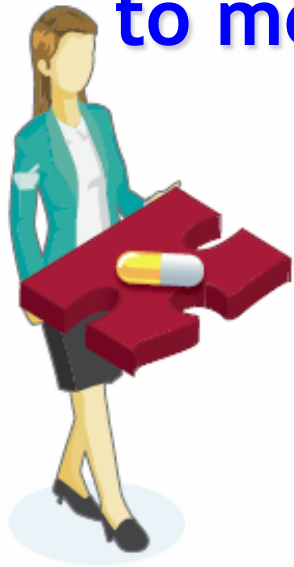# From medicines reconciliation to medicines review

**Dr. Fatma Karapinar
Hospital pharmacist-
epidemiologist**

# Conflict of interest

Nothing to disclose

# Questions

- Medication review is more important than medicines reconciliation. True or false?

- Teach back is needed to check whether we have been able to explain the medication use to a patient. True or false

- Clinical decision support systems are the answer to implement medication review completely. True or false?
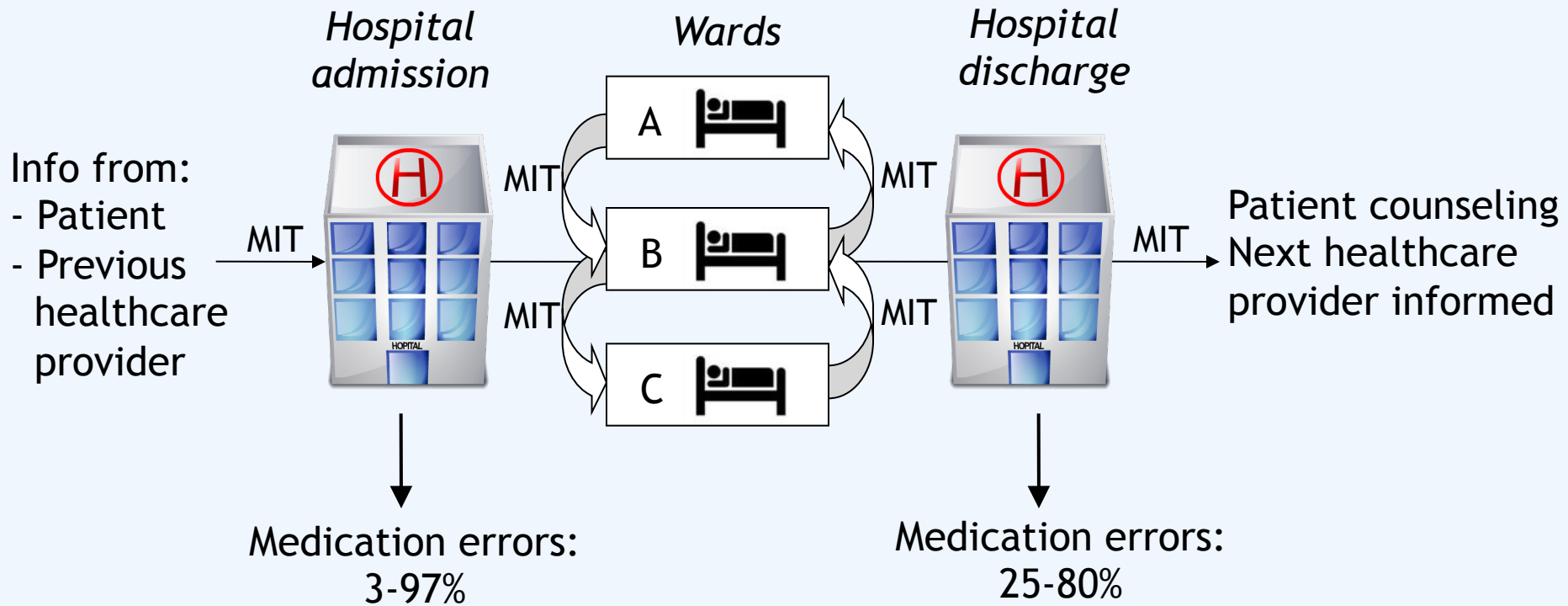
# Medication is the

