

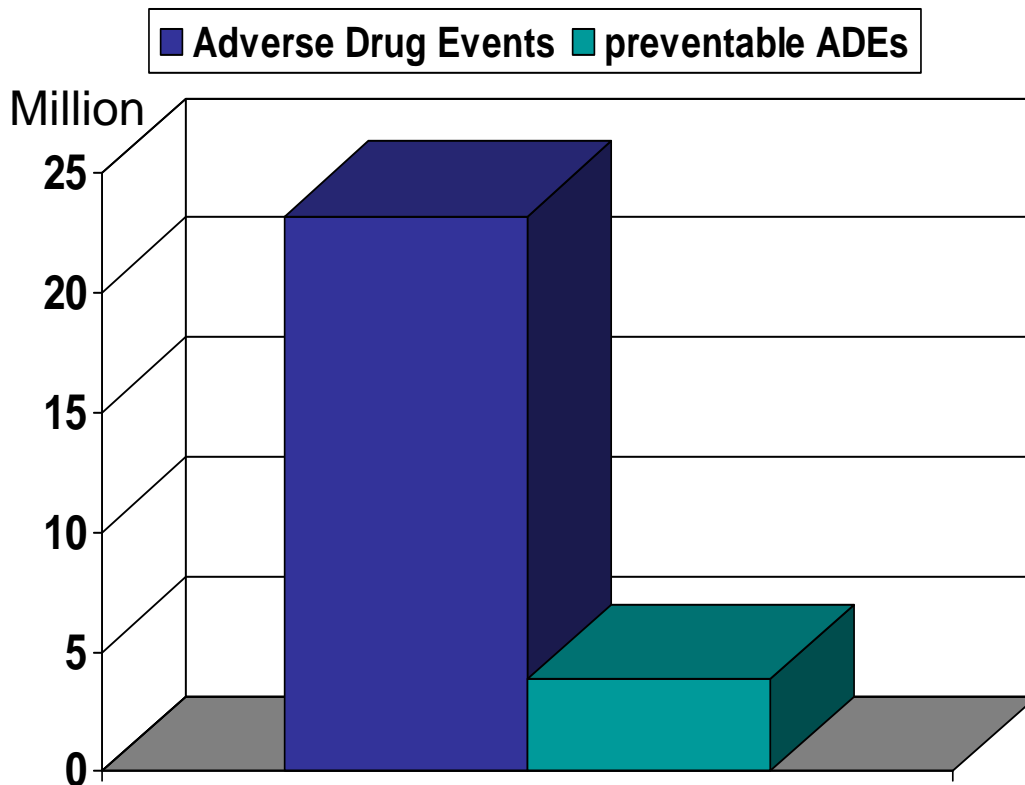
MEDICATION ERRORS IN PRIMARY CARE

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Why focus on medication errors in primary care?

Austrians consume 181.6 Million packages of medication per year¹



The median prevalence rate for ADEs in primary care is 12.8%²

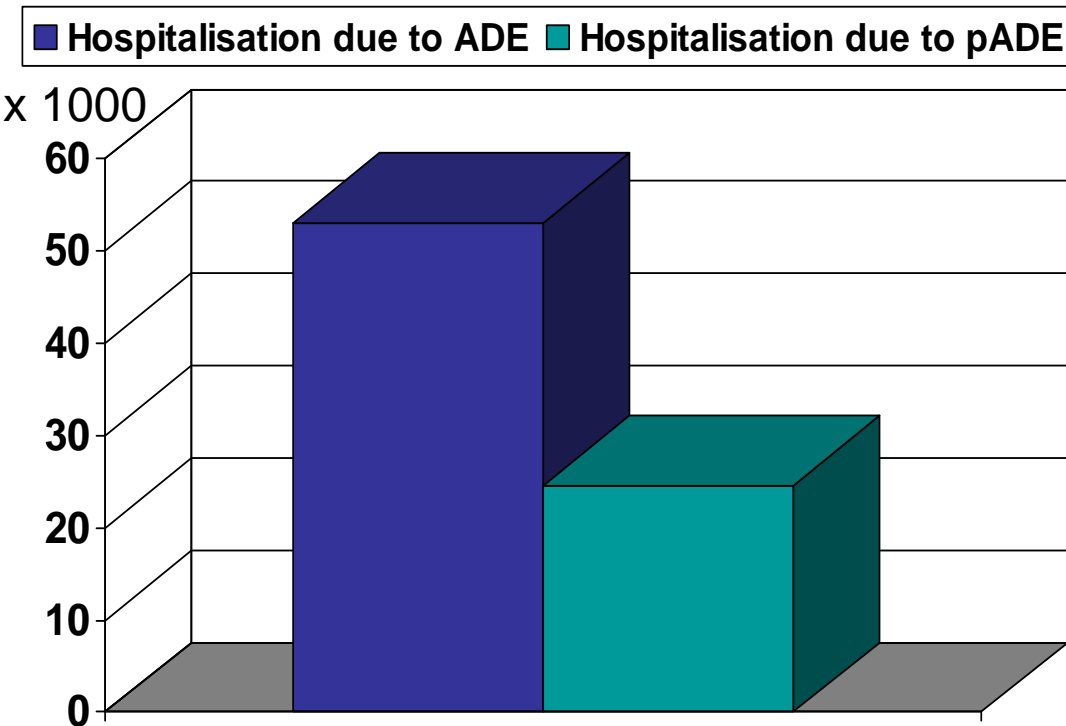
A median of 16.5% of these ADEs are preventable²

