

# Medication at Transitions in Care

## Medikamente bei Übergängen in Gesundheitsversorgung

Ciara Kirke, HSE Quality Improvement  
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# Large burden of error and harm

- 2.05 discrepancies per patient; 0.3 potentially harmful (Salanitro, 2013)
- Persisted at 10-14 days for 69% of patients. 8% had additional post-discharge error(s) (O'Riordan, Int J Clin Pharm 2016)
- Discrepancy on transcribing to community prescription for 27% of medicines (Duggan, IPU Review, 2009)

Hospital discharge/  
Re-admission  
to  
community

- 8.8% of emergency admissions adverse drug event-related (Ahern, Emerg Med J 2013)
- 26% of emergency admissions of over 65s had an adverse drug event (ADE) (Hamilton, Arch Int Med 2011)

Community

- One medication error per hospital in-patient per day (Institute of Medicine, 2006)
- Median 7% prescribing error rate (Lewis, Drug Safety 2009)

Hospital

Hospital admission

- 1.72 discrepancies per patient; 0.16 potentially harmful (Salanitro et al. BMC Health Services Research 2013)
- Pharmacist-led medication reconciliation the only cost effective strategy evaluated to reduce ADEs (Etchells, Can Pt Safety Inst, 2012)

# How large?

- Unintended discrepancies may
  - affect at least 256 million and harm at least 28 million people per year on admission and
  - affect at least 191 million and harm at least 21 million people on discharge from hospital
- Based on:
  - Up to 67% of patients have one or more unintended discrepancies on admission
  - 11-59% potential for harm at admission and discharge (Tam, CMAJ 2005)
  - 50% of patients have one or more discharge discrepancy (Grimes, BJCP 2011)
  - If global hospital discharges 1/3 of OECD average, 382 million per year (OECD)

# A simple slip

Discharge prescription: LANZ entered for lansoprazole, selected oLANZapine 30mg daily

## Defences

Discharge prescribing on computer system

Community physician (GP)

Community pharmacists

Emergency Department doctor, admitting doctor, post-take ward round, nursing admission

Hospital dispensary

Family concerns, patient deterioration

Clinical pharmacist medication reconciliation

**STOP**

No decision support, no second check, no patient counselling, no written patient info