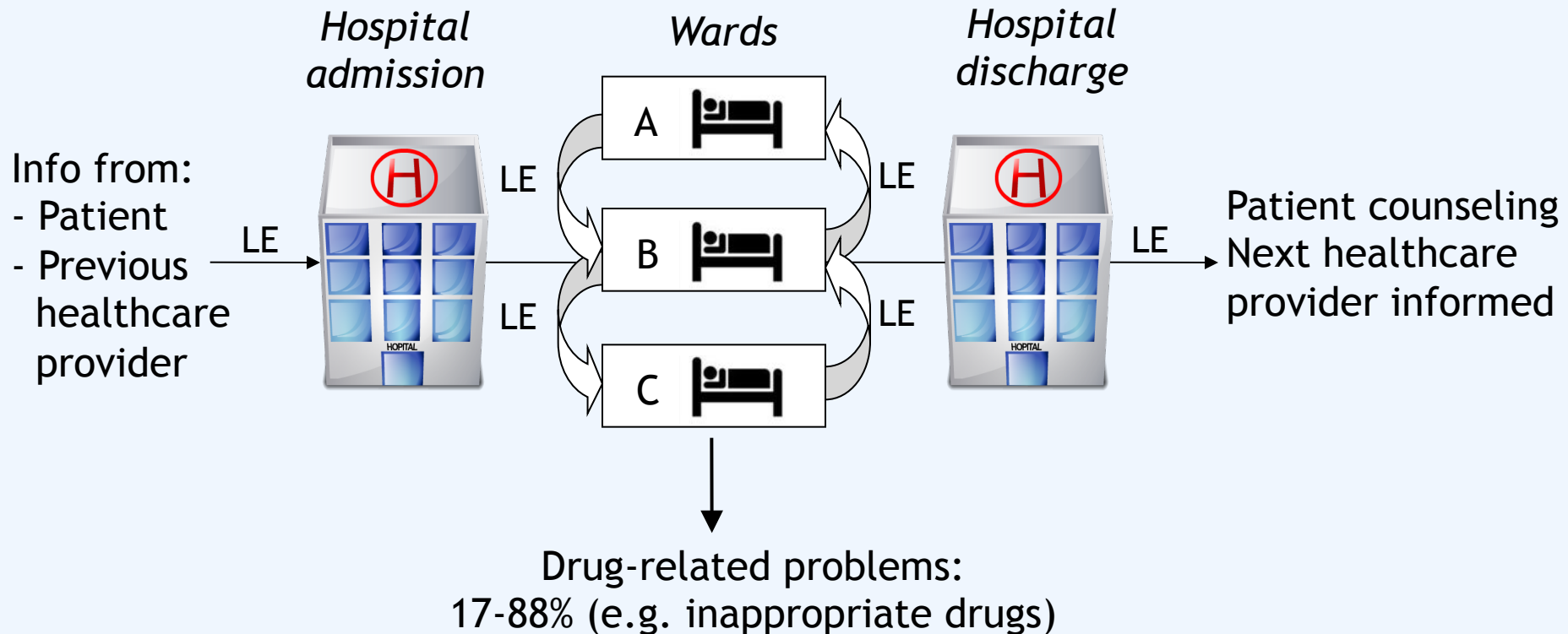most commonly used intervention/treatment



yet we lack the overview…

M. Fitzsimons, T. Grimes, M Galvin. Sources of pre-admission medication information: observational study of accuracy and availability. International Journal of Pharmacy Practice 2011;19;408-16

# Continuity of pharmaceutical care



Info from:
- Patient
- Previous healthcare provider

Hospital admission

Wards

Hospital discharge

Patient counseling
Next healthcare provider informed

A

B

C

MIT

MIT

MIT

MIT

MIT

MIT

MIT

MIT

Medication errors: 3-97%

Medication errors: 25-80%

## Medication reconciliation

MIT= medication information transfer

Tam VC, et al. CMAJ. 2005 Aug 30;173:510-5. Schnipper JL, et al. Arch Intern Med 2006;166:565-71. Wong JD, et al. Ann Pharmacother 2008;42:1373-9. Karapinar F, et al. Ann Pharmacother 2009;43:1001-10. Lehnbom EC, et al. Ann Pharmacother 2014;48:1298-1312.

# Evaluation of pharmaceutical care

Info from:
- Patient
- Previous healthcare provider

Hospital admission

Wards

Hospital discharge

Patient counseling
Next healthcare provider informed

A

B

C

LE

LE

LE

LE

LE

LE

LE

LE

Drug-related problems:
17-88% (e.g. inappropriate drugs)

## Medication review

LE = longitudinal evaluation: accurate pharmacotherapy based on patient needs?

Lehnbom EC, et al. Ann Pharmacother 2014;48:1298-1312.

# Key messages



## Medication review

- Med. review always start with med.rec.
- Know definitions/problems and prioritize
- Empower patients/carers
- You are not alone in healthcare: think broader than your hospital walls
- Use IT wisely

# Key messages

## Medication review

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# Medication reconciliation

"The process of creating the most accurate list of medications at all transition points,
with the goal of providing correct medications"

- IHI. Protecting 5 million lives from harm. Getting started kit: prevent adverse drug events (medication reconciliation).
- Joint Commission on The Accreditation Of Healthcare Organizations. Medication Reconciliation Handbook. ASHP; 2006.

# Medication review

A review of the pharmacotherapy by patient, physician and pharmacist based on a periodic, structured and critical evaluation of medical, pharmaceutical and user information

