Hospital Accreditation: Aim or Means?

EAHP 22nd Congress 22-24 March 2017 Cannes, France: Hospital pharmacists – catalysts for change
Seminar LM2
Frank E. Rademakers, UZ Leuven, Belgium

Hospital Accreditation: Aim or Means?

Critical appraisal of implementation of accreditation standards

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Hospital Accreditation: Aim or Means? What's in it for me?

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Hospital Accreditation: Aim or Means? What's in it for the Patient?

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Disclosure COI

None

Teaching Goals

- To describe the generic structure and focus of accreditation standards.
- To make aware of the need for a quality and safety culture in healthcare.
- To identify the most important issues, main pitfalls and quick wins.

Questions

- Medication errors are the third important cause of patient harm in the hospital environment: Y/N
- Accreditation is impossible if you do not have an electronic patient record and electronic prescription module Y/N
- Knowledge-based errors are the most common cause of medication administration errors Y/N


Patient
Needs

Michael E. Porter Thomas H. Lee

Demand and Supply–Based Operating Modes

– Operating modes

- 5 classificatory variables
  urgency, severity, clarity, continuity, risk
- 7 operating modes based on demand and supply

Paul Lillrank

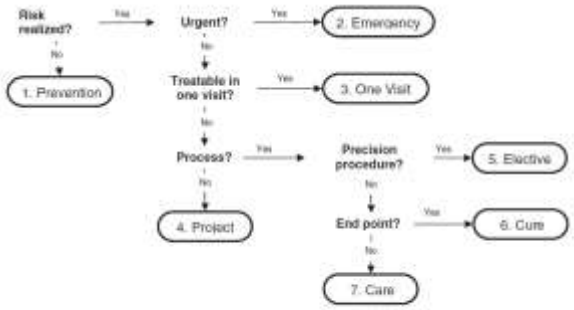

FIGURE 1. Demand and Supply–Based Operating Mode Flowchart.

The Milbank Quarterly, Vol. 88, No. 4, 2010 (pp. 595–615)

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ASHP Foundation PHARMACY FORECAST 2017

Strategic Planning Advice

for Pharmacy Departments in Hospitals and Health Systems

- Population Health Management: Improving the Community to Heal the Patient
- Health-System Operations: New Frontiers in Practice Change
- Health Information Technology: Integration, Patient Empowerment, and Security
- Therapeutics: Changing Practices to Meet New Demands
- Managing Medication Costs: Focusing on Value
- Regulatory Requirements: Proliferation of Complex Demands
- Pharmacy Work Force: Shifts in Roles, Responsibilities, and Training
- Presidential Election: Republican Donald J. Trump Is the Surprising Victor

AM J HEALTH-SYST PHARM | VOLUME 74 | NUMBER 2 | JANUARY 15, 2017

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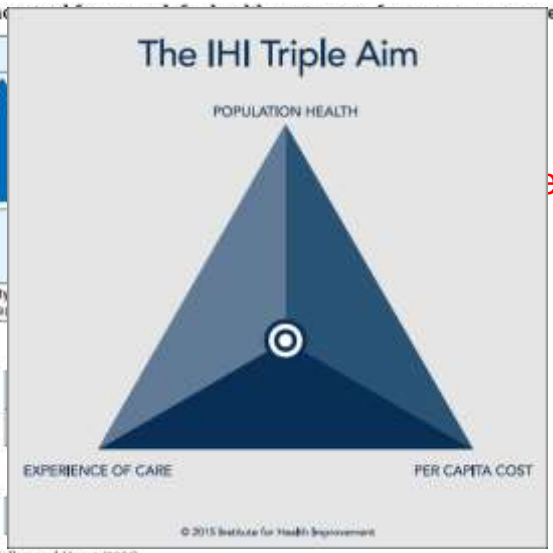
Societal Framework

Figure 0.1. Conc ent



Source: Adapted from Kelley and Hurst (2006).

ed Value = Quality/Cost

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New Model Design

- Alternative sites of care or caregivers
- New care processes
- Enabling technologies

→ Improvements in quality and/or cost

NEJM 368: 1468 18 April 2013

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Success depends on

- Effective care teams
- Management of local operations
  - Clinical microsystems
  - Influenced by clinicians/care providers

▶ Clinical Leadership

NEJM 368: 1468 18 April 2013

Need for Leadership

- Deep in the organisation
- Without formal title, authority or leadership job description

- Focus on
  - Shared goal
  - Dependence on others' action to succeed
  - Lack of direct control over others

NEJM 368: 1468 18 April 2013

Challenges

- Clinicians schooled as individualists
- Don't view the goal as shared
- More accountable to professional bodies than local authorities

NEJM 368: 1468 18 April 2013

4 Key Tasks

- Establish the group's purpose
- Ensure that clinical microsystems can execute to achieve these goals
- Monitoring system performance
- Improving performance

NEJM 368: 1468 18 April 2013

Establish the group's purpose

- Goal is shared
- Action is collective

"Many clinicians presume their organisation's purpose is to provide patients with services , and them with clinical resources."

- Move from transactional performance measures to outcome measures which put a premium on teamwork.

NEJM 368: 1468 18 April 2013

Ensure that clinical microsystems can execute to achieve these goals

Address 2 tensions

- between evidence-based medicine and patient-centered care, which requires the flexibility to deliver standard care where the evidence is strong and customized care where it isn't, or when standard care conflicts with the patient's preferences
- Between medical and human needs, by ensuring caring and compassion as well as clinical precision.

NEJM 368: 1468 18 April 2013

Monitoring system performance

- Complex systems demand day-to day control to ensure that
  - Inappropriate variation is minimized,
  - Quality and efficiency remain high
  - Improvement opportunities are identified and seized
  - Microsystems meet patients' needs

NEJM 368: 1468 18 April 2013

Improving performance

- Neither financial pressure nor the push of new technology will abate soon.
- Productivity enhancement required to meet future demands with existing resources necessitates innovation and improvement in the execution of health care.
- Clinical leaders must model the combination of
  - humility,
  - self-doubt,
  - restless curiosity
  - courage

  to explore beyond accepted boundaries that drives organizations to relentless improvement despite colleagues' preferences for stability and familiarity.

NEJM 368: 1468 18 April 2013

How can a leader lead?

- Without formal authority, the only tool that clinical leaders have is their behavior:
  - what they say,
  - how they say it, and
  - how they model good practice.
- The choice of language
  - expressing the team's purpose in terms of creating value, curing disease, preventing harm, and caring for patients
  - and even tone of voice are essential leadership tools.
- Above all, leading peers in the four key tasks requires asking questions:
  - "What are we trying to achieve?"
  - "What is the best way to achieve it?"
  - "Are we getting the desired results?"
  - "What can we do to get even better results?"
  - "Are our systems keeping patients safe?"

NEJM 368: 1468 18 April 2013

Framing the organizational purpose as value creation

- Giving local leaders the authority to make microsystem changes,
- Tolerating the failure of some new delivery ideas
- Creating professional pathways for clinicians who want to make leadership a career option.
- **But data remain the single most important motivator and tool for a clinical leader**.
  - High-quality, comparative, unit-level and individual-level clinical and financial data can both create the need for clinician leadership and be the starting point for the four tasks.
  - Other critical resources include protected time, training and mentorship
  - clear organizational expectations of clinician performance.

NEJM 368: 1468 18 April 2013

Revision of the International Pharmaceutical Federation's Basel Statements on the future of hospital pharmacy: From Basel to Bangkok

Am J Health-Syst Pharm. 2016; 73:1077-86

- **Overarching statements**
  - The overarching goal of hospital pharmacists is to optimize patient outcomes through the judicious, safe, efficacious, appropriate, and cost effective use of medicines.
  - The “five rights” (the right patient, right medicine, right dose, right route, and right time) should be fulfilled in all medicines-related activities in the hospital.
  - Health authorities should ensure that each hospital pharmacy is supervised by pharmacists who have completed specialized training in hospital pharmacy.
  - The chief pharmacist/director of pharmacy should be the senior professional responsible for coordinating the judicious, safe, efficacious, appropriate, and cost effective use of medicines in the hospital
  - Hospital pharmacists’ authority over the medicine-use process should include authority over the selection and use of medicine-related devices such as administration devices, giving sets, infusion pumps and computer-controlled dispensing cabinets.
  - Hospital pharmacists should take responsibility for all medicines logistics in hospita
  - All prescriptions should be reviewed, interpreted, and validated by a hospital pharmacist prior to the medicine being dispensed and administered.
- **Medicines procurement**
  - Procurement should be guided by the principle of procuring for safety
- **Influences on prescribing**
  - Hospital pharmacists should be an integral part of all patient rounds to assist with therapeutic decision-making and advise on clinical pharmacy and patient safety issues.
- **Preparation and delivery of medicines**
  - Hospital pharmacists should decrease the risk of medication errors by implementing evidence-based systems or technologies, such as automated prescription-filling, unit dose distribution, and bar coding systems.
- **Administration of medicines**
  - Hospital pharmacists should ensure that allergies are accurately recorded in a standard location in patient record and evaluated prior to medicines administration
  - Vinca alkaloids should be diluted, ideally in a minibag and/or large syringe (for pediatric patients), and dispensed with special labeling precautions in order to prevent inadvertent intrathecal administration
  - Medicines not commercially available for neonatal and pediatric patients should be prepared by the hospital pharmacy.
  - Hospital pharmacists should be responsible for determining which medicines are included in ward stock and for standardizing the storage and handling of ward medicines.

Am J Health-Syst Pharm. 2016; 73:1077-86

Value = Outcome / Cost

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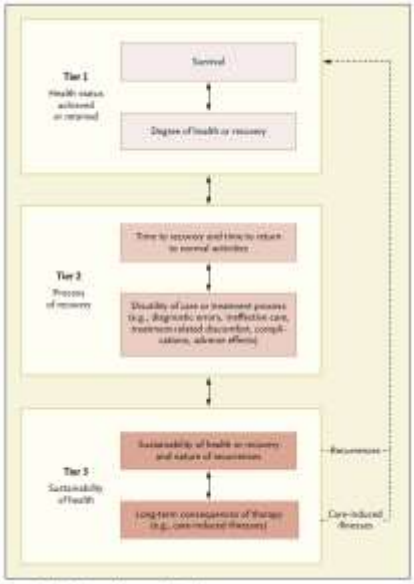

Figure 1. The Outcome Measures Hierarchy.

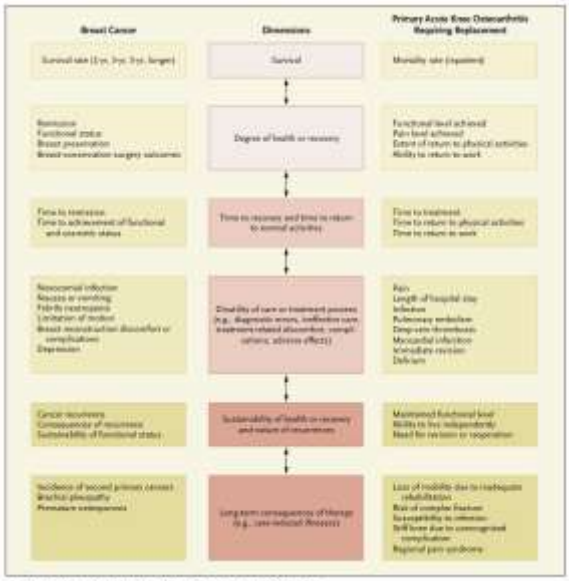

Figure 2. Outcome Hierarchies for Breast Cancer and Knee Osteoarthritis.