¹ Austrian Health Report. ÖBIG 2010

² Taché S, *et al.* Prevalence of adverse drug events in ambulatory care: a systematic review (in press)

Why focus on medication errors in primary care?

2.22 Million Austrians are hospitalised per year, about 0.9 Million unplanned¹



5.6% of unplanned hospital admissions are due to ADEs²

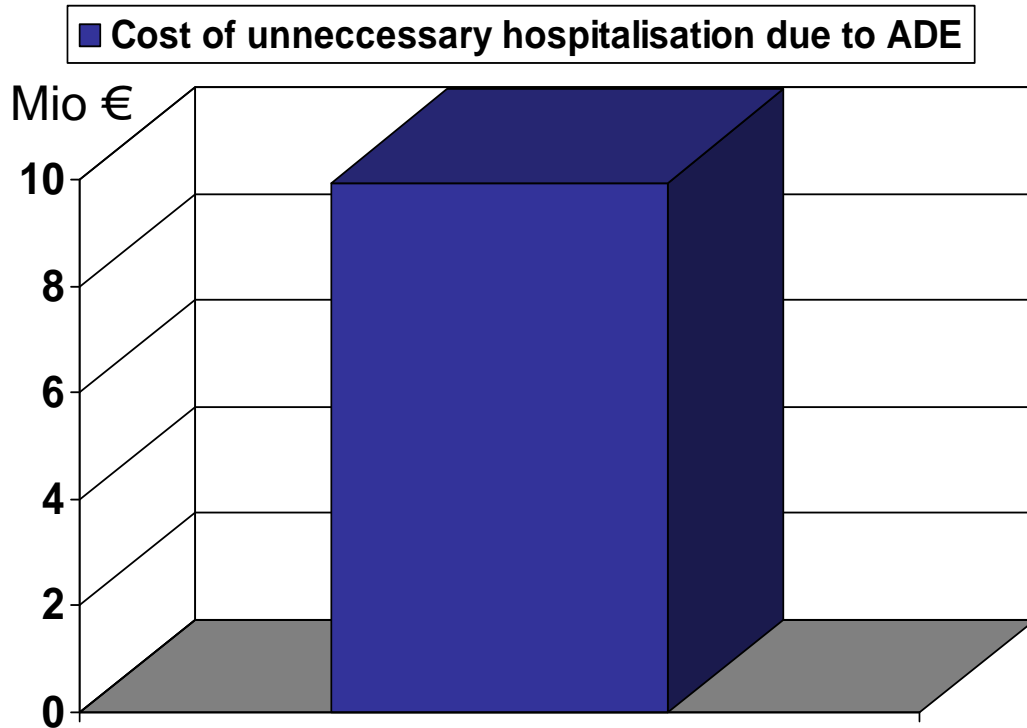
46.5% of these admissions are preventable²

¹ Austrian Health Report. ÖBIG 2010

² Leendertse et al. Frequency of Preventable ADE-related Hospital Admissions in the Netherl. Arch Int Med 2008

Why focus on medication errors in primary care?