-Dutch polypharmacy guideline

# Medicines reconciliation vs review

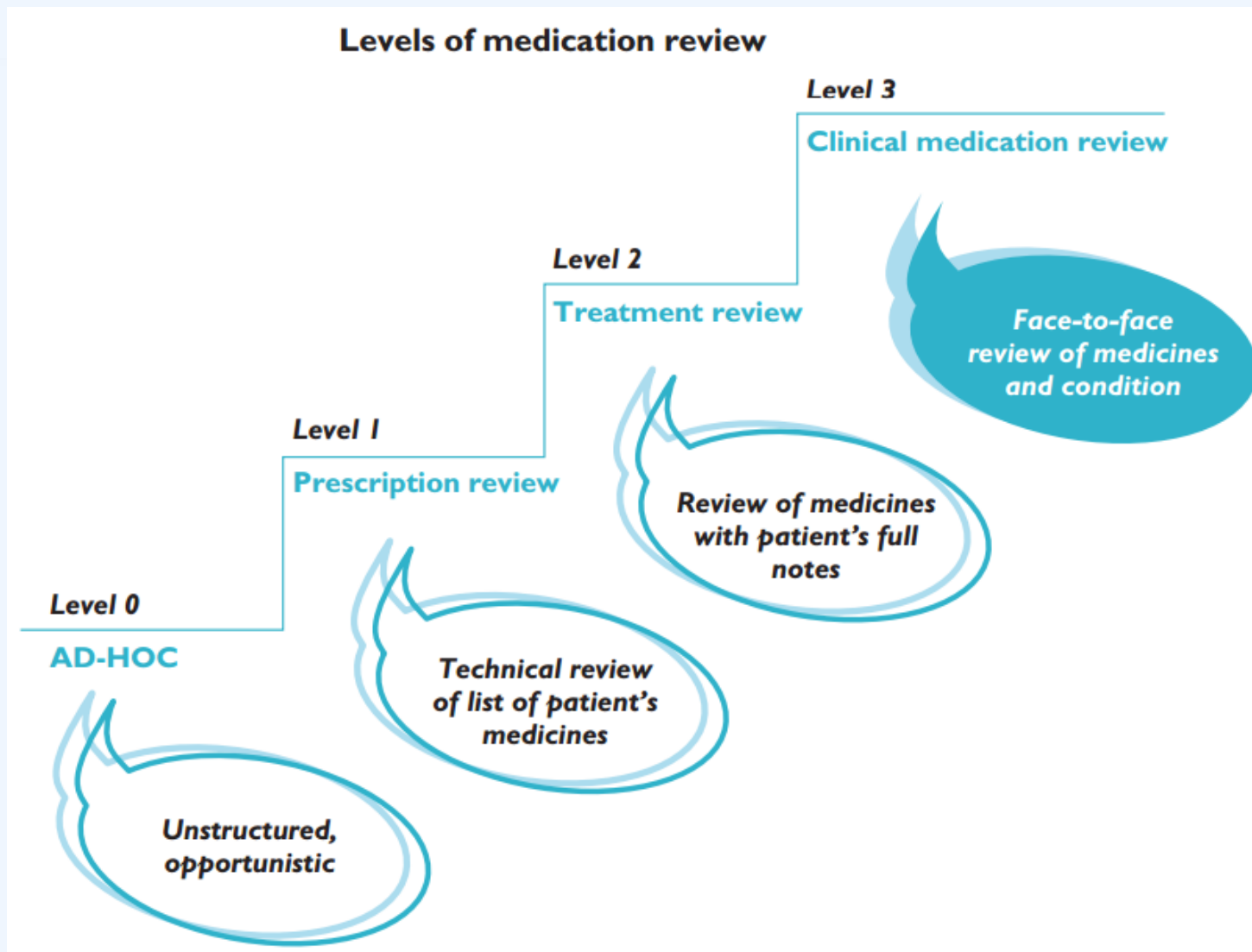| Medicines reconciliation | Medication review |
|---|---|
| Overall: assumes that the pre-admission used medication is indicated | Overall: indications of the entire pharmacotherapy are assessed and evaluated |
| Primary goal: continuity<br>Focus: discrepancies | Primary goal: to optimise<br>Focus: complete pharmacotherapy |
| Systematic inventarisation of drugs and elimination of obvious errors | Systematic assessment and evaluation of a patient's drug use |
| Includes an optimisation step to eliminate obvious errors: evaluation of the medication list with "simple" criteria e.g. laxative + opioid, NSAID + protonpumpinhibitor | Includes extensive sources for the review, including all lab parameters, previous ADEs, STOPP START criteria, Beers criteria etc.<br><br>Includes evaluation of the changes over time |

# Medicines reconciliation vs review

## Medication reconciliation is a prerequisite for obtaining a valid medication review

Mette Bjeldbak-Olesen[1], Anja Gadsbølle Danielsen[2], Dorthe Vilstrup Tomsen[1] & Tomas Joen Jakobsen[3]

**CONCLUSION:** Medication reconciliation identified a higher number of errors than medication review, but the number of serious errors identified by medication review was higher than that identified by medication reconciliation. The two methods identified different types of errors and should be used concurrently to supplement each other.