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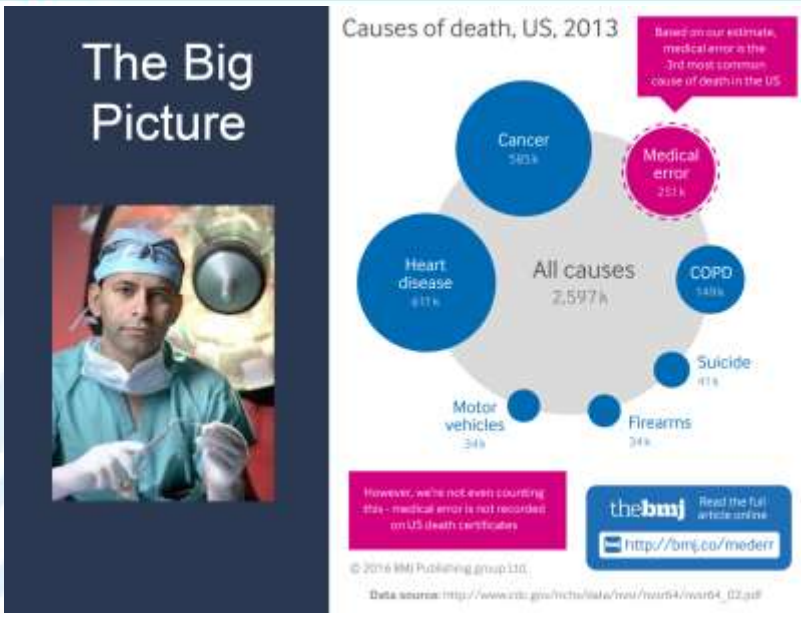

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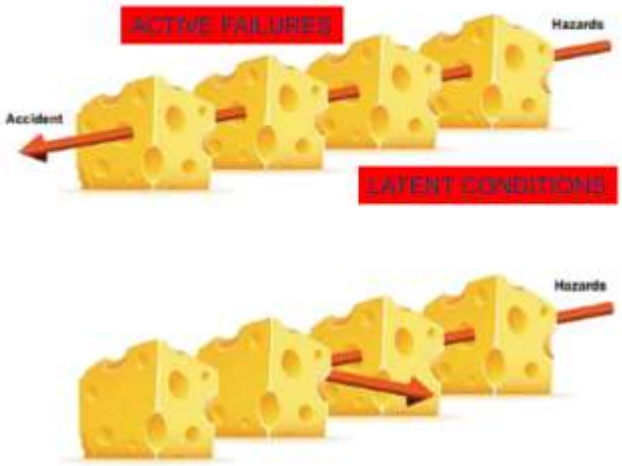
Swiss Cheese Model (James Reason)



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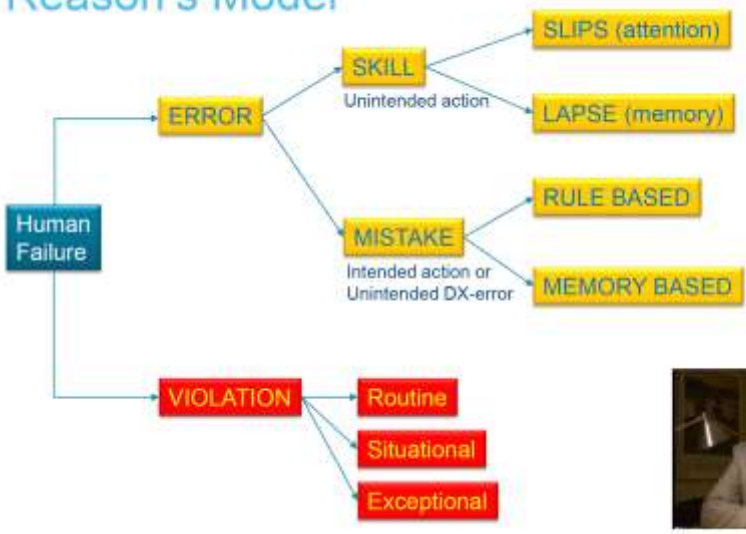
Reason's Model



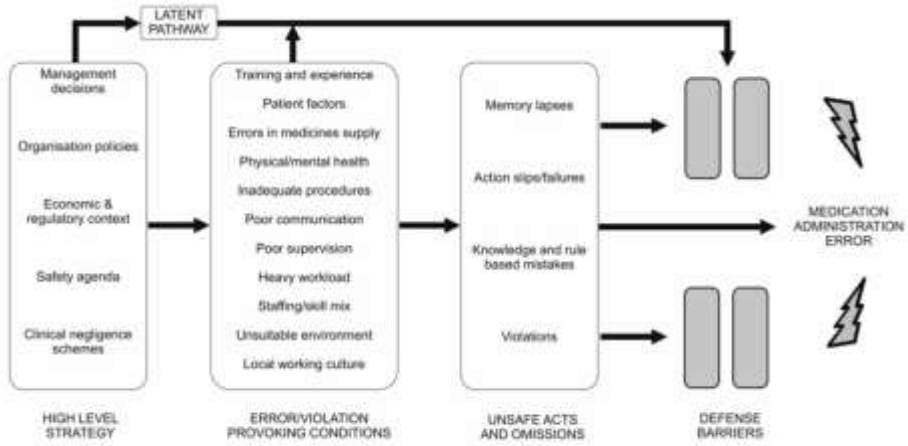
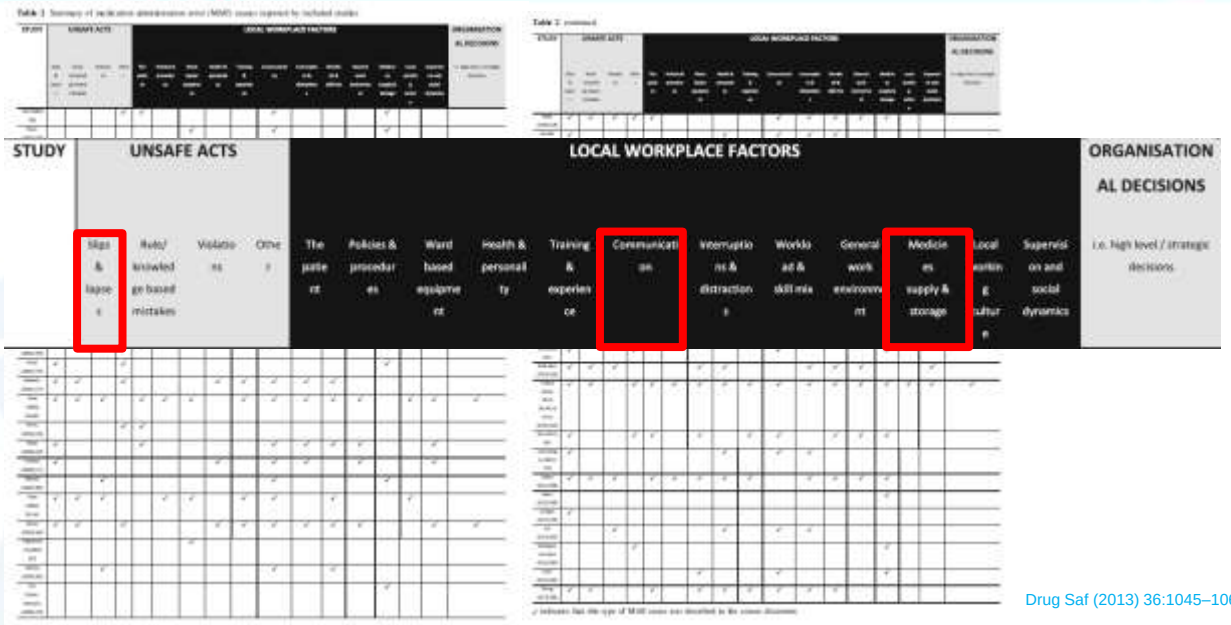


Fig. 1 Reason's model of accident causation as applied to medication administration errors in hospitals [13, 18, 35, 36]

Drug Saf (2013) 36:1045–1067



Drug Saf (2013) 36:1045–1067

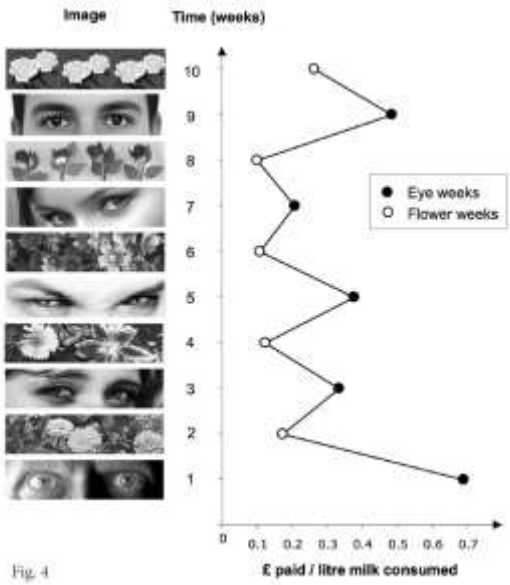


Image
Time (weeks)
10
9
8
7
6
5
4
3
2
1
Eye weeks
Flower weeks
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
£ paid / litre milk consumed

Fig. 4

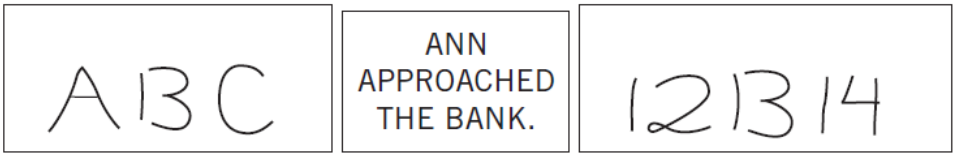

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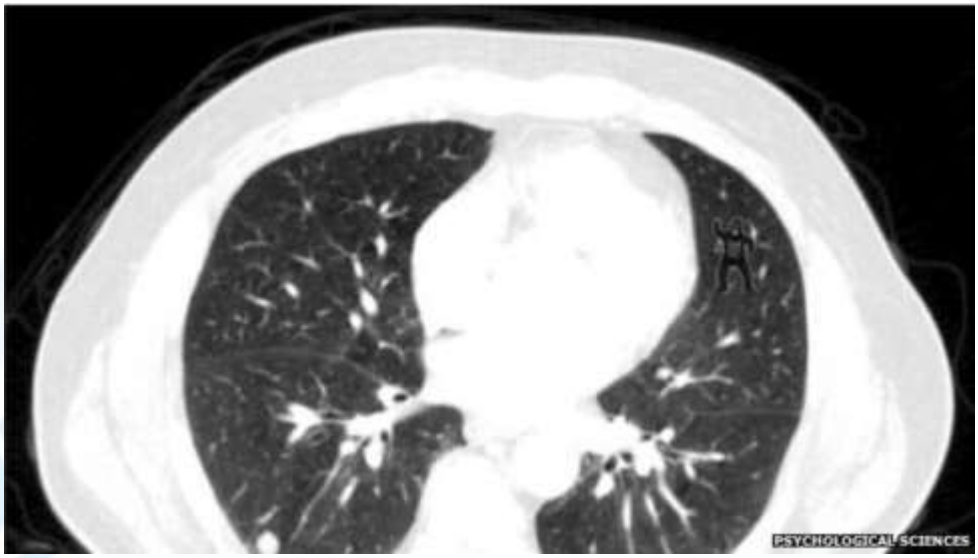
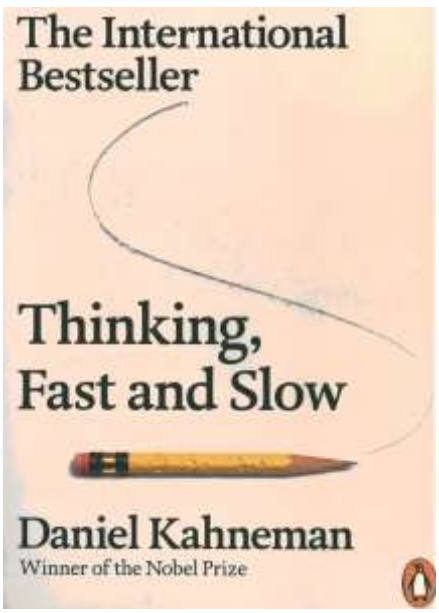
Fig. 6