25000 unnecessary hospital admissions per year



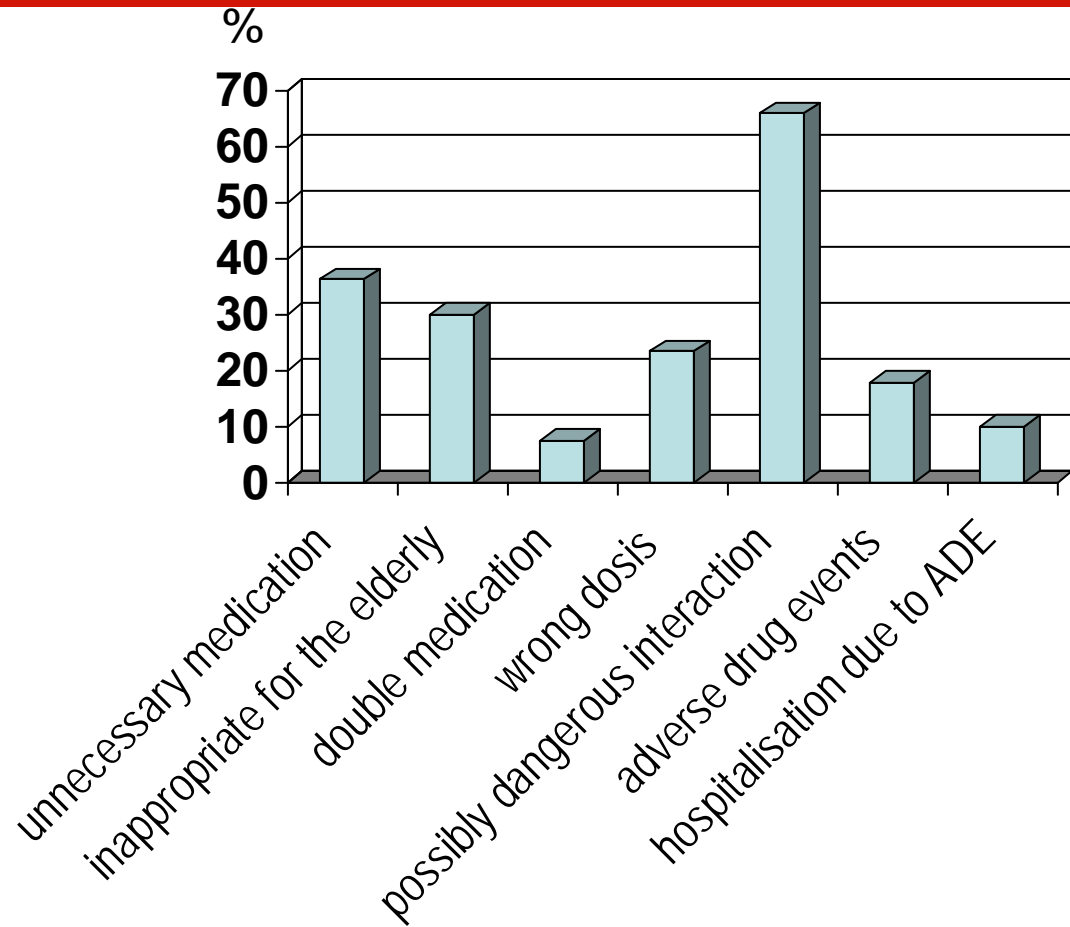
Average duration of stay in the hospital: 9 days

Average cost of 1 day in the hospital: 450 €

¹ Austrian Health Report. ÖBIG 2010

Medication Errors at Admission to an Austrian Hospital

543 patients admitted to the hospital, taking a mean of 7.5 drugs.....