# Different levels of medication review



-Geurts et al. Br J Clin Pharm 2012;74:16-33

# Different types of medication review

| | Purpose | Patient's presence | Access to patient's notes | All prescription medicines | Review of medicines and/or condition |
|---|---|---|---|---|---|
| **Type 1: prescription review** | Address technical issues relating to prescription | No | Possibly | Possibly | Medicines |
| **Type 2: concordance and compliance review** | Address issues relating to patient's medicine-taking behaviour | Usually | Possibly | Yes | Medicines use |
| **Type 3: clinical medication review** | Address issues relating to the patient's use of medicines in the context of their clinical condition | Yes | Yes | Yes | Medicines and condition |

-Geurts et al. Br J Clin Pharm 2012;74:16-33

# Systematic approach to review

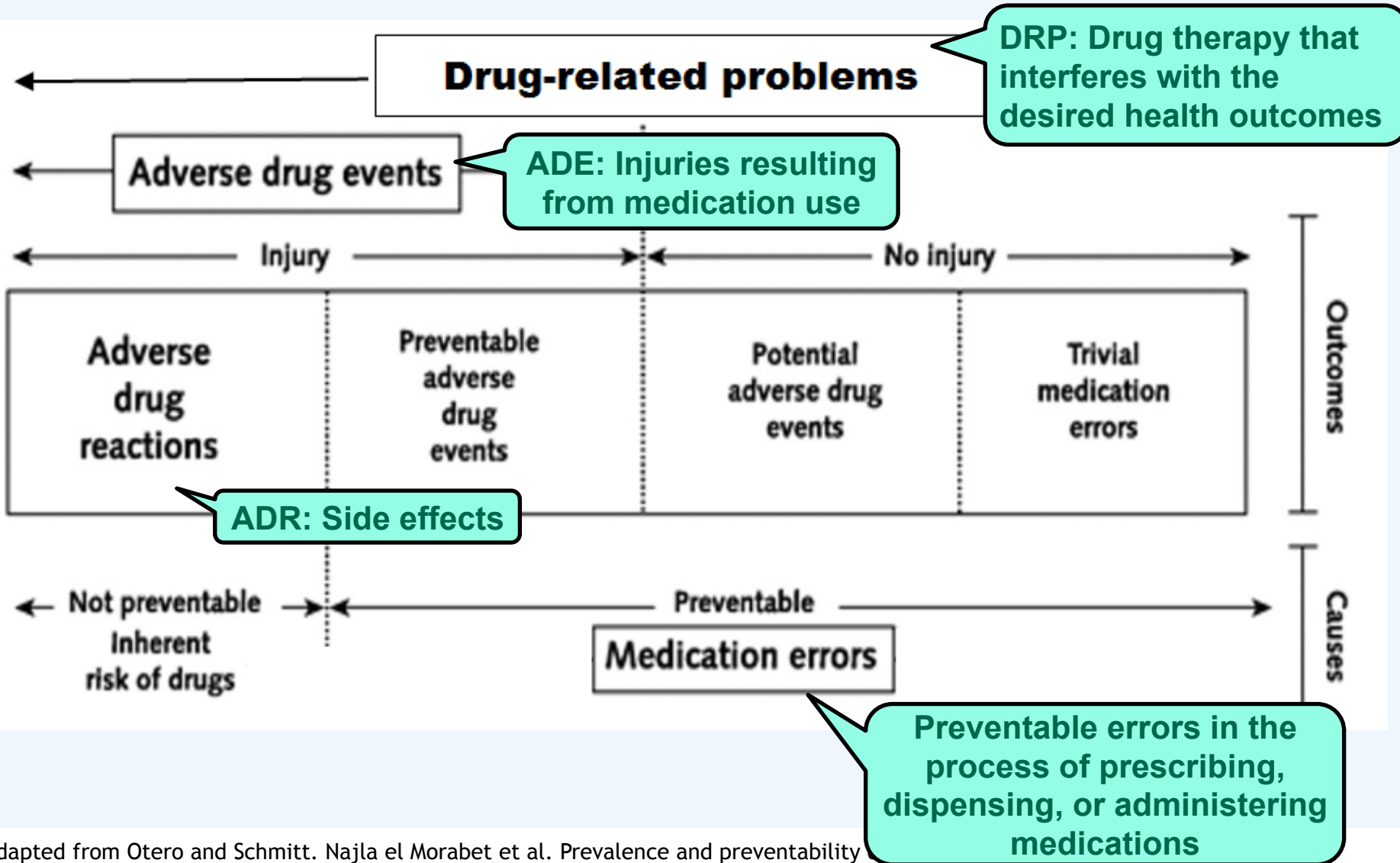| | |
|---|---|
| **Step 1**<br><br>Pharmacotherapeutic anamnesis | - Medicines reconciliation: actual drug use<br>- Assess problems, knowledge about drugs, experiences, concerns, hopes, wishes, questions |
| **Step 2**<br><br>Pharmacotherapeutic analysis | - Link diseases–drugs – lab<br>- Assess treatment goals<br>- Identify drug-related problems |
| **Step 3**<br><br>Discuss with the physician | - Prioritize actions (e.g. based on patient wishes)<br>- Minimize intake moments (adherence) |
| **Step 4**<br><br>Discussion with the patient | Discuss plan (provide written information)<br>Discuss medication changes, concerns/ expectations of patient |
| **Step 5**<br><br>Follow-up and monitor | Evaluate within 3 months |

-Dutch polypharmacy guideline

# Key messages
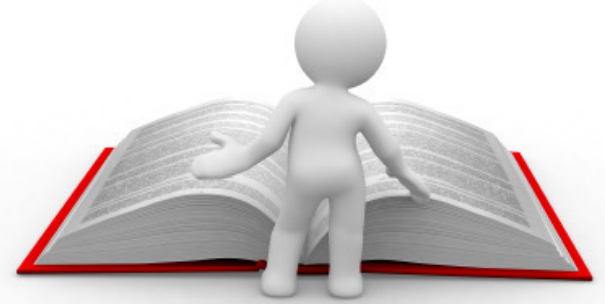
## Medication reconciliation

- Med. review always start with med.rec.

