

Drug-Related Hospital Admissions of Family Medicine Patients: The High Cost of Non-Adherence

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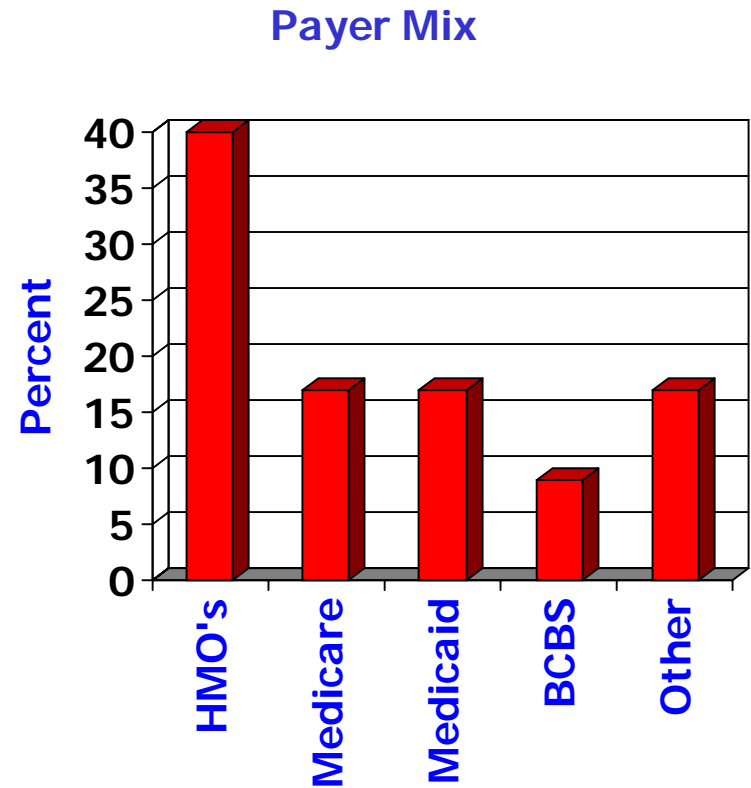
Eastern Virginia Medical School Campus– Norfolk, VA



- Department of Family and Community Medicine (DFCM)
 - 2 family practice centers
 - 3 family medicine residency programs
- Sentara Healthcare
 - Largest regional health organization with six hospitals and several health plans
 - Sentara Norfolk General Hospital (SNGH) - flagship
- DFCM has own family medicine service at SNGH
- PharmD fulltime at DFCM with teaching and patient care responsibilities
 - Preceptor for pharmacy students and residents

Ghent Family Practice

- 30,000 patient visits per year
- Primarily African-American adult population
- Sentara Healthcare is primary private insurer





Prompt for Study

- GFP PharmD on inpatient rounds once a week
- Observation that many drug-related events and admissions were not being recognized or documented by family medicine residents
- Hospital census beyond capacity and patients waiting in ED for up to 48 hours for admit
- Increasing complaints of high drug costs and co-pays by both outpatients and inpatients
- Increase in complexity of drug regimens, new drugs, and multiple providers



Methods

- Pharmacy resident assigned to inpatient family medicine rounding team
- Concurrently monitored the progress of all adult admissions for 40 consecutive days, assisting with therapeutic recommendations and drug information requests
- Also recorded primary and secondary causes for admission
- If primary drug-related cause, the resident performed patient interviews when possible and reviewed outpatient charts for medication history



Classification of Drug-Related Events

1. Adverse drug event
2. Failure to receive drug (non-adherence)
3. Drug interaction
4. Untreated indication
5. Drug used without indication
6. Improper drug selection
7. Subtherapeutic dosage
8. Unintentional overdosage
9. Intentional overdosage