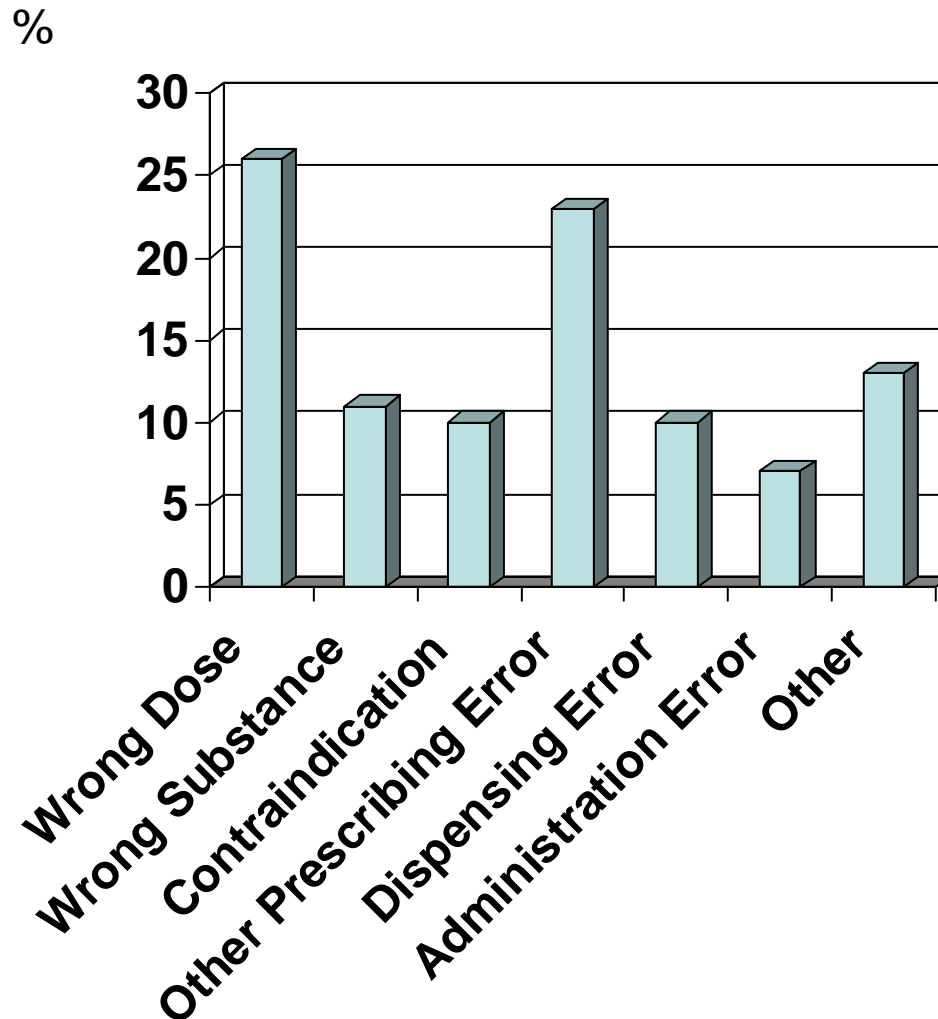
Schuler et al WKlinWo 2008; 120: 733

ADEs are most frequently due to....

Children ¹	Adults ¹	Elderly ¹
Antiinfectives	Cardiovascular Dr.	Cardiovascular Dr.
Analgesics	Analgesics	Anti-Cancer-Drugs
Respiratory Drugs	CNS-Drugs	CNS-Drugs
CNS-Drugs	Antiinfectives	Analgesics
	GI-Tract-Drugs	Antiinfectives

¹ Taché S, *et al.* Prevalence of adverse drug events in ambulatory care: a systematic review (in press)

Causes of Medication Errors



Kuo 2007





“I can tell this prescription is a phony.
The doctor's signature is legible.”