- Know definitions/problems and prioritize

- Empower patients/carers

- You are not alone in healthcare: think broader than your hospital walls

- Use IT wisely

# Possible drug-related problems



-Adapted from Otero and Schmitt. Najla el Morabet et al. Prevalence and preventability
progress

# Focus on real problems

- Statin in the morning → patient forgets the drug in the evening
  – leave it (adherence)

- Bisphosphonate for a 90 years old patient with a life expectancy of 1 year?

- So prioritize
  – based on patient wishes

# Scottish guideline

## **Polypharmacy Guidance**
### **March 2015**

| Drug Efficacy Chart | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Medicine or intervention | Comparator | Study population | Outcome | Duration of trial | Number needed to treat (NNT) | Annualised number NNT | Comments | |
| CEREBROVASCULAR/ CARDIOVASCULAR DISEASE | | | | | | | | |
| 17 Warfarin ( target INR 2 - 3) | Aspirin 75mg daily | Age > 75yrs with AF | 1st occurrence of fatal or non fatal disabling stroke (ischaemic or haemorrhagic), other intracranial haemorrhage or | 2.7 years (mean follow-up) | 20 | 54 | Mean age of patients prescribed warfarin was 81.5 years [14]<br><br>73% of patients had a CHADS2 score of 1-2<br><br>67% of patients on warfarin remained on this treatment for the complete duration of the trial | |
| 18 Aspirin | Placebo or no treatment | Primary prevention of CVD<br><br>Individuals without history of occlusive disease | Serious vascular event (Defined as MI, stroke or vascular death) | 5.8 years (mean follow-up) | 246 | 1428 | Age range in trials was 19-94yrs [15]<br><br>Patients had hypertension or coronary risk factors without overt disease | |
| 19 Aspirin or other antiplatelet | Placebo or no treatment | Secondary prevention of CVD in patients with history of stroke or TIA (outwith acute period) | Serious vascular event (Defined as non-fatal MI, non-fatal stroke or vascular death) | 29-31 months | 28-40 | 68 – 94 | Antiplatelets include aspirin (most widely studied), clopidogrel, dipyridamole, and other antiplatelets not commonly used in UK practice [16 17] | |

# Focus first: high risk patients

- Polypharmacy and ≥1 riskfactor(s)
  - Decreased kidney function (<50 ml/min);
  - Decreased cognition;
  - Increased fall risk (≥1 fall in the last 12months);
  - Signals of non-adherence;
  - Nursing home patients;
  - Unplanned hospital admission.

-Dutch polypharmacy guideline

# Drug-related readmissions

- Prevalence: 3 – 64%, median 21%

- Preventability: 5 - 87%, median 61%



-Najla el Morabet et al. Prevalence and preventability of
drug-related readmissions. Work in progress
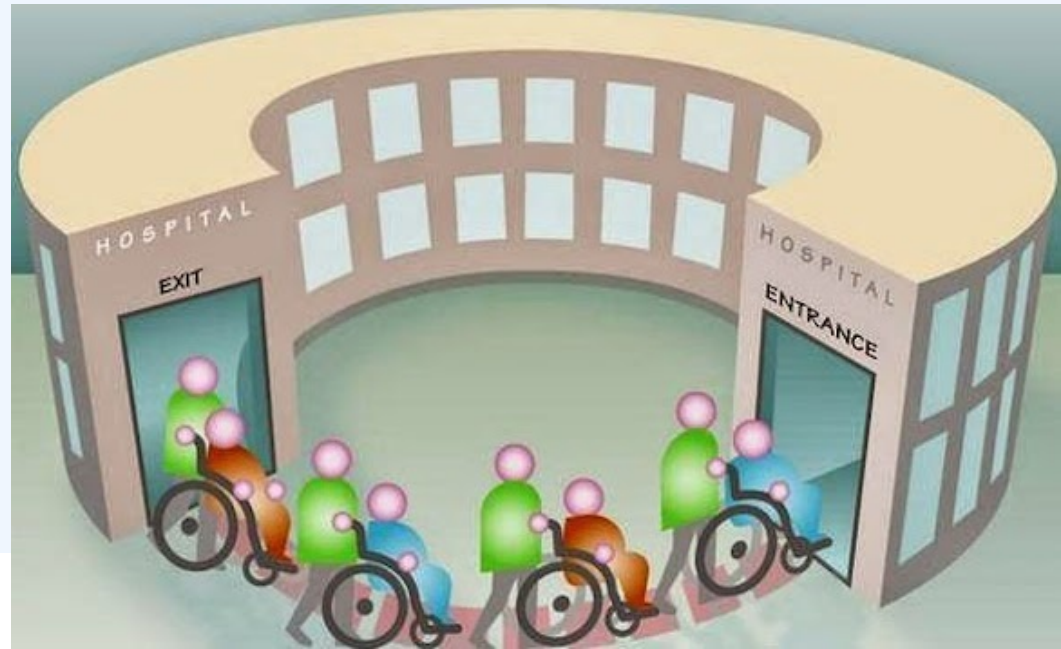
# Med. reconciliation or med. review?