PSYCHOLOGICAL SCIENCES


The International Bestseller
Thinking, Fast and Slow
Daniel Kahneman
Winner of the Nobel Prize

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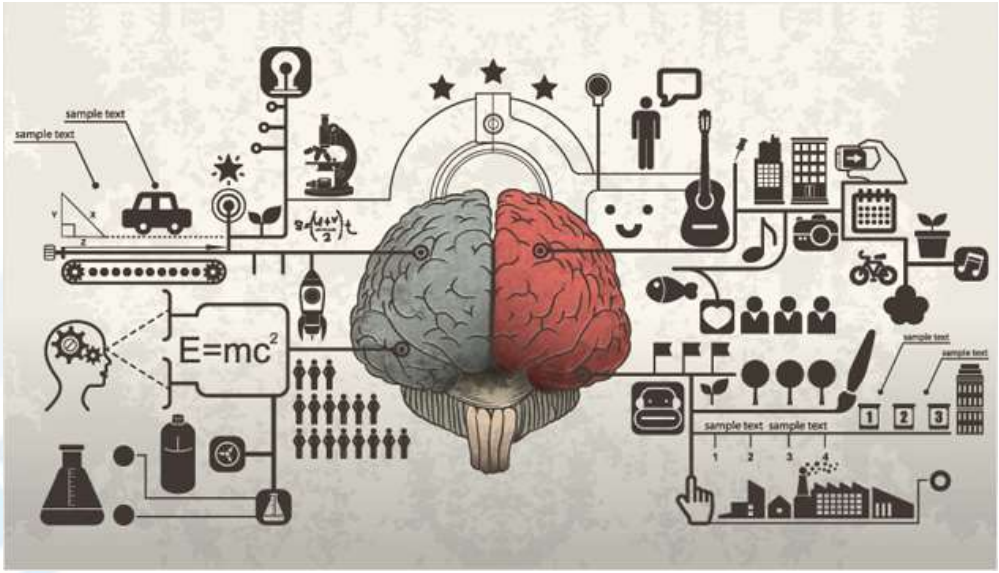

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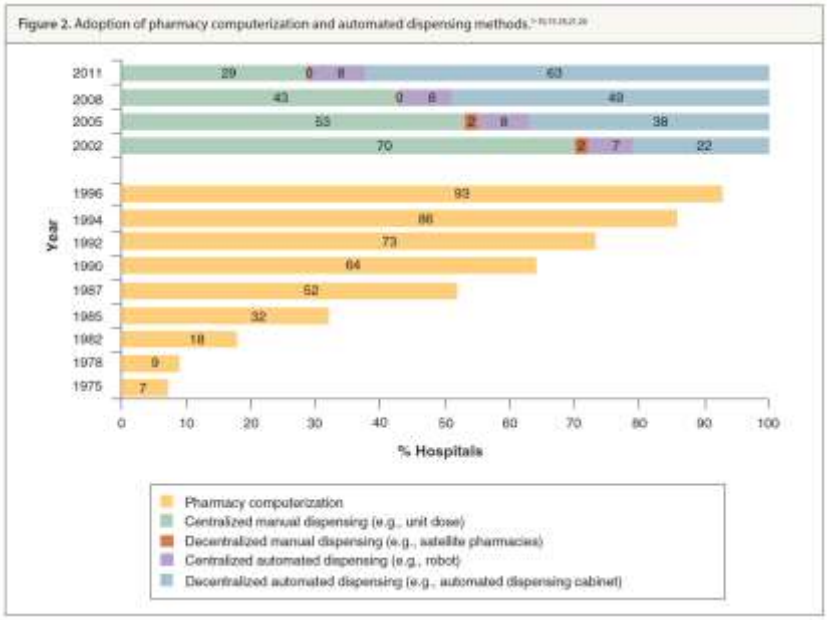
	System 1	System 2
Characteristics	Fast, Effortless, Unconscious, Triggers emotions, Associative, Looks for patterns, Looks for causation, Creates stories to explain events	Slow, Effortful, Conscious, Logical, Deliberative, Can handle abstract concepts
Advantages	Speed of response in a crisis, Creativity through associations, so good for expansive thinking, Easy completion of routine or repetitive tasks	Allows reflection and consideration of the "bigger picture", options, pros and cons, consequences, Can handle logic, maths, statistics, Good for reductive thinking
Disadvantages	Jumps to conclusions, Unhelpful emotional responses, Can make errors that are not detected and corrected, such as wrong assumptions, poor judgements, false causal links	Slow, so requires time, Requires effort and energy, which can lead to decision fatigue



Decentralized Automated Dispensing Devices: Systematic Review of Clinical and Economic Impacts in Hospitals

Table 2. Summary of Impact of ADDs on Medication Errors (part 1 of 2)

Type of Error	Study Results	Interpretation	Overall Conclusion
Omission	Borel and Rascati[9]: decrease from 4.1% (39/873) to 1.1% (10/929); relative reduction 73% Chapuis et al.[10]: no effect	In Borel and Rascati study[9] omission errors were recorded if administration had not been documented by the time observers checked medication administration records; not known if these drugs were given at a later time	ADDs have no impact on omission errors.
Wrong time	Borel and Rascati[9]: mean deviation from scheduled administration times 38.5 min (SD 48.9) before and 30.1 min (SD 31.6) after implementation ($p = 0.03$) Shirley[11]: mean deviation between actual and scheduled administration times improved from 129.84 min to 101 min ($p = 0.157$) Chapuis et al.[10]: no effect	Mean reduction in wrong-time errors of 4.4 min in the Borel and Rascati study[9] was statistically significant but not clinically significant. Shirley[11] found a mean difference of 28.84 min, but this was not statistically significant. A time difference of this magnitude also would not have been clinically significant in the majority of cases. Chapuis et al.[10] found that ADDs had no impact on timing errors in the ICU.	ADDs have no impact on wrong-time errors.
Wrong dose	Borel and Rascati[9]: no effect	No interpretation required	ADDs have no impact on wrong-dose errors.
Wrong preparation or dosage form	Borel and Rascati[9]: no effect Chapuis et al.[10]: no effect	No interpretation required	ADDs have no impact on wrong-preparation or wrong-dosage-form errors.
Unauthorized drug	Borel and Rascati[9]: no effect	No interpretation required	ADDs have no impact on unauthorized-drug errors.
Wrong route	Borel and Rascati[9]: no effect	No interpretation required	ADDs have no impact on wrong-route errors.
Extra dose	Borel and Rascati[9]: no effect Chapuis et al.[10]: no effect	No interpretation required	ADDs have no impact on extra-dose errors.
Missing doses	Schwarz and Brodsky[12]: decrease in mean number of missing doses from 13.8/day (SD 7.1) to 3.3/day (SD 3.4) in surgical ICU and from 33.8/day (SD 3.0) to 1.2/day (SD 1.5) in cardiac ICU	Error rate determined by review of missing-medication forms sent to pharmacy; pharmacy would then send medications to unit, resulting in no patient harm	Implementation of ADDs containing all medications will reduce the number of missing-medication forms being sent to pharmacy.
Pharmacy technician filling error	Ray et al.[13]: decrease relative to unit-dose cassettes (0.61% versus 0.80%, $p = 0.04$)	Reduction was believed to be a result of fewer medications from which technicians had to select when stocking ADDs, since type of medications in ADDs does not change (whereas any medication might be required when preparing unit-dose cassettes).	Technician filling errors may be reduced, depending on system design before and after ADD implementation; this result will be institution-specific.

Can J Hosp Pharm. 2014;67(2):138-48

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Decentralized Automated Dispensing Devices: Systematic Review of Clinical and Economic Impacts in Hospitals

Table 2. Summary of Impact of ADDs on Medication Er

Type of Error	Study Results		Overall Conclusion
Preparation error	Chapuis et al.[14] d to 0.5%	) in errors related to the Exact definition of t ADDs should influence ime study showed no	Inconclusive
Storage error	Ch (£	was conducted in the ICU, her patient care units.	The use of ADDs will reduce storage errors.

ADD = automated disp

There was no definitive evidence that using ADDs increased the time that nurses or pharmacists spent with patients, reduced medication errors resulting in patient harm, or reduced costs in Canadian hospitals. However, pharmacy technicians spent more time stocking the machines.

Can J Hosp Pharm. 2014;67(2):138-48

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Table 12.
Use of Medication Safety Technologies[a]

Characteristic	n	% Hospitals: Any EHR (Complete or Partial)	% Hospitals: Complete EHR	% Hospitals: Partial EHR	% Hospitals: No EHR	Inpatient CPOE System with CDSS: n	Inpatient CPOE System with CDSS: % Hospitals	BCMA: n	BCMA: % Hospitals	Smart Infusion Pumps: n	Smart Infusion Pumps: % Hospitals
No. staffed beds											
<50	85	91.8	44.5	47.3	8.2	85	77.6	85	87.1	85	67.1
50–99	54	88.9	30.4	58.5	11.1	54	74.1	54	87.0	54	81.5
100–199	48	97.9	18.7	79.2	2.1	48	81.3	48	85.4	48	85.4
200–299	70	97.1	37.0	60.1	2.9	69	91.3	70	95.7	70	87.1
300–399	58	96.6	29.0	67.6	3.4	58	81.0	58	91.4	58	98.3
400–599	65	95.4	23.9	71.6	4.6	65	90.8	65	90.8	65	95.4
≥600	46	97.8	48.9	48.9	2.2	46	87.0	46	89.1	46	100.0
All hospitals—2014	426	94.1	33.8	60.3	5.9	425	80.9	426	88.4	426	80.5[b]
All hospitals—2013[1]	413	92.6	26.5	66.1	7.4	412	65.2	413	80.0	413	80.8
All hospitals—2012[2]	481	81.5	18.6	62.9	18.5	481	54.4	481	65.5	480	77.0
All hospitals—2011[3]	554	66.7	8.0	58.7	33.3	562	34.2	559	50.2	561	67.9
All hospitals—2010[4]	553	58.6	7.7	50.9	41.4	549	18.9	564	34.5	563	65.0
All hospitals—2009[5]	551	55.9	8.8	47.1	44.1	550	15.4	551	27.9	550	56.2
All hospitals—2008[6]	NS	NS	NS	NS	NS	527	11.4	527	25.1	525	59.1
All hospitals—2007[7]	531	41.0	3.8	37.2	59.0	531	10.4	531	19.6	531	41.1
All hospitals—2006[8]	460	38.1	…[c]	…[c]	61.9	460	8.7	460	13.2	460	37.0
All hospitals—2005[9]	NS	NS	NS	NS	NS	510	3.6	510	9.4	510	32.2
All hospitals—2004[10]	492	24.5	…[c]	…[c]	75.5	492	3.1	493	4.4	NS	NS
All hospitals—2003[11]	548	30.6	…[c]	…[c]	69.4	552	2.7	550	3.2	NS	NS
All hospitals—2002[12]	NS	NS	NS	NS	NS	NS	NS	505	1.5	NS	NS

[a]EHR = electronic health record, CPOE = computerized prescriber-order-entry, CDSS = clinical decision support system, BCMA = barcode-assisted medication administration, NS = not surveyed.
[b]Unconnected $\chi^2 = 33.2341$, df = 6, design-based $F(4.05, 1696.91) = 6.8887$, $p < 0.0001$.
[c]Before 2007, hospitals reported only the presence or absence of an EHR, not the current status.