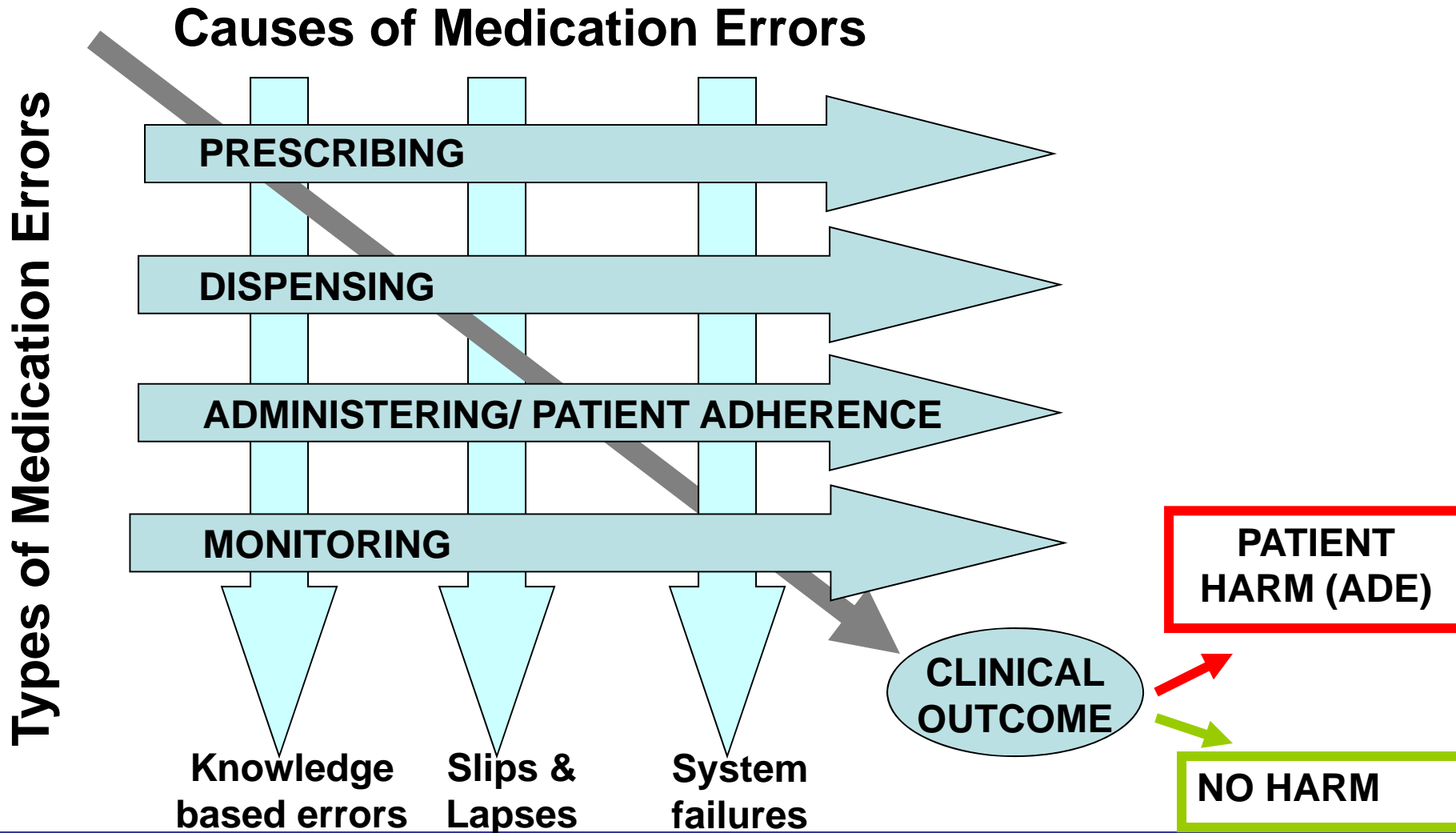


“Son, just how much of this extra strength pimple remover did you use?”

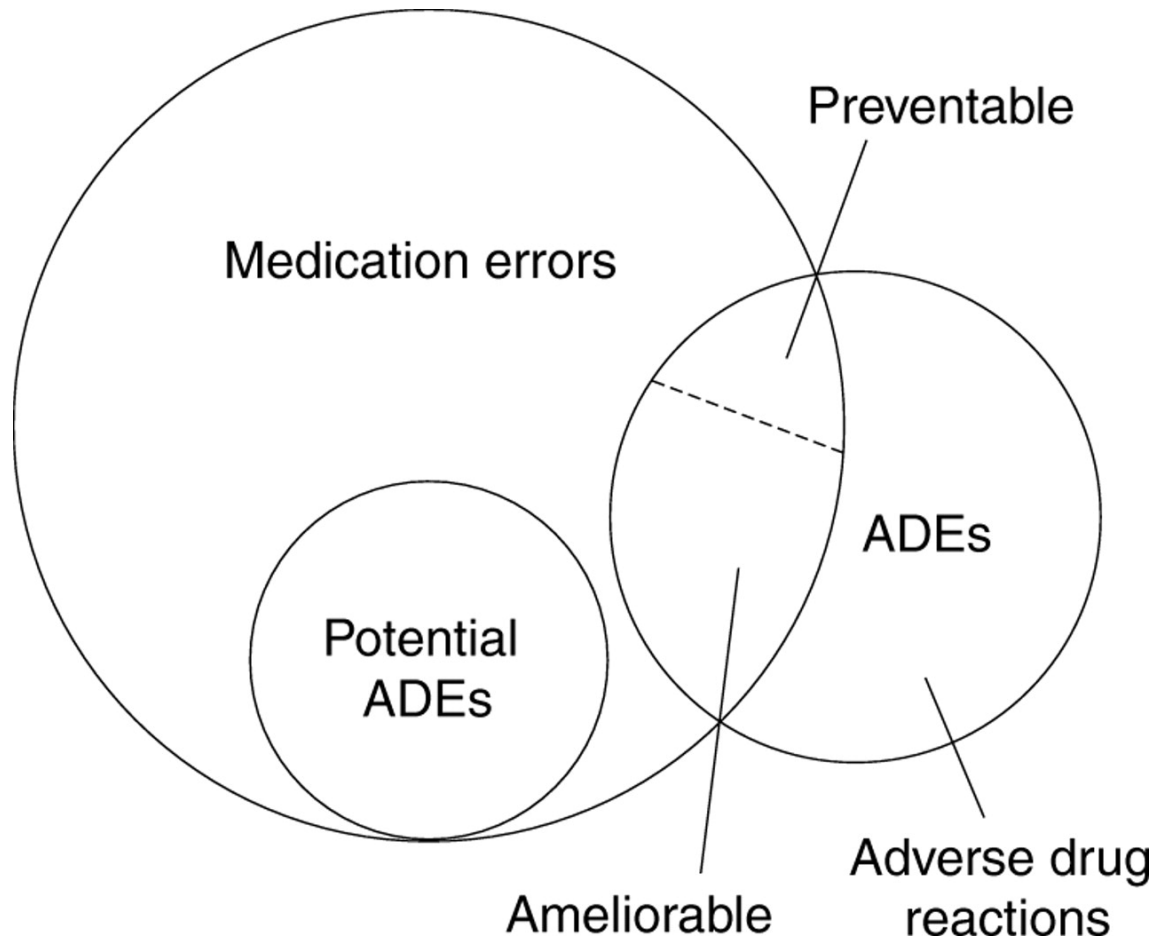
ADMIT IT... YOU'VE
BEEN SECRETLY
TAKING HERBAL
REMEDIES AGAIN!