A patient used omeprazol 40 mg. At hospital discharge 20 mg was prescribed unintentionally. The patient returned within 14 days post-discharge with reflux problems
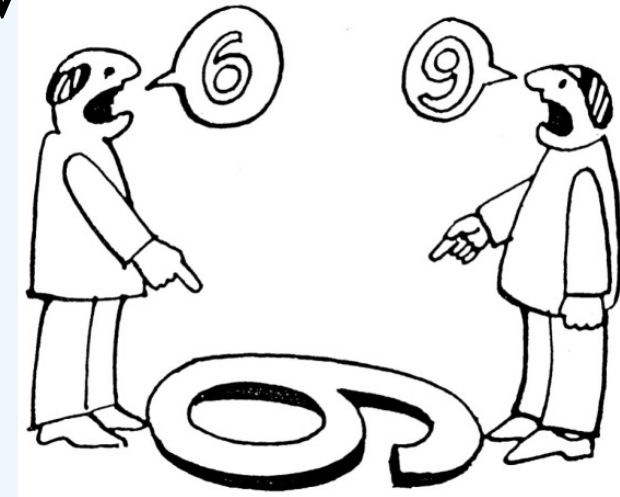
Medication reconciliation

# Med. reconciliation or med. review?

A patient is admitted for the third time with diarrhoea after paclitaxel use

Medication review

# Med. reconciliation or med. review?

A patient is admitted with hepatic encephalopathy. The patient continued to use his lactulose as prescribed (as needed). The patient is readmitted (lactulose dose too low for this indication)
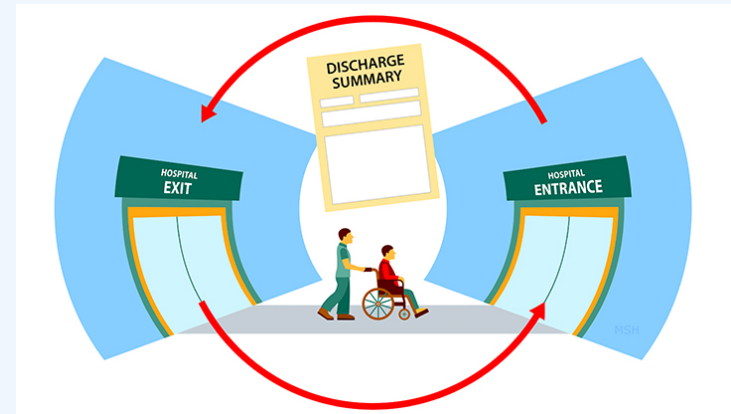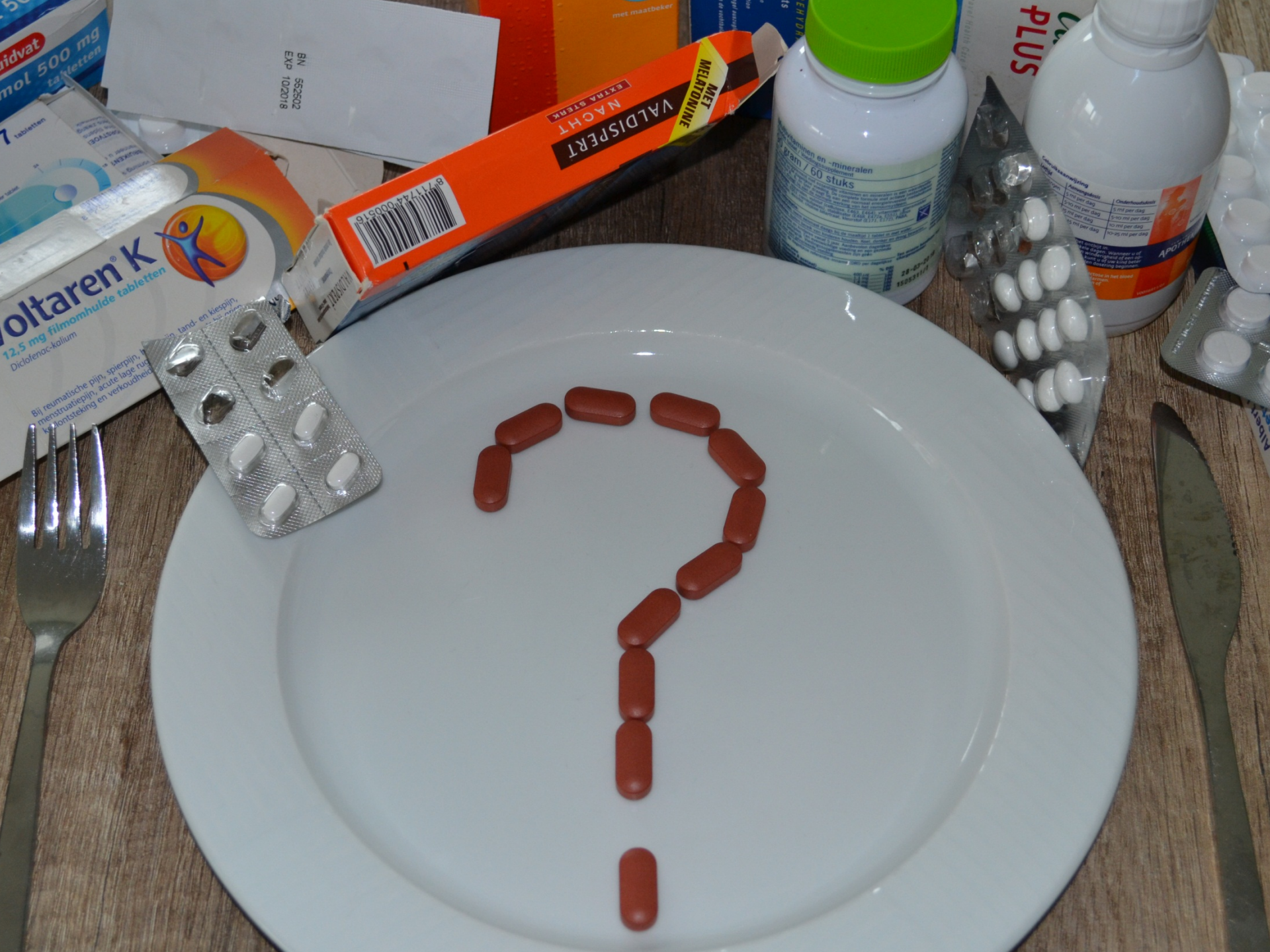