Am J Health-Syst Pharm. 2015; 72:1119-37

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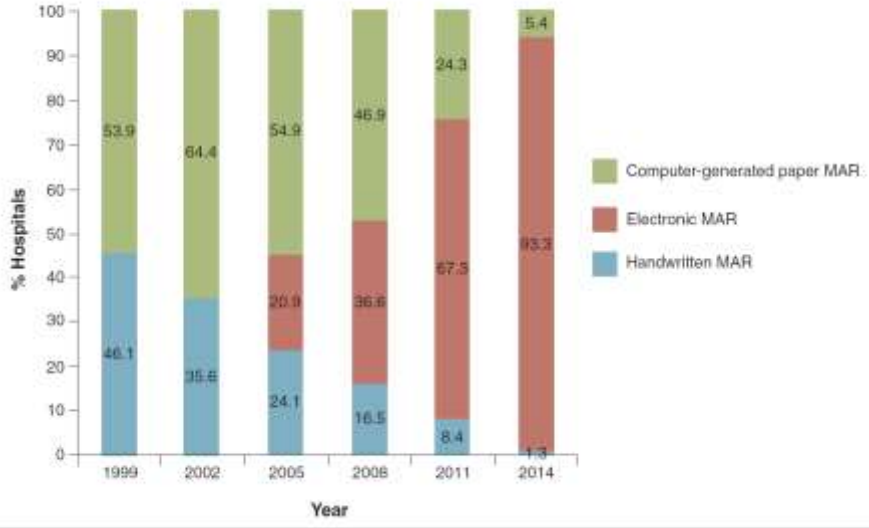
Figure 2. Types of medication administration records (MARs) used by hospitals from 1999 through 2014.



Am J Health-Syst Pharm. 2015; 72:1119-37

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Effectiveness of safety alerts in electronic patient medication record systems

Table 1 Characteristics of studies and alerts included in the systematic review

Study	Study type	Intervention	Setting*	Country	Outcomes measured	Alert functionality**	Improved primary outcome (Yes/No)	False positive alerts reported*** (Yes/No)	Notes
Bhardwaja et al. 2011 [26]	RCT	Drug-lab alert (Renal)	HMO	US	Proportion of medication errors in drug selection or dosing of targeted drugs	Medication decision guide printed in lieu of the prescription label.	Yes	Yes	Pharmacists were trained to ensure effective communication of the reason for alerts and the rationale for drug changes to prescribers and patients. All activities were documented electronically.
Raebel et al. 2007 [24]	RCT	Drug-pregnancy alert	HMO	US	Primary - proportion of pregnant women dispensed a FDA category D or X medication. Secondary - total number of first dispensing of targeted medications	Prescription label not printed and pharmacist intervened.	Yes	Yes	False positive alerts led to early cancellation of study. Specific intervention guideline and patient counselling script were developed.
Raebel et al. 2007 [24]	RCT	Drug-age alert	HMO	US	Proportion of first dispensing of medications on the targeted medication list	Prescription label not printed until pharmacist intervened.	Yes	Yes	Intervention guideline and patient counselling script were developed. Pharmacists were required to complete an intervention note in the system before being able to print the prescription label. Notes were reviewed retrospectively.
Humphries et al. 2007 [21]	Before-After study (no control)	Drug interaction alert (Contraindicated)	HMO	US	Proportion of patients co-dispensed two critically interacting drugs	Prescription label not printed, pharmacist must consult with the prescriber.	Yes	...	Pharmacists could bypass the alert. They documented their activities electronically. Decision support guide was developed to aid them in interpreting and resolving critical alerts. Scripted conversations were used to explain to patients the reason for alerts and the rationale for medication changes.
Mansour et al. 2013 [16]	Before-After study (no control)	Drug-lab alert	Large teaching hospital (504 bed)	US	Proportion of hospitalised patients requiring treatment for hyperkalaemia	Pop-up alert about patient's last reported potassium level	Yes	...	Pharmacists documented their response to the alert electronically. They could override the alert but were required to provide a reason for doing so. Number of alerts was retrieved through a report generated by the information technology pharmacist. Inconsistent response to the alert led to the development of the hyperkalaemia treatment guideline.

* HMO – Health Maintenance Organisation, FDA – Food and Drug Administration, RCT – Randomised Controlled Trial
** Alert generated when a trigger medication order was entered. *** Ellipses indicate false positive alerts were not reported.

BMC Medical Informatics and Decision Making 2013, 13:69

Impact of pharmacist interventions in older patients

Table 1 Reasons for intervention and severity of the medication error

Potentially lethal
- High potential for life-threatening adverse reactions
- Potentially lifesaving drug at a dosage too low for the disease being treated
- High dosage (more than ten times the normal dosage) of drug with narrow therapeutic index

Serious
- Route of administration could lead to severe toxicity
- Low dosage of drug for serious disease in patient with acute distress
- High dosage (four to ten times the normal dosage) of drug with narrow therapeutic index
- Dosage could result in potentially toxic concentrations
- Drug may exacerbate the patient's condition (warnings or contraindications)
- Misspelling or mix-up in medication order could lead to dispensing of wrong drug
- Documented allergy to a drug
- High dosage (more than ten times the normal dosage) of drug with normal therapeutic index
- Omission of pretest for drug hypersensitivity
- Drug without indication
- Interaction: association contraindicated
- Error in the content of a secondary medicines package/refill error

Significant
- High dosage (1.5–4 times the normal dosage) of drug with narrow therapeutic index
- Drug dosage too low for patient's condition
- High dosage (1.5–10 times the normal dosage) of medication with normal therapeutic index
- Therapeutic duplication
- Inappropriate dosage interval
- Drug omitted from the medical order
- Route of administration that can lead to mild toxicity
- Interaction: clinically significant, requires monitoring
- Error in the switching to a medication included in the hospital drug guide
- Transcribing error in the administration chart
- Error in the handling of a pharmaceutical form

Minor
- Incomplete information on the medical order
- Inappropriate dosage form
- Nonformulary drug
- Noncompliance with standard formulations and hospital policies
- Illegible, ambiguous, or nonstandard abbreviations
- Error in the time of administration
- Medical chart documentation error

Clinical Interventions in Aging 2016:11 1343–1350

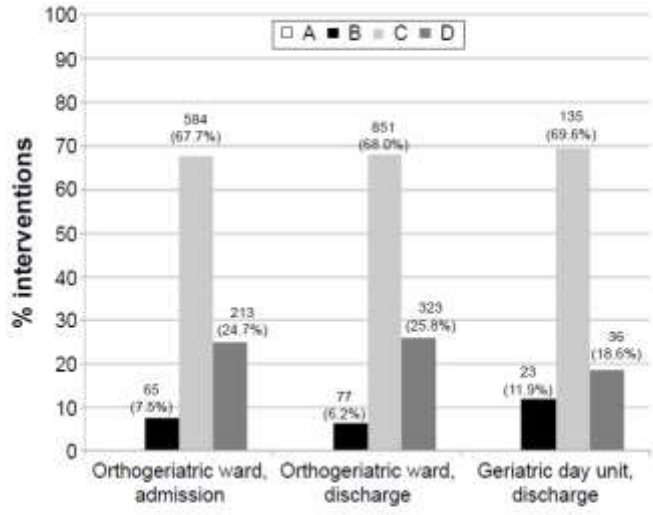


Figure 1 Severity of the medication errors detected on the three different settings: orthogeriatric ward at admission and discharge and on the geriatric day unit at discharge.
Notes: A, potentially lethal; B, serious; C, significant; D, minor; Category A is 0% in the three settings.

Clinical Interventions in Aging 2016:11 1343–1350

UZ LEUVEN

Impact of pharmacist interventions in older patients

Table 2 Interventions carried out on the orthogeriatric ward at admission

Interventions	n	%
Associated with errors		
Drug omitted from the medical order	172	20.0
Interaction: clinically significant, requires monitoring	170	19.7
Incomplete information on the medical order	118	13.7
High dosage (1.5–10 times the normal dosage) of medication with a normal therapeutic index	73	8.5
Transcribing error in the administration chart	69	8.0
Drug dosage too low for patient's condition	48	5.6
Medical chart documentation error	42	4.9
Drug without indication	42	4.9
Error in the time of administration	36	4.2
Inappropriate dosage interval	26	3.0
Inappropriate dosage form	17	2.0
Error in the switching to a medication included in the hospital drug guide	14	1.6
The drug may exacerbate the patient's condition (adverse effects or contraindications)	13	1.5
Therapeutic duplication	12	1.4
Interaction: association contraindicated	10	1.2
Total	862	100.0
Not associated with errors		
Medication reconciliation at the hospitalization	457	61.8
Switching to a therapeutic equivalent included in the hospital drug guide	261	35.3
Clarification of medical order or information request	13	1.8
Information requested by physician or other health care professional from pharmacist	9	1.2
Total	740	100.0

Table 3 Interventions carried out on the orthogeriatric ward and on the geriatric day unit at discharge

Interventions	Orthogeriatric ward		Geriatric day unit	
	n	%	n	%
Associated with errors				
Interaction: clinically significant, requires monitoring	380	30.4	41	21.1
Incomplete information on the medical order	179	14.3	27	13.9
Drug omitted from the medical order	129	10.3	28	14.4
Transcribing error in the administration chart	103	8.2	6	3.1
Medical chart documentation error	98	7.8	6	3.1
High dosage (1.5–10 times normal dosage) of medication with a normal therapeutic index	80	6.4	23	11.9
Drug without indication	53	4.2	15	7.7
Error in the handling of a pharmaceutical form	52	4.2	16	8.2
Drug dosage too low for patient's condition	39	3.1	10	5.2
Inappropriate dosage interval	31	2.5	8	4.1
Error in the time of administration	23	1.8	2	1.0
Therapeutic duplication	23	1.8	3	1.5
Interaction: association contraindicated	19	1.5	4	2.1
Error in the switching to a medication included in the hospital drug guide	13	1.0	0	0.0
Nonformulary drug	12	1.0	0	0.0
Inappropriate dosage form	11	0.9	1	0.5
The drug may exacerbate the patient's condition (adverse effects or contraindications)	3	0.2	3	1.5
Documented allergy to a drug	1	0.1	1	0.5
Error in the content of a secondary medicines package/refill error	1	0.1	0	0.0
Route of administration that can lead to mild toxicity	1	0.1	0	0.0
Total	1,251	100.0	194	100.0

Clinical Interventions in Aging 2016:11 1343–1350

UZ LEUVEN

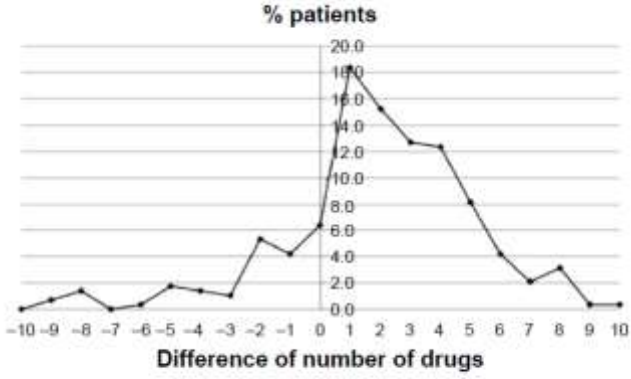


Figure 2 Difference of number of drugs (discharge–admission) of the patients who were admitted on to the orthogeriatric ward.