Medication Error Matrix



Relationship between ADEs, potential ADEs, and medication errors.



Morimoto T et al. Qual Saf Health Care 2004; 13:306-314

DEFENCES

Procedures

Physical barriers

Training

Culture

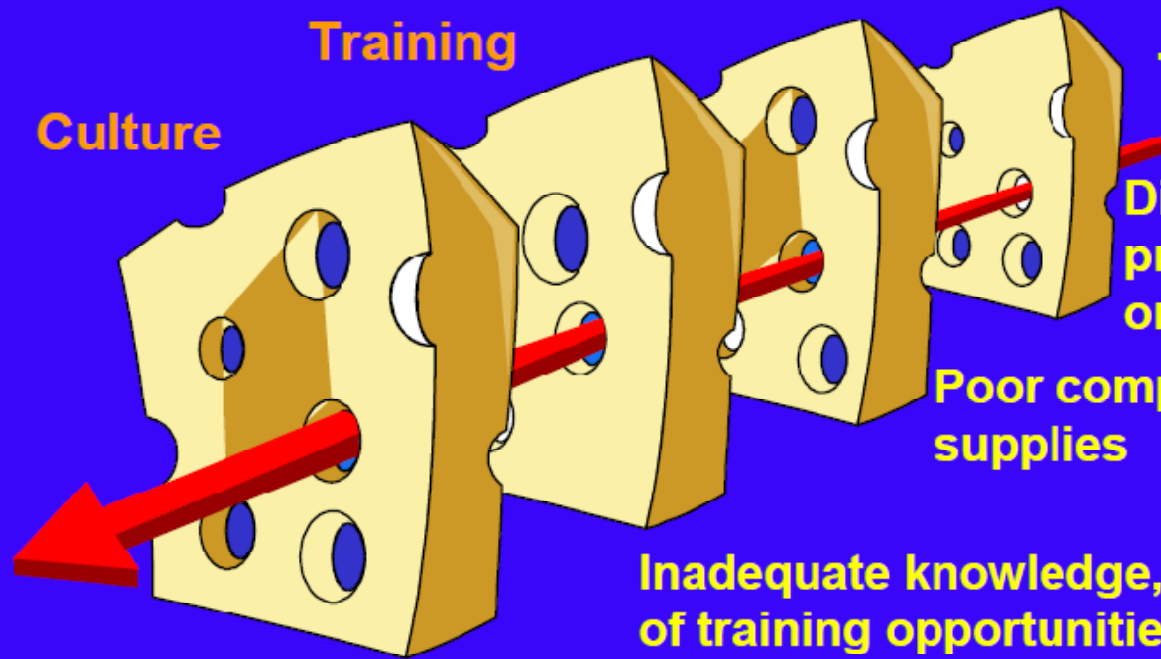
THE GAPS

Disease manage protocols missing or not actioned

Poor compliance, poor supplies

Inadequate knowledge, lack of training opportunities

Patient harmed



Why is the problem likely to get worse?

- Shift to more outpatient management
- Greater number of medications per capita over time
- Greater complexity of outpatient medical management
- Increasing polymorbidity and polypharmacy
- Increasing proportion of elderly in the population



PREVENTING DRUG RELATED MORBIDITY

Interventions at the primary care level

Miriam Lainer

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Medication errors: What can be done?