Medication review

# Key messages

## Medication review

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- Use IT wisely

# The patient...

The only constant factor in healthcare
and the one that has to endure the drugs

mol 500 mg
tabletten

7 tabletten

BN 562602
EXP 10/2018

met maatbeker

VALDISPERT
NACHT EXTRA STERK
MET MELATONINE

oltaren K
12,5 mg filmomhulde tabletten

Diclofenac-kalium

Bij reumatische pijn, spierpijn,
menstruatiepijn, acute lage rug
ontsteking en verkoudheid

PLUS

vitaminen en -mineralen
gram / 60 stuks

The most important thing in communication is hearing what isn't said

Peter Drucker
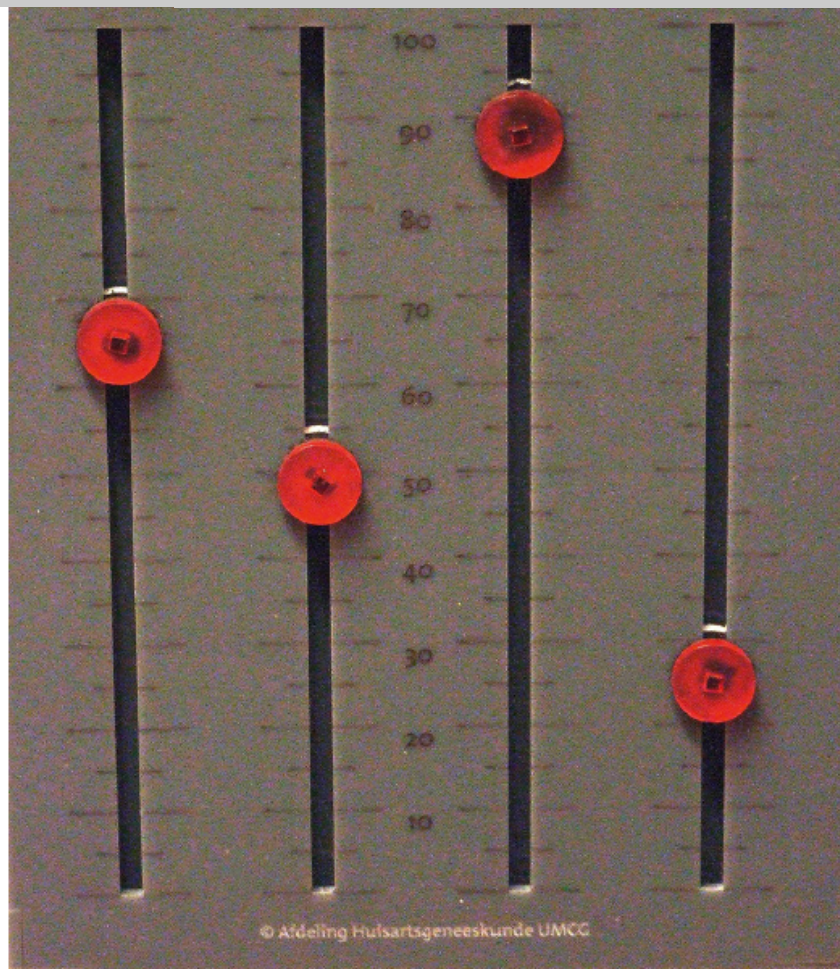
Treatment preferences

Stay alive · Stay independent · Less pain · Less complaints
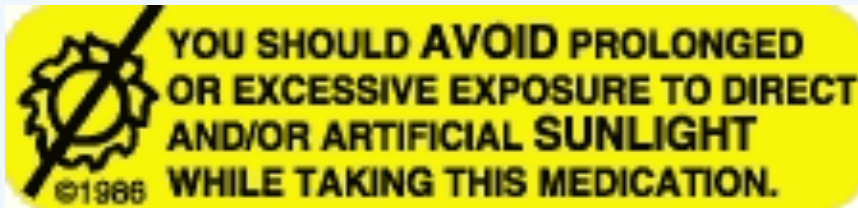
NED TIJDSCHR GENEESKD. 2013;157: A6491