Clinical Interventions in Aging 2016:11 1343–1350

Hospital Readmissions Reduction Program: Implications for pharmacy

- *Reconciliation.* Compare a patient's prescriptions at arrival and departure, verify dosages, and check for missing or duplicative items.
- *Education.* Meet with patients in their rooms before discharge. Review each medication, and provide pictures of each medication and instructions for use.
- *Access.* Send patients home with medications, even if it requires sending the medications and billing the patients later or pursuing insurance claim issues.
- *Counseling.* Make a follow-up phone call within three days and again at the end of one month.
- *Healthy patient at home.* Doing all of the above leads to a healthy patient at home.

Am J Health-Syst Pharm. 2015; 72:237-44

Identifying the Optimal Role for Pharmacists in Care Transitions: A Systematic Review

What is already known about this subject

- Transitions between health care settings increase the risk of medication errors, which can result in adverse drug events, prolonged hospital stay, early readmissions, and use of other health care resources.
- Pharmacist intervention during and after hospitalization have been frequently studied, albeit with varied effects on clinical outcomes.
- Several systematic reviews have been performed studying care transition programs, although none have done so by separating pharmacist intervention components from continuity of care programs.

J Manag Care Spec Pharm. 2015;21(8):614-38

Identifying the Optimal Role for Pharmacists in Care Transitions: A Systematic Review

What this study adds

- Our model systematically categorized components of pharmacist intervention in care transition programs. Study heterogeneity enabled a best evidence synthesis to elucidate effective components.
- This review revealed that multifaceted programs should combine medication reconciliation with active patient counseling and a clinical medication review. Care continuity can be secured by integrating pharmacists across settings and providing them with patients' clinical background.
- Collaborating with other health care professionals is crucial to increase the effectiveness of pharmacist intervention.

J Manag Care Spec Pharm. 2015;21(8):614-38

Quality improvements in decreasing medication administration errors made by nursing staff in an academic medical center hospital: a trend analysis during the journey to Joint Commission International accreditation and in the post-accreditation era

Hua-fen Wang[1], Jing-fen Jin[1], Xiu-qin Feng[1], Xin Huang[1], Ling-ling Zhu[2], Xiao-ying Zhao[3], Quan Zhou[4]

1 Division of Nursing, 2 Geriatric VIP Ward, Division of Nursing, 3 Office of Quality Administration, 4 Department of Pharmacy, the Second Affiliated Hospital of Zhejiang University, School of Medicine, Zhejiang University, Hangzhou, Zhejiang Province, People's Republic of China

Therapeutics and Clinical Risk Management 2015:11 393–406

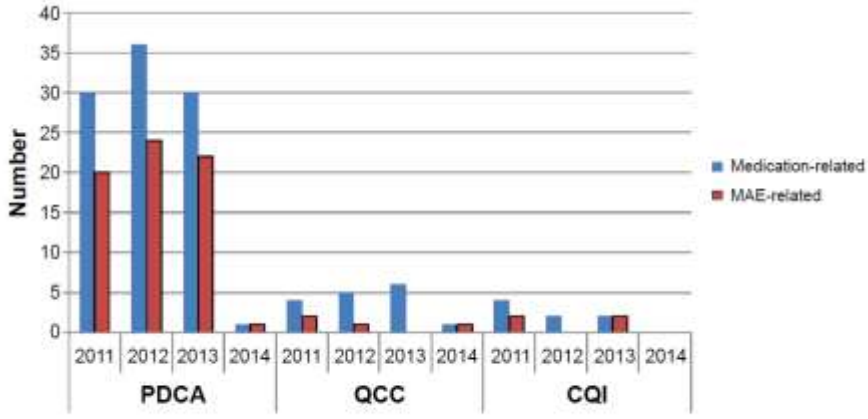


Figure 1 Medication- or MAE-related quality improvement programs during the period January 2011 to June 2014.
Abbreviations: MAE, medication administration error; PDCA, plan–do–check–action cycle; QCC, quality control circle; CQI, continuous quality improvement.

Therapeutics and Clinical Risk Management 2015:11 393–406

MAEs made by nursing staff

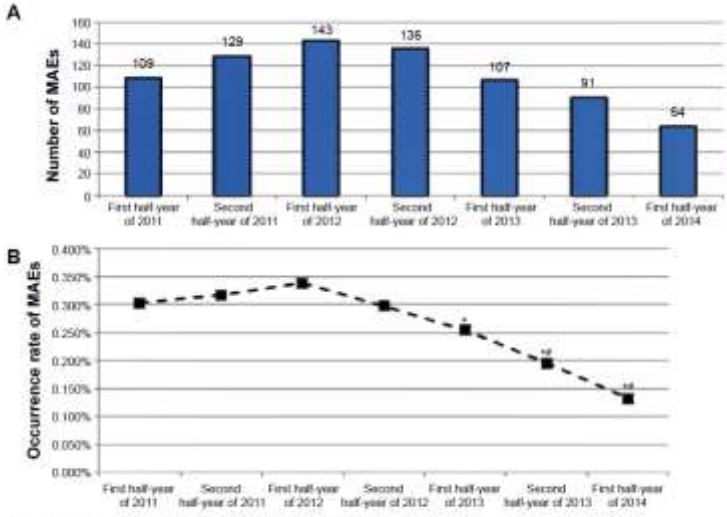


Figure 2 MAEs made by nursing staff during the period January 2011 to June 2014.
Notes: (**A**) Number of MAEs. (**B**) Occurrence rate of MAEs (%). *P<0.05 (compared with data in the first half-year of 2012); #P<0.05 (compared with data in the half-year of 2011).
Abbreviation: MAEs, medication administration errors.

Therapeutics and Clinical Risk Management 2015:11 393–406

Number of MAEs according to error severity rating

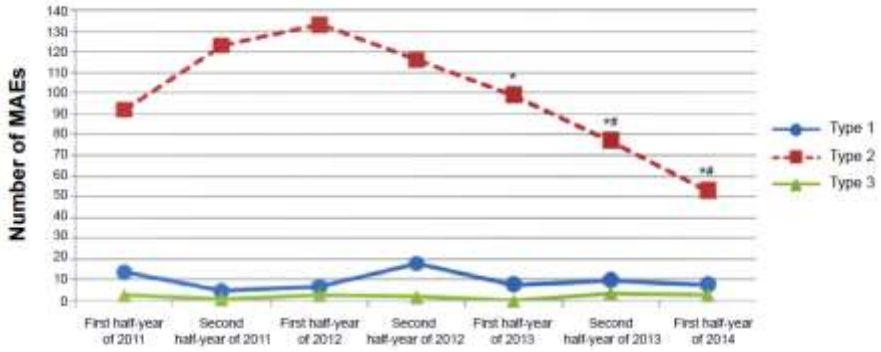


Figure 4 Number of MAEs according to error severity rating.
Notes: Type 1: errors occurred that reached the patient but did not cause patient harm. Type 2: errors occurred that reached the patient and required monitoring to confirm that they resulted in no harm to the patient and/or required intervention to preclude harm. Type 3: errors occurred that may have contributed to or resulted in temporary harm to the patient and required intervention, initial or prolonged hospitalization. *$P<0.05$ (compared with data in the first half-year of 2012); *#$P<0.05$ (compared with data in the first half-year of 2011).
Abbreviation: MAEs, medication administration errors.

Therapeutics and Clinical Risk Management 2015:11 393–406

MAEs associated with four categories of high-alert medications

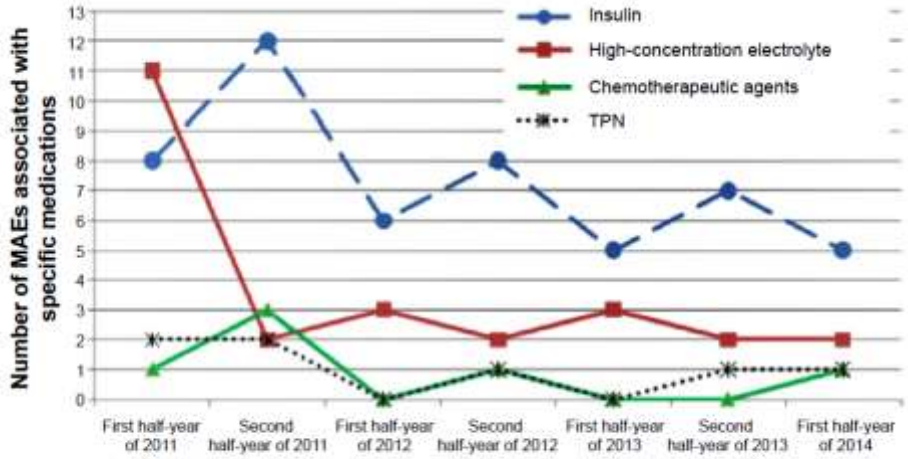


Figure 6 MAEs associated with four categories of high-alert medications during the period January 2011 to June 2014.
Abbreviations: MAEs, medication administration errors; TPN, total parenteral nutrition.

Therapeutics and Clinical Risk Management 2015:11 393–406

Tips

TABLE 1: TIPS FOR ANSWERING SURVEYOR QUESTIONS
Take a deep breath and relax.
Begin with a clear understanding of what the surveyor wants to know.
Remember that the survey is about the work you do each day.
The best answers are straightforward ones that come from everyday work experience.
If you don't know the answer, don't panic. Tell the surveyor how you would find the right information.
Reply to questions directly. Give concise answers.
Ask the surveyor to clarify the question if you do not understand what they are asking.
Be familiar with policies and procedures pertinent to work you do and where to find them.

How to Be Prepared?

Accreditation surveys are undoubtedly challenging to prepare for and can be a major source of consternation for pharmacy staff. Preparing for a survey is now a continuous process in health care organizations. Preparation for a future survey can be time-consuming and resource intensive, but an organized approach is the best way of being prepared. Here are some strategies you can employ to help the department get ready—and stay ready.

1. Start Early

Efforts should begin well in advance of the upcoming survey. One way to start is to perform an overall self-assessment of how both the department and hospital policies and procedures align with each of the accrediting organization's standards. A detailed action plan can be developed from this information to help identify gaps, resulting in quality assurance initiatives and audit planning. Having started early, you can have time to correct deficiencies and educate staff. It is also important to stay knowledgeable about the standards, interpretations, and standards changes to ensure continuous compliance. An organization is never really finished—it takes due diligence at all times because expectations are always changing.

2. Get Involved!

Conduct compliance "readiness rounds" with hospital leadership to all pharmacy areas. The purpose of the rounds is to ensure overall compliance and correct non-compliance issues, as well as provide additional staff education. These rounds will allow staff members the opportunity to ask critical questions and obtain valuable responses from leadership. Rounding frequency should increase as the date of the survey approaches. Also, there has been increased interest by accrediting organizations on areas outside of the pharmacy department which are utilizing and preparing medications, such as outpatient ambulatory areas or physician practices. These areas should also be part of the unannounced rounds to ensure compliance with medication standards since the pharmacy department is ultimately responsible for medication use in the organization. Also, educational handouts can be very helpful to increase staff awareness. This could be through the creation of pocket guide resource books on accreditation standards and pharmacy procedures, posting of Joint Commission National Patient Safety Goal fliers throughout the department, departmental policy review and updates, attendance at staff meetings for question and answer sessions, creation of checklists to assist staff in preparing their area for survey, and frequent departmental newsletter updates.

