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Who is screening what?

Adverse Drug Events in Long Term Care

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BACKGROUND

Seniors have been found to be more susceptible to medication-related adverse events than younger-aged individuals. Higher risk may be due to several intrinsic (comorbid health status, frailty) and extrinsic factors (medication administration process, availability of trained staff). Although drug-related issues in the elderly have been well researched, few studies examine adverse drug events (ADEs) among high-risk seniors: those in long term care (LTC).

To date, ADE studies have focused on the effect of medication policies and procedures or the implementation of electronic medication databases. Although studies use varying screening methods involving nurses, physicians, and pharmacists to determine ADE prevalence rates across a variety of clinical settings, it is difficult to know how much of the reported screened incidents might be due to the professional training of the individual doing the screening itself.

FOCUS: A pilot study to examine prevalence of ADEs in four LTC facilities when screened independently by **nurses, physicians, and a pharmacist-physician team**.

METHODS

A modified, pilot-tested **Harvard Medical Practice Study protocol appropriate for LTC** was used: 4 CNS nurses, 2 physicians, and 1 pharmacist experienced in LTC settings were trained on the protocol. Patient charts across four sites (n=134) were randomly selected from patient lists at each site.

Patient chart inclusionary criteria: (1) the patient had to be a resident of the participating site between January 1, 2004, and December 31, 2004; and (2) there had to have been a RAI-MDS assessment of the patient completed at the start of that time interval.

Method 1: A **nurse-reviewer** screened selected charts at the facility they were employed; this reflects the most common screening method found in ADE studies. Monthly medication reports, nursing notes and consultation reports were included in the review. Recorded data included patient demographics and RAI-MDS. Nurse-reviewers screened each chart for actual/potential Adverse Events (AEs) as outlined in the protocol. Screening was done for **adverse drug events**, **falls**, and **patient safety**. Next, the **pharmacist-physician team** reviewed all nurse-identified AEs and the entire 12-month period for the patient charts screened. This was done to determine if the consensus team felt there might be other possible AEs not identified by the nurse-reviewers. Upon completion of their independent reviews, the team then met at a consensus conference where each event was discussed on: (1) agreement the nurse-identified event was an AE based on the protocol; (2) the degree to which the evidence for the ADE was either non-existent or strong; (3) the degree to which the ADE was preventable; and (4) the degree of disability associated with the incident (from no evident effect to death). Ratings for issues 2-4 were made on a 6-point Likert scale.

Method 2: Two physicians independently reviewed all 134 patient charts. In addition, the two physicians determined through consensus the likelihood and severity of consequence for each medication error they identified.

The study was approved by the joint University of British Columbia and Providence Health Care Research Ethics Board.
All data were entered into SPSS™ 16.0 for PC and analyzed.

FINDINGS

Of the 134 patients whose charts were reviewed:
Sex: 89 (66.4%) women; 45 (33.6%) men.
Age: Mean age of 82.99 years (SD = 8.89); range of 65-104 years.
A significant difference was found between women and men on age (F=8.86, df=1, p=.003) with women being older (mean age=84.59, SD=8.71) than men (mean age=79.91, SD=8.48).
Comorbidities: The top five comorbidities were: CVA (41.8%), dementia – non-Alzheimer type (34.3%), depression (25.4%), diabetes mellitus (24.6%) and Alzheimer's Disease (20.1%). The average number of comorbid conditions was 5.1, with men having slightly more comorbid conditions (6.2) than women (4.6)
Site differences: A significant difference was found across sites, with women being more predominant than men (X2=52.3, df=3, p <.001). There were no significant age nor ADE differences across the four sites (p >.05).

ADE Screening Method Results

	Method 1		Method 2
ADE Classification	Nurses	Consensus Team	Physicians
Untreated condition	0	7	1
Adverse drug event	8	46	348
Medication errors	2	2	0
Subtherapeutic dose	1	6	18
Supratherapeutic dose	1	3	8
Drug-drug interactions	1	5	10
Not an ADE	7	2	0
Screened incidents	20	71	385
Number of patients (total sample=134)	17 (12.7%)	17	95 (70.9%)
Crude rate	1.4	5.1	27.7

Screening Method 1 Results *(Nurse Screening for ADEs)*
Nurses identified 17 patients with ADEs from the 134 charts (12.7%) . Among these, 20 incidents of ADEs were identified (Crude Rate =1.4), with the majority of incidents related to medication administration errors. Of the 20 identified incidents among the 17 patients, the pharmacist-physician consensus team conferences classified them as follows: **7** should **not** be considered ADE (4 were identified by nurse-reviewers as a wrong medication); **8** as an adverse drug reaction (ADR); **2** as a wrongly administered medication; **1** incident as a subtherapeutic dose; **1** incident a supratherapeutic dose; and, **1** incident as an ADR due to a drug-drug interaction.

In contrast to the nurse-reviewers, **the physician-pharmacist team** identified a total of **71 ADEs** for the same 17 patients (CR =5.1). The top four types of incidents identified by the consensus team were: ADRs (67.2%); Supratherapeutic dose (7.2%); Subtherapeutic dose (5.6%); Untreated indication that warranted medication (4.8%).

Screening Method 2 Results *(Physician Screening for ADEs)*
Two physician-reviewers identified 95 (70.8%) patients with a possible 385 ADEs (CR=27.7). The most commonly identified medication-related ADEs were: **falls** (25.7%), **somnolence** (7.8%), **GI disorder** (14.0%), **abnormal laboratory results** (4.9%) and **edema** (3.6%).

CONCLUSIONS

A dramatic difference was seen in the identified number of incidents between the nurses and physicians/pharmacist reviewers, with nurses appearing to focus primarily on symptoms, physicians on laboratory findings and diagnoses, and pharmacists on possible drug-drug interactions.

KEY RECOMMENDATIONS

- *ADE Education and Training Certification, especially Care Aides (more frequent in LTC)*
- *Standardize Definition of a Medication Adverse Event*
- *Standardize Reporting of Incidents in Medical Charts*
- *Standardize Incident Review and Monitoring Process*
- *Remunerate non-salaried Physician/Pharmacist*
- *Ongoing Monitoring and Research*

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FURTHER INFORMATION

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