monitoring, voluntary reporting).
 - Medication error rates are quoted in various ways (i.e., errors per order; per dose; per 1,000 patient administrations; per 1,000 patient days, etc.).

2. According to an article from the National Conference of Gerontological Nurse Practitioners (NCGNP) 25th Annual Meeting in 2006 titled, *Medication Error Prevention for Healthcare Providers*, **there are several nodes or parts of the medication use process where errors can occur**. These include prescribing, documenting, transcribing, dispensing, administering and monitoring. Ordering or prescribing the wrong drug, dosage, or route contributes to 48% of medication errors. Nurses intercept 48% of these types of ordering errors. Transcription errors account for 11% of all errors, of which 23% are intercepted by nurses. Dispensing errors comprise 14% of all medication errors; however nurses intercept 37% of them. Overall, nurses intercept 58% of all medication errors. **Administration errors account for only 28% of all errors. Could not the nurse’s time be better spent catching medication errors in these other areas of the process, working on medication and dosage reduction with physicians, supervising the administration of *routine* medication by qualified medication aides and developing a systems approach to total reduction of medication errors in all parts of the medication uses process?**

3. Incidence of Medication Errors **related to administration** varies across settings:
 - **Hospitals** (most extensive research) – rate of 2.4-11.1 errors per 100 doses administered. *Lack of access to information about the patient or lack of knowledge about the medication accounts for 78% of administration errors.*
 - **Nursing Homes** (some research on adverse drug events (ADEs) incurred and a few studies on error rates at various stages of medication-use process; little known about errors of omission) – rate of 6-20 errors per 100 doses administered. Excluding wrong-time errors, omission of an ordered medication is the most common type of administration error in nursing homes.
 - **Wrong time errors** is a significant problem in assisted living and nursing homes. In one study, an administration error rate of 27% in AL settings was reduced to 15% when a 4-hour interval was scheduled as opposed to a 2-hour interval for administration (Young et al 2005). In another nursing home study, administration errors were reduced from 35.6% to 6.7% when wrong time errors were excluded (Scott-Cawiezell et al 2005).

Medication Aide Fact Sheet – May, 2007
Resident Safety and Medication Errors
Page 2

4. **Significant Nursing Home Studies** of Medication Errors Due to Administration:
 - Study by Barker et al (2002) of 36 facilities (hospitals and nursing homes) used the medication administration error detection method used by CMS as a quality indicator. Excluding “wrong time errors,” the administration error rate averaged 19% (or nearly 1 of every 5 doses in the typical hospital and nursing home), and there were **no statistically significant differences between hospitals and nursing home rates**. Of the medication errors, about 7% were rated potentially harmful.
 - A statewide study in North Carolina performed by the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill studies nursing home medication errors from January through September 2004. Of the 385 nursing homes that participated (100% of the nursing homes in the state!), there was a total of 10,920 errors reported during the 9 month period. Of these, 9,951 resulted in no harm to the residents (91%); 886 required monitoring/intervention (8%); 82 required ER visit/medical attention (0.08%); and 1 error contributed to permanent harm (less than 0.01%). **Personnel involved in most medication errors were LPNs (54%) or RNs (29.4%) followed by pharmacists (6.9%), physicians (4.3%); patients (2.3%); and supportive personnel (2.1%).**
 - To put the 10,920 errors in context, the researchers estimated that the average nursing home resident received 8.1 medications administered 2.1 times per day (2003 National Medication Usage study). For the approximately 47,000 nursing home beds in North Carolina, this translates to approximately 836,600 administrations of medications per day statewide. **On average, 40.5 medication errors are reported statewide per day which is a very small percent (only 0.005%) of medication administration opportunities.**
 - Possible causes of medication errors were also examined. “human factors” and “communication” were listed as the main possible causes for medication errors accounting for over 93% of responses. High staff turnover, heavy use of agency nurses, understaffing, and lack of communication between staff were possible underlying factors explaining these causes.

5. Incidence of Adverse Drug Events (ADEs) by setting published shows **significantly lower rates in nursing homes**:
 - **Hospitals** – ADE rate of 2.4-6.5 per 100 admissions (estimated that 28-50% are preventable).
 - **Nursing Homes** – ADE rate of 0.02-0.1 per 100 admissions (estimated that 42-51% are preventable). A recent study by Boockvar et al (2004) found that a significant percent of ADEs occurred between transfer from the hospital to nursing home when a large percent of medication were discontinued or altered.

6. In reviewing OSCAR data from the first quarter of 2007, F332 - Med Errors >5%, there was a 3.86% med error rate for nursing homes with medication aides compared to 3.68% med error rate for those without this type of legislation. Regarding F333 – Significant Med Errors, there was a 9.49% rate for nursing homes in states with medication aides versus 10.7% for states without them. The mean number of F148 Drug Errors is 1.536 in states with medication aides and 1.546 in states without medication aides. These variances are negligible.

Medication Aide Fact Sheet – May, 2007
Resident Safety and Medication Errors
Page 3

7. In the February, 2007 issue of *Clinical Nursing Research*, an article (<http://cnr.sagepub.com/cgi/content/abstract/16/1/72>) (Scott-Cawiezell, et al) titled *Nursing Home Error and Level of Staff Credentials*, described a descriptive and exploratory study that used findings from naïve observation of medication administration that was completed during a larger Agency for Healthcare Research and Quality study.
- The five Midwestern nursing homes were a convenience sample of nursing homes within driving distance of the University of Missouri-Columbia. Although a convenience sample, the nursing homes represented both urban and rural settings that were small, medium, and large nursing homes and both profit and non-for-profit ownership, suggesting generalizability from the sample.
 - When medication errors were considered by level of credential, RNs had an error rate of 34.6%, LPNs, had an error rate of 40.1% and CMT/As (Certified Medication Technicians/Aides) had 34.2% of the medications administered in error. However, when wrong time errors were removed, RNs had the largest percentage of error (7.4%), but the highest rate of interruptions (39.9%) Both the complexity of the medications being delivered and the competing demands on the RN's time could explain both the interruptions and medication error rates.
 - The conclusion reached was: “**This study provides some initial evidence to suggest that CMT/As can be effectively used for routine medication administration.** This study also suggests that minimizing interruptions would improve the safety of medication administration. Understanding the limitations of the CMT/As and **creating medication systems that include the RN and CMT/A as partners could provide a safe medication administration** where residents get the right medication, at the right time, in the right dose, through the right route, and prepared in the right method to assure the most therapeutic result.”