3. Be Creative

A variety of approaches should be used for staff education. One example we used at our institution was to place red balloons near fire extinguishers and pull stations to highlight fire safety, as well as perform fire drills. This was well received by staff and it made employees remember what to do in the event of a fire emergency.

There is a way to prepare so the survey journey becomes a familiar path. The best preparation is to follow your hospital's policies in everyday work, because they should be based on practices that promote quality of care and patient safety, and meet regulatory standards. Continuous readiness should become a part of departmental culture, and embedding standard compliance into daily operations is the key to a successful survey. With thorough preparation, you can start your next accreditation survey with confidence and be prepared to demonstrate compliance.

Question 1

- Medication errors are the third important cause of patient harm in the hospital environment: Y/N

NO, they are cause 1 or 2

Question 2

- Accreditation is impossible if you do not have an electronic patient record and electronic prescription module: Y/N

NO: it is possible to be accredited without an electronic patient record and electronic prescription module

Question 3

- Knowledge-based errors are the most common cause of medication administration errors: Y/N

NO: they are the second most common reason; most common is “slip of mind”

Take Home Messages

- Start from the Patients Needs
- Think as a Team and work Decentralized
- Plug the Holes in the Swiss Cheese
- Use your Imagination

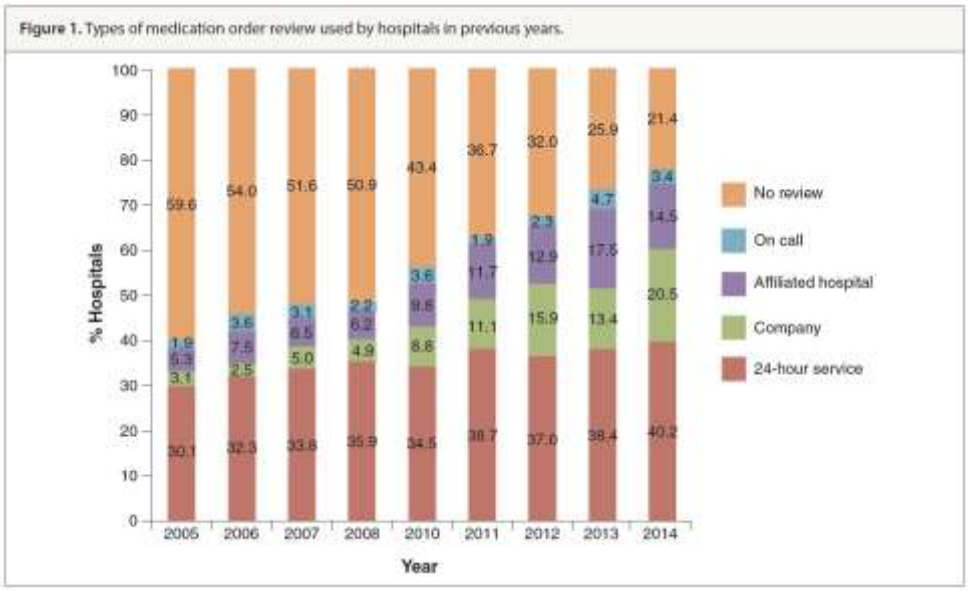
UZ LEUVEN

CHANGE HAPPENS – whether we're ready for it or not!! Be a Leader!

UZ LEUVEN

Backup slides for discussion

ASHP national survey of pharmacy practice in hospital settings: Dispensing and administration—2014



Am J Health-Syst Pharm. 2015; 72:1119-37

Check of appropriateness (COA)

Sabrina De Winter
Tine Van Nieuwenhuyse
Isabel Spriet
Thomas De Rijdt

INHOUD

- COA …achtergrond
- COA… wat?
- COA… hoe?
- COA…enkele voorbeelden uit de praktijk
- COA…toekomst?

Background

- Last decennium:
  - Clinical Pharmacy
  - Fully electronic EPD with prescription module ('interaction modules')
  - Accreditation expects 'check of appropriateness' for each new prescription
- Goal clinical pharmacy and prescription support:
  - Improve quality of medication therapy
  - Improve patient safety
- Belgian situation
  - Organization clinical pharmacy cfr USA requires many FTE's
  - In Belgian context financially not feasible
  - Prescription support too general and not fully elaborated: requires more fine-tuning

De Rijdt et al CjHP 2016, Hecq JD Pharmacy 2016, To Err is human 1999, Kaboli Arch Int Med 2006, Bates DW BMJ 2000

Intent of MMU 5.1

Good medication managment includes two reviews of each prescription or order:

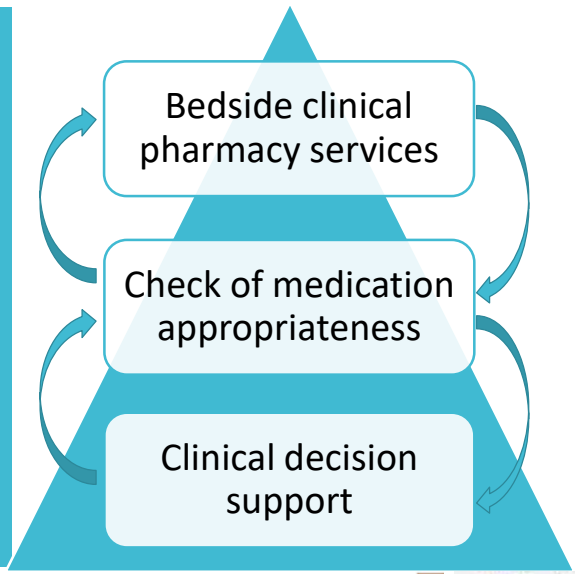
- The appropriateness of the medication for the patient and his or her clinical needs performed at the time the medication is prescribed or ordered
- The verification at the time of administration that the medication is exactly as orderd or prescribed (see MMU 6.1)

Measurable Elements of MMU 5.1

1. The hospital defines the patient specific information required for an effective review process, and the source or availability of this information is available at all times when the pharmacy is open or closed
2. Each prescription or order is evaluated for appropriateness
3. There is a process to contact the individual who prescribed or orderd the medication when questions arise
4. Individuals permitted to review orders or prescriptions are judged competent to do so and are provided resources to support the review process
5. Review is facilitated by a record for all patients receiving medications, and this record is available at all times when the pharmacy is open or closed
6. Computer software is current and updated according to the program manufacturer's recommendations

UZ LEUVEN

COA… what?

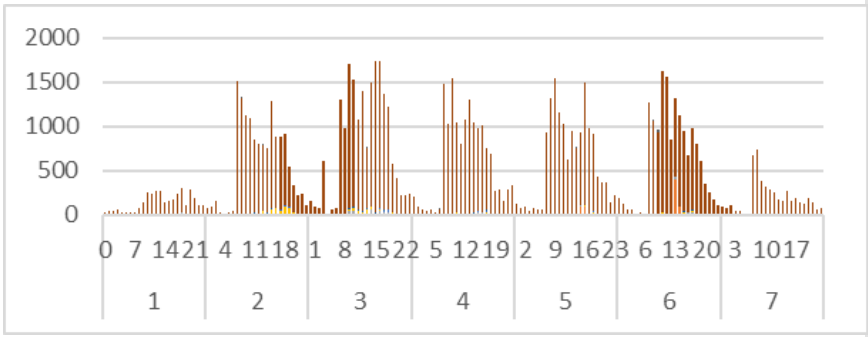


- Traumatology
- Geriatrics
- Pediatrics
- Abdominal surgery

- Interaction-modules
- only on EMV, not on PDMS
- updates slow
- not volledig (ie not for oral chemo)

COA… what?

- Daily* central evaluation of new presriptions



 # new prescriptions/day/hour in klinisch werkstation (KWS) UZ Leuven

**on working days PM*
Dag 1 = Sunday

COA… how?

Evaluation of overrules interaction modules

Evaluation use of drugs with restricted indication or specific side effects

Evaluation when abnormal lab results and other parameters

Attestation 'patiënt has no indication for reimbursement'

IV-PO switch

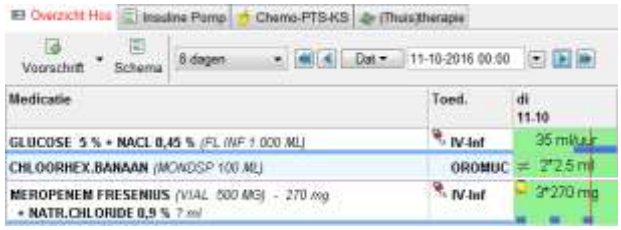
Link-KWS	Check	Opvolgnota	gebeld	eadnr	eenheid	Geslacht naam	Leeftijd	kws_omsch	kws_vorm
opt 12345/a	1	0	0	[redacted]	650	[redacted]	[redacted]	DAPSONE	CAPS 100
http://local	1	0	0	[redacted]	467	[redacted]	[redacted]	MEROPEN	VIAL 1 G
http://local	1	0	0	[redacted]	467	[redacted]	[redacted]	MEROPEN	VIAL 1 G
opt 12345/a	1	0	0	[redacted]	650	[redacted]	[redacted]	DAPSONE	CAPS 100
http://local	1	1	0	[redacted]	305	[redacted]	[redacted]	MEROPEN	VIAL 500
opt 12345/a	1	1	1	[redacted]	454	[redacted]	[redacted]	RIFADINE	CAPS 150

- 75 decision trees to allow standardized evaluation
- By trained hospital pharmacists
- Uniform notifications in follow-up notes
- 0,5 FTE hospital pharmacist

COA…enkele voorbeelden uit de praktijk

Stimuleren correct gebruik van meropenem bij neutropene koorts

Een voorbeeld:



Is er een lopend voorschrift van meropenem voor de hoge dosis?
>18j : (=3x2 g/d)?
<18j:(= 100 à 120 mg/kg/dag in 3 giften)?

JA

- 3 x 270 mg = 810 mg
- 8,1 kg
  ➔ 100 mg/kg/dag

Wordt meronem gegeven bij een long TX patiënt
-met pseudomonas+ donor long ?
- met VG van resistente Enterobacteriaceae?

NEE

COA…enkele voorbeelden uit de praktijk

Wordt er voldaan aan één van de volgende indicaties:
- Gram-negatieve infecties met slechts intermediaire gevoeligheid aan meropenem? (kijk tot 1 jaar terug in het labo!)
- Gebruik bij bot-en prothese infecties?
- Gebruik bij meningitis? Bij indicaties voor bloedhersenbarrière?
- Gebruik bij endocarditis?
- Gebruik bij cystische fibrose/CF?

NEE

Tekst	Ctype	Zender
RVO: pre B All met T° in aplasie bijgeroepen omwille van rilkoorts. 3h na laatste pcm T° 38.7 koz: nu niet meer aan het rillen, al wat beter niet septisch, longen zuiver, niet meningeaal, abd soepel. NKO normaal BN: 500 WBC, 0 neutro's, CRP 7 urine negatief, kweken voorlopig negatief Plan - idem verder. AB reeds gestart	hospitalisatie	[redacted]

10-10-2016 02:08	pediatrie	Bloedkweek:	ontvangen
09-10-2016 18:17	pediatrie (PAC)	Bloedkweek:	ontvangen
09-10-2016 14:54	pediatrie	Bloedkweek:	ontvangen
09-10-2016 12:23	pediatrie (PAC)	Bloedkweek:	ontvangen
09-10-2016 12:23	keel (Keel)	Kweek: V(neg. voor beta-hem. Streptokokken A, C, G) Fungi: V(negatief)	

COA…enkele voorbeelden uit de praktijk

ADVIES APOTHEEK: Hoge dosis van meropenem wordt voorbehouden voor strikte indicaties: endocarditis, meningitis, bot-prothese infecties, Gram-infecties met intermediaire gevoeligheid aan meropenem en bij mucoviscidose . Cfr. antibioticagids.be. Graag nazicht therapie.