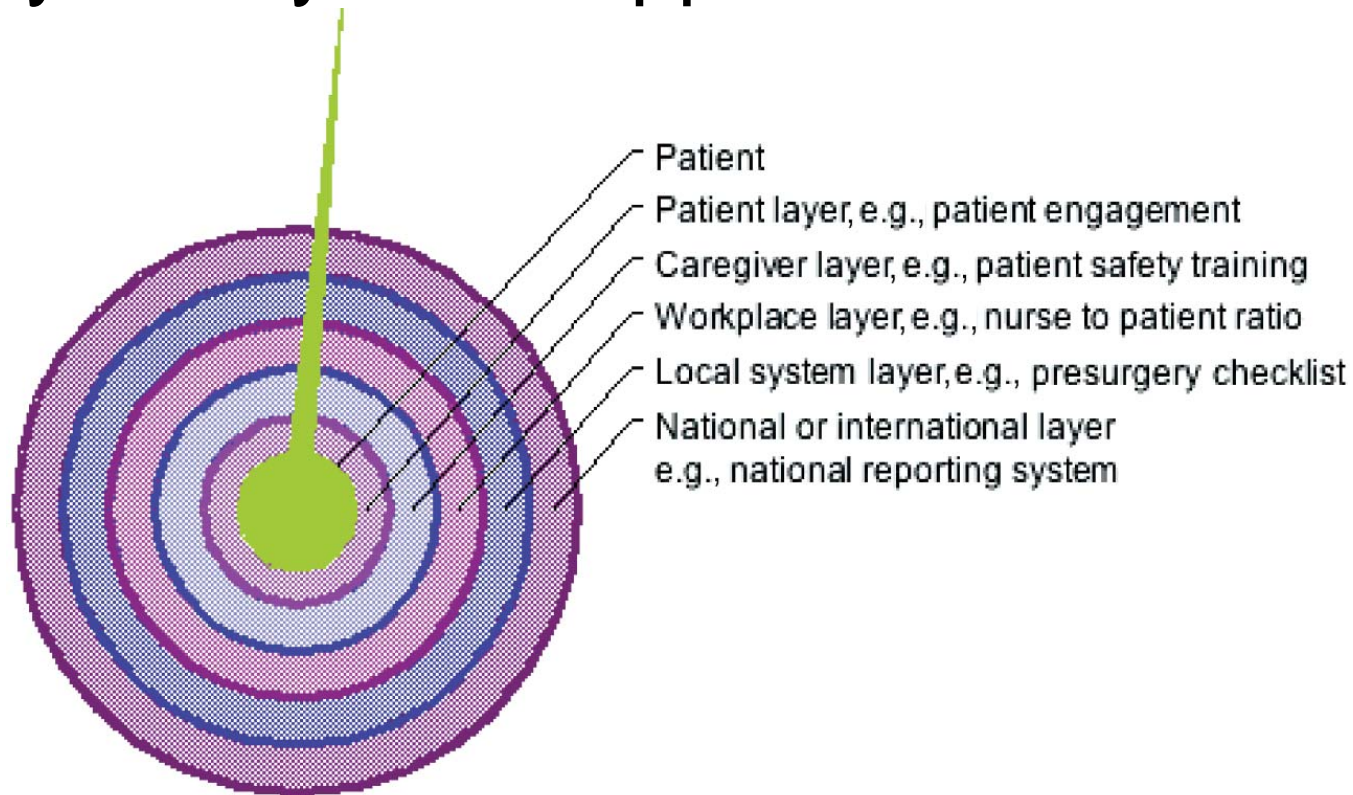
1. Patient safety culture
2. Root Cause Analysis
3. Create a Safety Onion around the patient with multi-level interventions¹



¹Woodward et al. 2010 Ann. Rev Public Health 31:479-97

Preventing Drug Related Morbidity

Why is a systems approach needed?

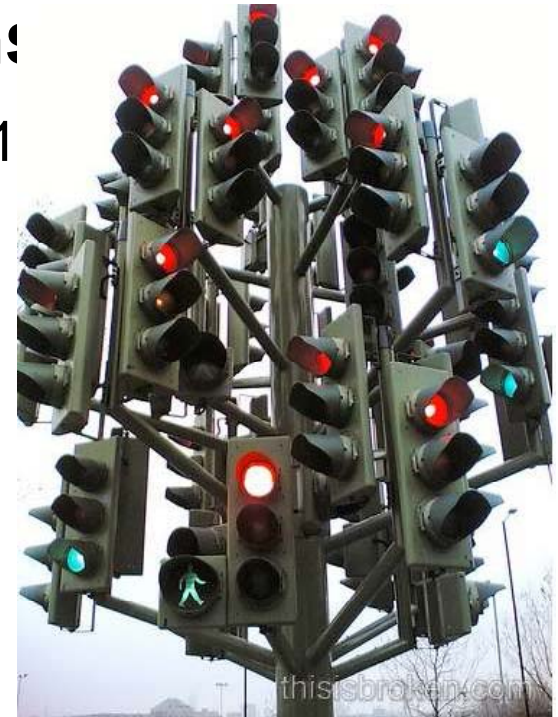


AR Woodward HI, et al. 2010.
Annu. Rev. Public Health 31:479–97

Systems level interventions

Information Technology Systems:

- Computerized Prescriber Order Entry ¹
- Clinical Decision Support ²



¹ Eslami S, *et al.* The impact of computerized physician medication order entry in hospitalized patients. A systematic review. *International Journal of Medical Informatics*. 2008; **77**(6): 365-76.