- https://www.youtube.com/watch?v=nvwR74XpKUM

# Warning labels

**TAKE WITH FOOD** © 1990

**Don't take with food.**

**YOU SHOULD AVOID PROLONGED OR EXCESSIVE EXPOSURE TO DIRECT AND/OR ARTIFICIAL SUNLIGHT WHILE TAKING THIS MEDICATION.** ©1986

**Don't leave medicine in the sun.**

**MEDICATION SHOULD BE TAKEN WITH PLENTY OF WATER** ©1976

**Don't take when wet. Don't drink hot water.**

# Patient empowerment?

- 54-82% does not know that medication was changed [1]
- 55% of patients uses the medication not as prescribed at discharge [2]

- Prioritize your information

- Use teach back: check
  - ↑ knowledge, ↑ adherence [3]

[1] Ziaeian B, et al. J Gen Intern Med. 2012;27(11):1513-1520.
[2] Pasina L, et al. Drugs Aging. 2014;31(4):283-9.
[3] Negarandeh R, et al. Prim Care Diabetes. 2013;7(2):111-8.

# Key messages

## Medication review

- Med. review always start with med.rec.
- Know definitions/problems and prioritize
- Empower patients/carers
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# The risks begin post-discharge

- Beyond hospital walls:
  - ADEs for 19% of patiënts (<14 days after discharge)
  - 1,7 DRPs despite med.rec. at hospital discharge
    - Generally due to newly prescribed drugs

- Length of stay: 4 days in the Netherlands

→Collaboration needed with primary care

- Kanaan AO, et al. J Am Geriatr Soc. 2013;61:1894-9.
- Coley KC, et al. Pharmacotherapy 2012;32:10(e270).

ADE= Adverse Drug event
DRPs= Drug Related Problems

# Collaborate with GP

- Why was certain medication not prescribed?
  - Previous side effects
  - Patient does not want it
  - Family does not want it
  - Etc.

# Phone call post-discharge

A patient is certain that her cardiologist discontinued her anticoagulant. Although she receives the medication from the community pharmacy, she does not use it.

In reality, digoxin was discontinued

-Sara Daliri et al. Collaboration at transition in care. Work in progress

# Phone call post-discharge

The hospital assumes that only an antibiotic has to be dispensed for a male Parkinson patient. A few days later the patient returns to the clinic, in a wheelchair, unable to walk.

The patient did not have enough supply of his Parkinson drugs.

# Home visit post-discharge

A patient receives an antibiotic one day before discharge. The patient was known to be allergic to penicillins but failed to specify this at admission.

The community pharmacist visits the patient and notices the difficulty in breathing and recognizes the allergy. The antibiotic is replaced.

-Sara Daliri et al. Collaboration at transition in care. Work in progress

# Key messages

## Medication review

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# Use of IT

- A must, but IT is an AID
- IT generally does not operate longitudinal

- Patient portals
  - Medication reconciliation by patients/carers themselves

# Clinical decision support systems

- Also called: clinical rules

- Which drugs increase potassium levels?
  - angiotensin-converting enzyme (ACE) inhibitors
  - angiotensin-receptor blockers
  - potassium supplements
  - potassium-sparing diuretics etc…

- Rules build in
  - only a warning: ↑potassium + a relevant drug
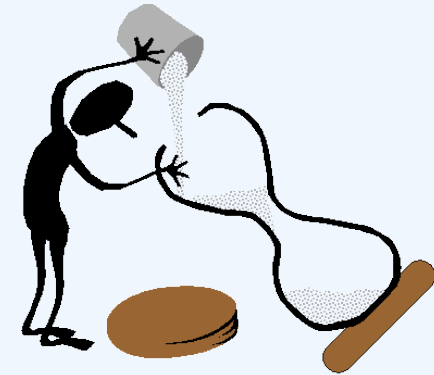
# Disadvantages clin.decision support

- Lack of all relevant information
  - E.g. rule: add laxative due to opioid use
    - BUT patient has diarrhea
- Works one way: adding medication
  - E.g. add protonpumpinhibitor with NSAID use
    - BUT when NSAID is discontinued, no warning exist to discontinue PPI
  - E.g. adjust antibiotic dose with ↓GFR
    - BUT when a patient is admitted with dehydration GFR will increase after fluid intake

GFR= Glomerular Filtration Rate, PPI = Protonpumpinhibitor

# Conclusions

## Key messages

- Med. review always start with med.rec.
- Know definitions/problems and prioritize
- Empower patients/carers
- You are not alone in healthcare: think broader than your hospital walls
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# Thank you for your attention