10-10-2016 14:42	✓	ADVIES APOTHEEK: Hoge dosis van meropenem wordt voorbehouden voor strikte indicaties: endocarditis, meningitis, bot-prothese infecties, Gram-infecties met intermediaire gevoeligheid aan meropenem en bij mucovisidose patiënten. Cfr. antibioticagids.be. Graag nazicht therapie.	Tine Van Nieuwenhuyse	apotheek

COA… een voorbeeldje uit de praktijk

Inname QTc verlengende medicatie bij een patiënt met een verlengd QTc interval.

Een voorbeeld:

- Man – 50 jaar
- Voorgeschiedenis:
  - Pulmonaire infectie *Mycobacterium xenopi* R/ azithromycine (Zitromax) en moxifloxacine (Avelox)
  - Verdere investigatie immunodeficiëntie is lopende
- Reden van opname:
  - Acuut opgekomen vertigo met nausea en braken en wankele gang
  - R/ alizapride en ondansetron
- Deze patiënt verschijnt in de COA query owv.
  - start voorschrift ondansetron en azithromycine (= beide geneesmiddelen staan op de definite list van de Credible Meds)
  - laatste ECG toont een verlengd QTc van 498 msec

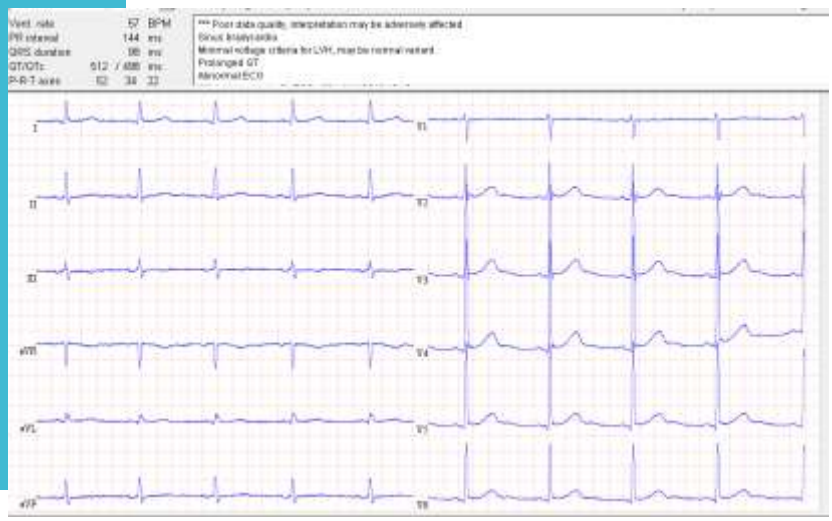
Inname QTc verlengende medicatie bij een patiënt met een verlengd QTc interval.

Een voorbeeld:

Medicatie	Toed.	07	08	09	10	11	12	13	14	15	16
PLASMALYTE A *(FL INF 1000 ML VIAFLO)*	IV-Inf	== 1000 ml (80 ml/uur)	1000 ml (80 ml/uur)								1000 ml (80 ml/uur)
LITICAN *(AMP INJ 50 MG/2 ML)* # bij misselijkheid	IV-Bolus	6*50 mg									
LITICAN *(AMP INJ 50 MG/2 ML)*	IV-Bolus		50 mg								
ONDANSETRON BRAUN *(AMP IV 4 MG/2 ML)* # bij misselijkheid	IV-Inf	1*4 mg (1/2)			4 mg						
TENORMIN *(TABL 100 MG)*	PO		100 mg							100 mg	
AMLOR *(CAPS 5 MG)*	PO		5 mg								
ZOCOR *(TABL 20 MG)*	PO										
ZITROMAX *(TABL 500 MG)*	PO		500 mg							500 mg	
AVELOX *(TABL 400 MG)*	PO		400 mg							400 mg	

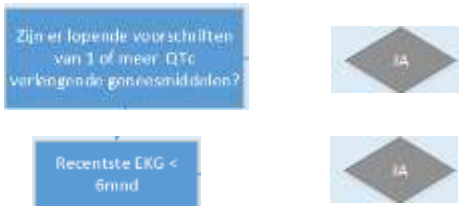
Inname QTc verlengende medicatie bij een patiënt met een verlengd QTc interval.

Een voorbeeld:



COA…een voorbeelden uit de praktijk

Labogestuurde QTc verlengende medicatie



- Geen ICD
- Geen pacemaker
- Geen QRS > 120 ms

HR	57			
RR	1,052632	1,0172448	1,025978	QTcFri=QT/RR$^{1/3}$
QT	512			QTcR=QT-0.185*(RR-1)+k
FRID (STANDAARD)	503			
BAZ (KWS)	499			
RAU (PM/QRS>120ms)	503 vrouwen			
RAU (PM/QRS>120ms)	515 mannen			
*PM=PACEMAKER				

COA…een voorbeelden uit de praktijk

Labogestuurde QTc verlengende medicatie

Labogestuurde QTc verlengende medicatie

27-10-2016 16:38	✓	ADVIES APOTHEEK: patiënt staat onder Zitromax en Ondansetron, graag verder opvolging QTc interval en nazicht therapie.
27-10-2016 17:17	✓	stop ondansetron gezien beter qua nausea en QT verlenging

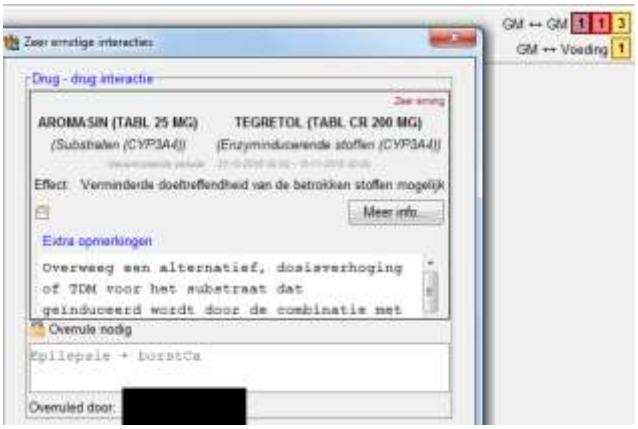
Colistineb via foute toedieningsweg

COA…enkele voorbeelden uit de praktijk

Greenberg S Ann Intern Med 1993

COA…enkele voorbeelden uit de praktijk

Overrule zeer ernstige interactie



COA…enkele voorbeelden uit de praktijk

Overrule zeer ernstige interactie

COA…enkele voorbeelden uit de praktijk

Overrule zeer ernstige interactie

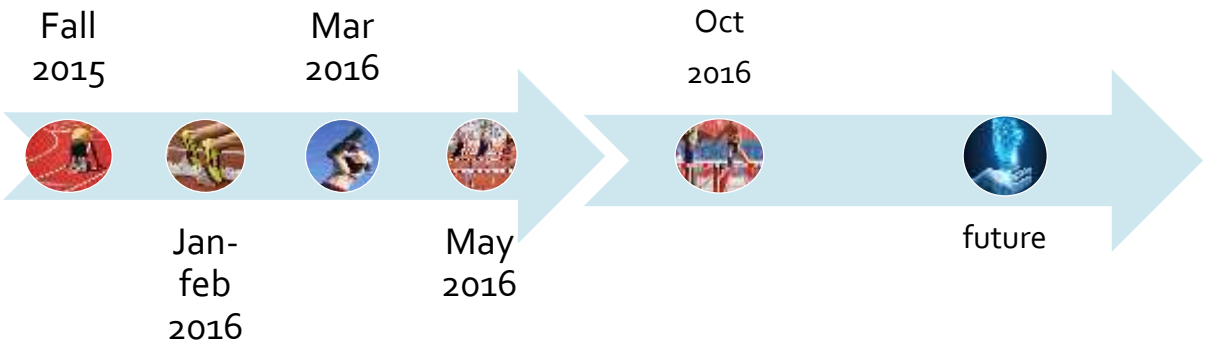
beantwoorden

Geachte collega

Herevaluatie adjuvante antihormonale therapie tijdens opname op dienst reconstructieve heelkunde.

Gezien significante interactie (D) tussen tegretol (sterke CYP3A4 inducer) en aromasin is een posologieverhoging van aromasin volgens het UB-label naar 50 mg/dag aangewezen. Er is geen restrictie in het aantal afleverbare verpakking zo aanvraag tot terugbetaling in adjuvante setting werd goedgekeurd.
Er werd met patiënte dan ook besproken om de posologie van Aromasin te verhogen naar 1 * 2 tabletten/dag, onder controle van de subjectieve tolerantie. We zien patiënte terug op raadpleging in februari op het multidisciplinair borstcentrum. Dan zal tevens een botdensitometrie worden ingepland.

Met collegiale hoogachting



Some results

numbers

COA-controle		aantal controles	aantal opvolgnota's	%opvolgnota's	aantal telefonische contacten	% telefonische contacten
restrictieve medicatie		1277	120	9	44	3
interacties overrules		4944	239	5	60	1
labogerel ateerde	eGFR	2815	96	3	17	1
	INR	157	5	3	3	2
	QTc	1765	338	19	88	5
	hyperK+	287	10	3	1	0
	hypoK+	12	1	8	1	8
eindtotaal		11257	809	7%	214	2%

Fig. cijfers COA maart-september 2016

- First evaluation
  - IV-PO switch 7469 follow-up notes sent (march-september 2016)
  - ATTESTATIONS: 1055 controls, 13 x follow-up notes (1,23%), 8x call (0,76%)
  - DUMP: 1405 controls, 59 x follow-up notes (4,2%), 7x call (0,50%)

evaluation

- Hospital wide service
- Dynamic principle, can be adapted in case of serious incident
- Bridge between electronic prescription support and bed-side clinical pharmacy
- Positively received by physicians

- Increase specificity – system performance → allows for time for other interventions
- Dependent on 'interaction modules' which are not all up to date
- Automatisation of queries in KWS needed
- Expansion to extra actions
- No weekend service
- No evaluation in PDMS (ICU)

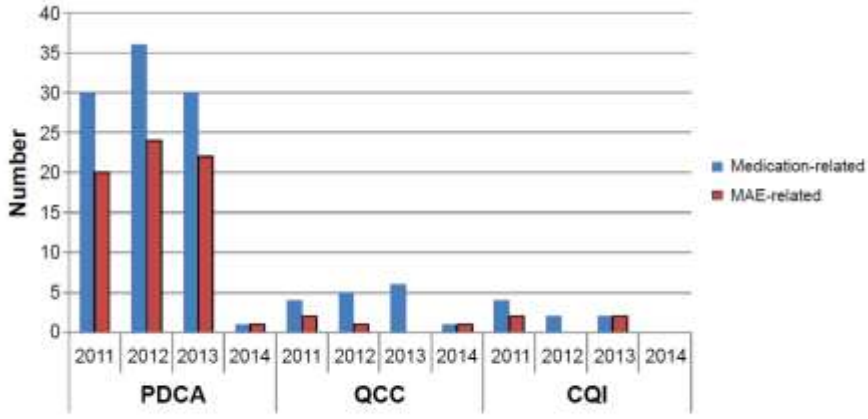


Figure 1 Medication- or MAE-related quality improvement programs during the period January 2011 to June 2014.
Abbreviations: MAE, medication administration error; PDCA, plan–do–check–action cycle; QCC, quality control circle; CQI, continuous quality improvement.