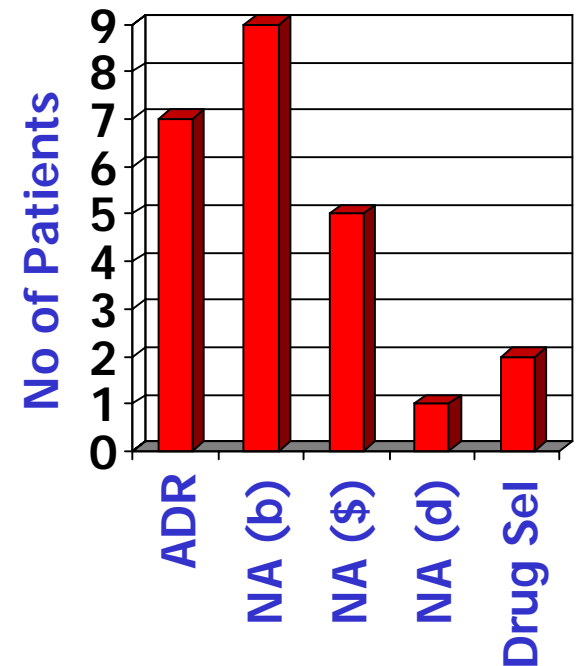
Methods

- Recorded sex, age, race, length of stay, primary and secondary causes for admission
 - If primary cause drug-related, used modified Naranjo ADR scale to determine probability
- For admissions secondary to adverse drug event:
 - Recorded severity, classification, probability, drugs involved, interview information, and outpatient chart review information
 - Patient information reviewed with GFP PharmD