² Durieux P, *et al.* Computerized advice on drug dosage to improve prescribing practice. *Cochrane Database of Systematic Reviews*. 2008; (3).

Systems level interventions

Incident Reporting Systems ³

www.cirmsmedical.at

www.jeder-fehler-zaehlt.de

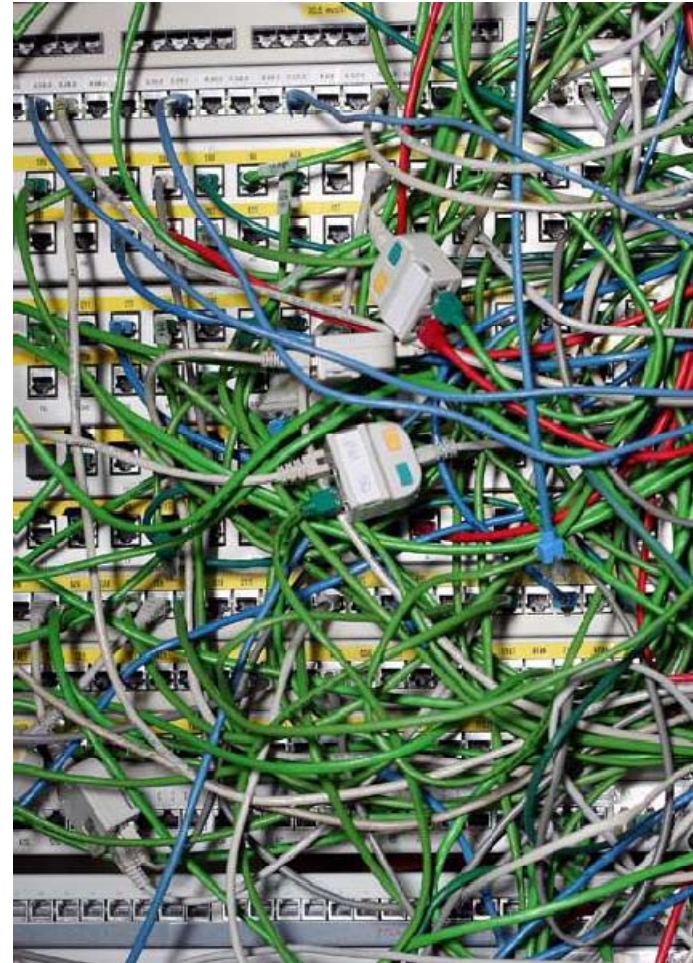
(= every error counts)

www.nrls.npsa.nhs.uk

³ Leape LL. 2002. Reporting of adverse events. *N. Engl. J. Med.* 347(20):1633–38

„The dream of modern medicine - that life, death, and illness can be scientifically (*technically*) dominated and pacified - will be one of the most difficult to give up.“

Daniel Callaghan (Medical Ethicist)
„False Hopes“ 1998



Pharmacist-led Interventions

- The **Pincer Trial**: Intervention with community pharmacists to decrease inappropriate prescribing¹
 - Significant decrease in inappropriate prescribing/monitoring after 6 months
- Pharmacist-led medication regimen simplification for patient on poly-pharmacy²



¹ Avery *et al.* The PINCER Trial. Abstracts of the 26th International Conference on Pharmaco-epidemiology & Therapeutic Risk Management, 19–22 August 2010, Brighton, UK

² George J, *et al.* 2008. A systematic review of interventions to improve medication taking in elderly patients prescribed multiple medications. *Drugs Aging* 25(4): 307–24

Interventions around the Patient

- Physician-patient **communication** is a major factor in patient adherence
- Assess Health literacy
- A **multi-disciplinary** approach for patient medication education can be effective¹
- Therapeutic self-monitoring²

¹ Al-Rashed SA, *et al.* 2002. The value of inpatient pharmaceutical counseling to elderly patients prior to discharge. *Br. J. Clin. Pharmacol.* 54(6):657–64

² Heneghan C, *et al.* 2006. Self-monitoring of oral anticoagulation: a systematic review and meta-analysis. *Lancet* 367(9508):404–11



Conclusions

- Interventions should occur at **many levels** to effectively reduce medication errors
- Current best evidence points to including **pharmacists** in medication management
- Medication safety remains an imperfect science
- Interventions should **continue** despite the lack of evidence



Thank you for your attention