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MAEs made by nursing staff

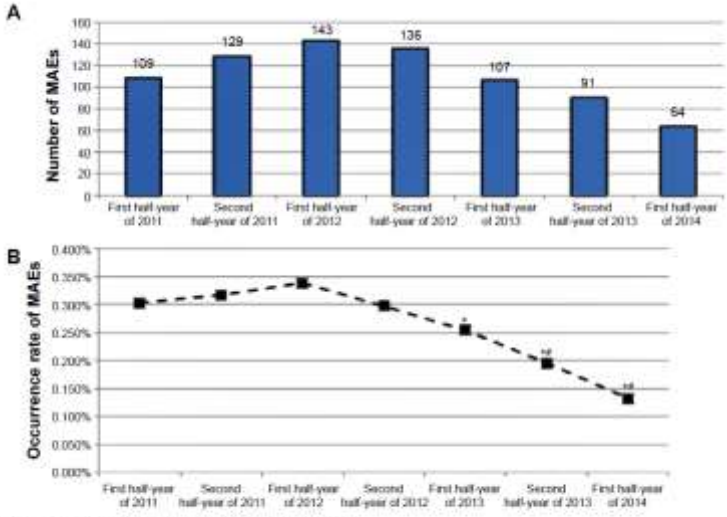

Figure 2 MAEs made by nursing staff during the period January 2011 to June 2014.
Notes: (**A**) Number of MAEs. (**B**) Occurrence rate of MAEs (%). *P<0.05 (compared with data in the first half-year of 2012); #P<0.05 (compared with data in the half-year of 2011).
Abbreviation: MAEs, medication administration errors.

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Table 1 Subtypes of MAEs during the intervention program period

Period	Subtype of MAEs										
	Omission	Wrong patient error	Preparation error	Time error	Dose error	Nonadherence to the rule on skin tests and contraindications concerning cross allergy	Route error	Duplicate dosing	Speed error	Improperly handling computerized physician orders prior to sending them to inpatient pharmacy	Exosmosis
First half-year of 2011	40 (0.11%)	14 (0.039%)	15 (0.042%)	10 (0.028%)	8 (0.022%)	10 (0.028%)	1 (0.003%)	3 (0.008%)	1 (0.003%)	4 (0.011%)	2 (0.006%)
Second half-year of 2011	31 (0.076%)	23 (0.057%)	16 (0.039%)	12 (0.030%)	11 (0.027%)	14 (0.034%)	7 (0.017%)	4 (0.010%)	3 (0.007%)	3 (0.007%)	2 (0.005%)
First half-year of 2012	44 (0.10%)	30 (0.071%)	19 (0.045%)	14 (0.033%)	12 (0.028%)	8 (0.019%)	1 (0.002%)	6 (0.014%)	3 (0.007%)	5 (0.012%)	0 (0%)
Second half-year of 2012	45 (0.099%)	21 (0.046%)	19 (0.042%)	14 (0.031%)	11 (0.034%)	11 (0.024%)	8 (0.018%)	2 (0.004%)	3 (0.007%)	0 (0%)	0 (0%)
First half-year of 2013	46 (0.11%)	16 (0.038%)	12 (0.029%)	12 (0.029%)	9 (0.021%)	4 (0.010%)	3 (0.007%)	1 (0.002%)	4 (0.010%)	0 (0%)	0 (0%)
Second half-year of 2013	31* (0.066%)	13 (0.028%)	14 (0.030%)	7 (0.015%)	13 (0.028%)	4 (0.009%)	5 (0.011%)	0 (0%)	1 (0.002%)	1 (0.002%)	0 (0%)
First half-year of 2014	20* (0.041%)	20 (0.041%)	5 (0.010%)	2 (0.004%)	4 (0.008%)	6 (0.012%)	2 (0.004%)	5 (0.010%)	0 (0%)	0 (0%)	0 (0%)
Sum	257	137	100	71	68	57	27	21	15	13	4

Notes: Data are presented as absolute number of a subtype of MAE (its occurrence rate, ie, number of this subtype's MAEs divided by number of discharged patients during the same period). *$P<0.05$ (versus first half-year of 2011).
Abbreviation: MAEs, medication administration errors.

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Administration route and MAEs

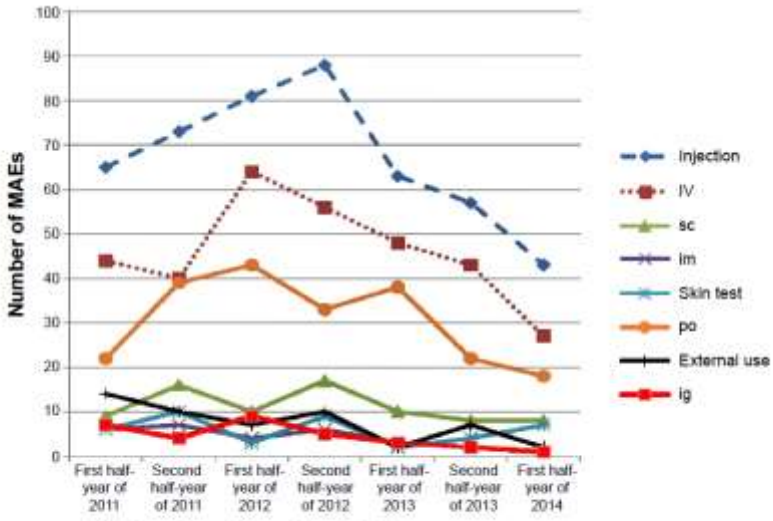

Figure 3 Administration route and MAEs during the period January 2011 to June 2014.
Abbreviations: MAEs, medication administration errors; IV, intravenous administration; sc, subcutaneous administration; im, intramuscular administration; po, oral administration; ig, nasogastric administration.

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Number of MAEs according to error severity rating

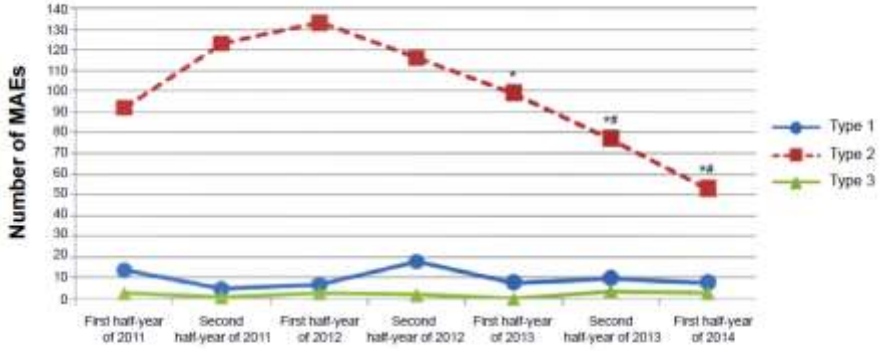

Figure 4 Number of MAEs according to error severity rating.
Notes: Type 1: errors occurred that reached the patient but did not cause patient harm. Type 2: errors occurred that reached the patient and required monitoring to confirm that they resulted in no harm to the patient and/or required intervention to preclude harm. Type 3: errors occurred that may have contributed to or resulted in temporary harm to the patient and required intervention, initial or prolonged hospitalization. *P<0.05 (compared with data in the first half-year of 2012); #P<0.05 (compared with data in the first half-year of 2011).
Abbreviation: MAEs, medication administration errors.

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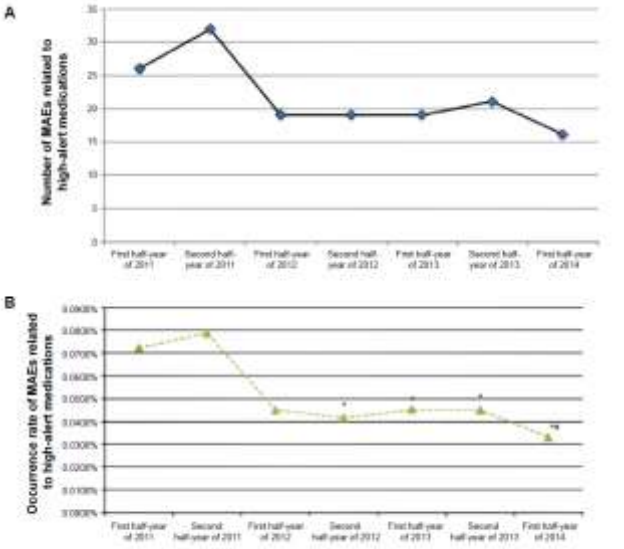
MAEs associated with high-alert medications



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MAEs associated with four categories of high-alert medications

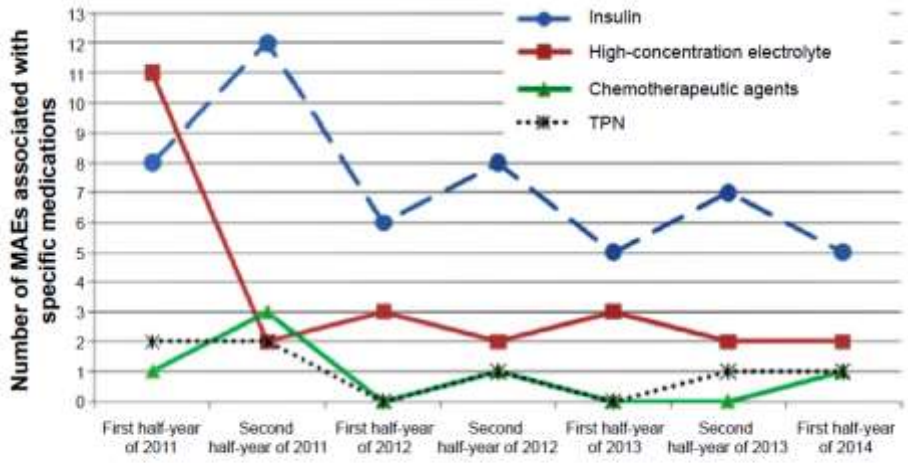

Figure 6 MAEs associated with four categories of high-alert medications during the period January 2011 to June 2014.
Abbreviations: MAEs, medication administration errors; TPN, total parenteral nutrition.

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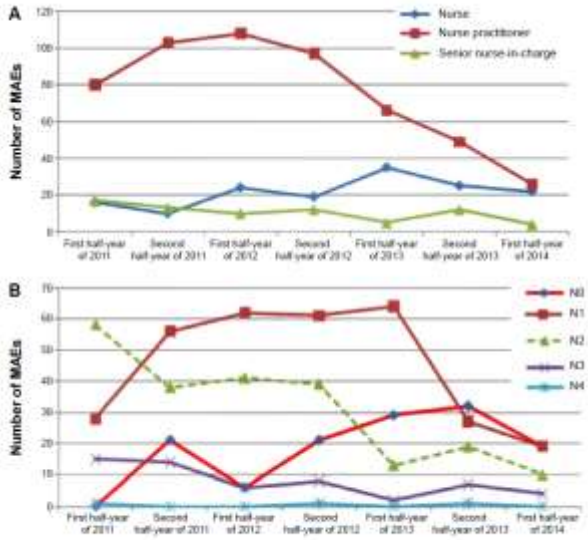
Nurse qualification and MAEs



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