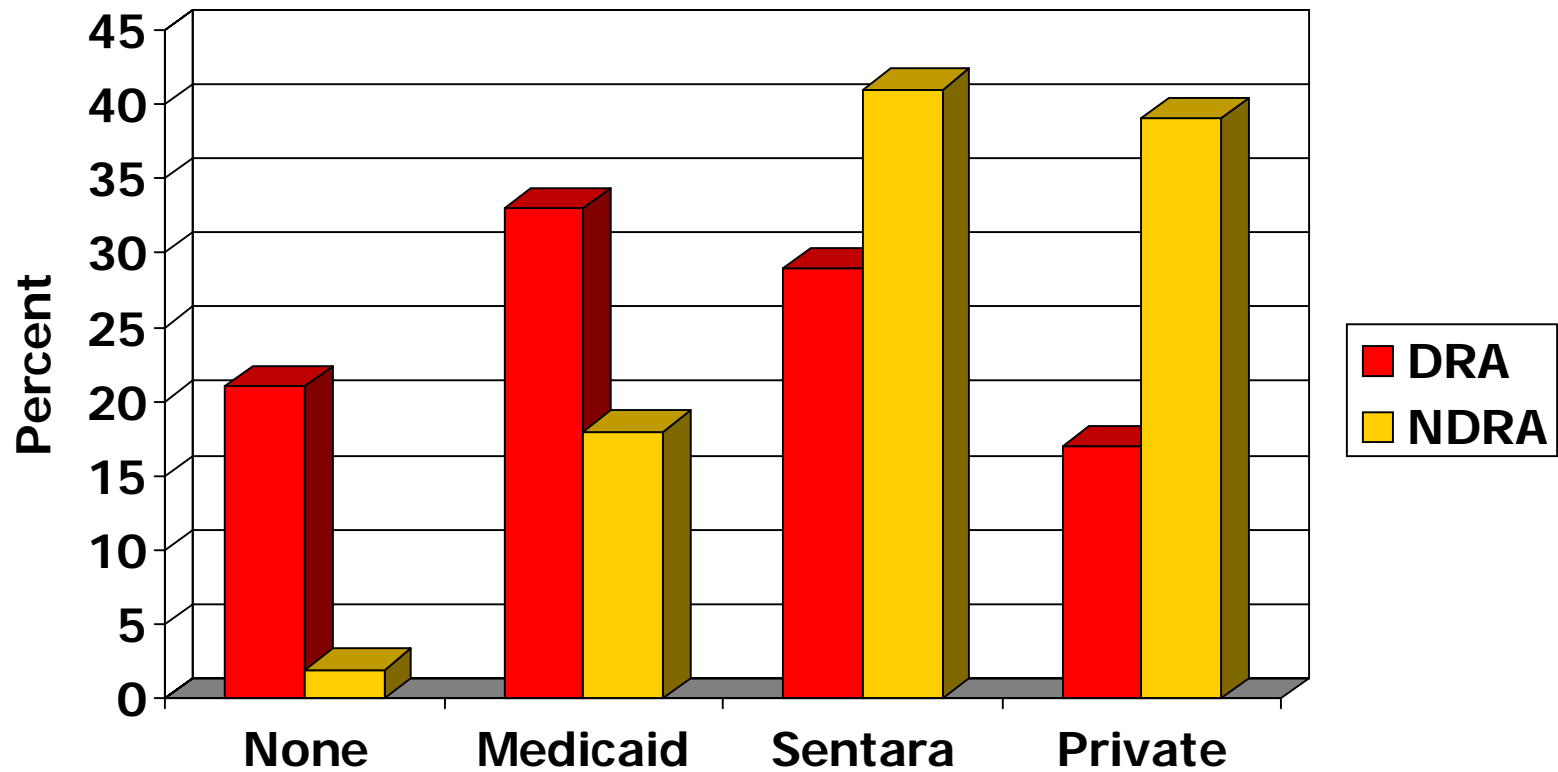
Results

- 68 adult patients admitted over 40 consecutive days
- 24 (35%) were primarily drug-related admissions (DRA)
- 15 (22%) due to non-adherence
 - 60% behavioral (b)
 - 33% financial (\$)
 - 7% drug distribution (d)
- 88% of DRA were considered preventable
- Mean LOS higher for DRA
 - DRA – 6.5 days
 - NDRA – 4.5 days

Drug-Related Admissions



Outpatient Prescription Drug Coverage





Non-Adherence Examples

- Behaviorally related
 - 64 y/o AA male admitted with hypertensive urgency and CHF exacerbation. He did not take his hypertensive medications (CCB and diuretic) for last week because he was afraid he would have an adverse effect similar to one he had with ACE inhibitor
- Financially related
 - 78 y/o AA male admitted with right sided weakness and CVA associated with uncontrolled hypertension and diabetes. Patient has been receiving samples on an intermittent basis at an indigent care clinic. Patient had Medicare with no supplemental insurance.



Conclusion

- In this small observational study of a local family medicine population, it appears that a high percentage of hospital admissions are due to drug-related events, the majority of which are related to non-adherence and are potentially preventable.



Weaknesses and Limitations

- Observational
- Small size
- Predominantly elderly, black, poor patient population
- Pharmacy residents with relative lack of experience
- Bias from pharmacists' perspective, without independent evaluation



Drug-Related Hospital Admissions

- Adverse drug reactions vs adverse drug events
- Adverse drug events in ambulatory care beginning to receive attention (Gurwitz et al, Gandhi et al)
- Most studies of drug-related admissions focus on adverse drug reactions and date back several decades (Einarson, Lazarou et al)
- Retrospective vs prospective data
 - Reported ADR rates range from 1% to 17%



Root Causes of Non-Adherence

- Multiple providers
- Multiple medications
 - New disease state guidelines
 - Interactions
 - # of doses
 - CME emphasis on promotion of drug use
- High direct and indirect drug costs
- Documentation discrepancies
- Poor communication



Solutions

- Adherence interventions
 - Time for extensive interview of patient
 - Identifying intolerances and barriers
 - Instructions, reminder aids, etc
- Therapeutic interventions
 - Assumption that prescription is appropriate
 - Need for better individualization of therapy
 - Must be aware of costs and insurance status
 - When too many drugs, need to prioritize those with the best evidence for efficacy, greatest effect on morbidity, and least cost.



Next Steps

- Verify results with expanded study using independent reviewers.
- Develop process to systematically identify inpatients admitted secondary to drug-related events and communicate with outpatient providers.
- Develop multidisciplinary outpatient program (physician, pharmacist, psychologist?) to evaluate and manage identified patients once discharged.



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