Receptionist transcribing, GP didn't know patient

Queried with GP, dispensed

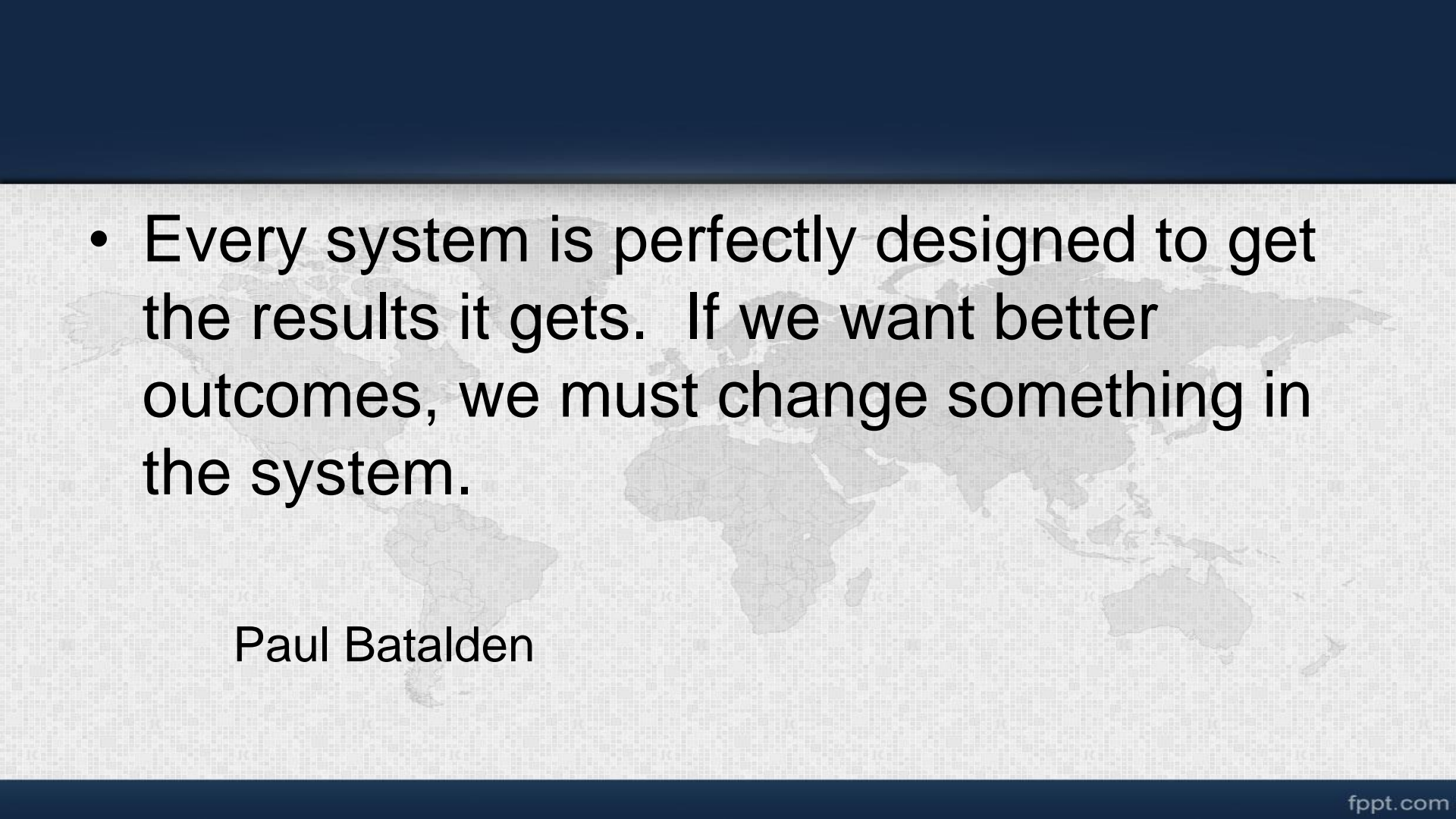
Medication-related harm not identified

Weekend dispensing, no clinical review, no patient info visible to dispenser

Medication-related harm not identified (Post-take ward round/ Weekend nursing)

## Gaps

Accident Trajectory (James Reason. Managing the Risks of Organizational Accidents, Ashgate, 1997)

- 
- Every system is perfectly designed to get the results it gets. If we want better outcomes, we must change something in the system.

Paul Batalden

# What has been done?

- WHO Patient Safety Solution
- High 5s Project
- Institute for Healthcare Improvement
- Accreditation, regulation
- NICE and NPSA
- Integrated medicines management, medicines optimisation
- Canada, US, Australia, Netherlands, Sweden, Northern Ireland, local improvements.....



We need

# 1. Better processes

1. Patient interview
2. Verify with at least one **reliable** information source
3. Back to patient
  - **Best Possible Medication History**
4. Compare to prescriptions, reconcile
5. Communicate/ make changes
  - **Medication reconciliation**

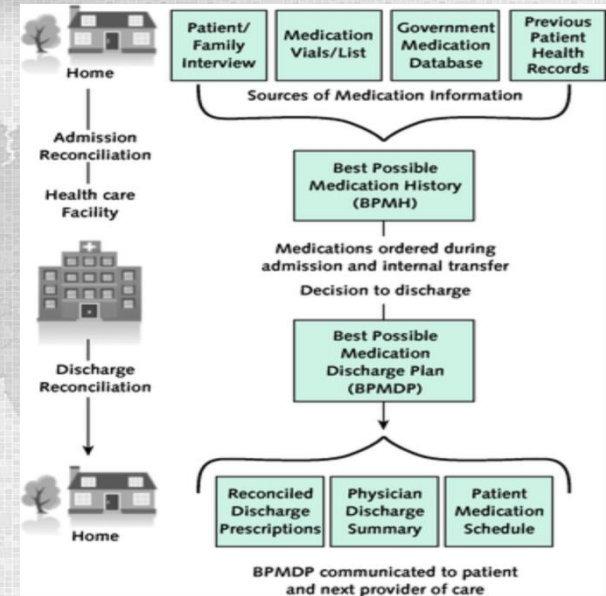


Figure adapted from Fernandes OA. Medication reconciliation. *Pharmacy Practice*. 2009;25:26  
In Kwan et al. *Ann Intern Med*. 2013; 158(5 Part 2): 397-403. Copyright American College of Physicians



# Use reliable sources to obtain BPMH

Table 1. Agreement of sources with GSPAML, percentage

Source	Agreement per inpatient episode		Agreement per medication		Mean number of disagreements per episode	Interval, days, median (range, IQR)
	For the episodes for which it was available; n/N (%)	For the study population (N = 97); n(%)	For the episodes for which it was available; n/N (%)	For the study population (N = 1111); n(%)		
Patient's own drugs	0/42 (0)	0 (0)	260/482 (53.9)	260 (23.4)	5.3	18.5 (1-127, IQR 7-26)
GP personal communication	4/32 (6.2)	4 (4.1)	531/752 (70.6)	531 (47.8)	3.4	18 (0-261, IQR 3-55)
GP referral document	1/31 (3.2)	1 (1.0)	151/345 (43.8)	151 (13.6)	6.3	0 (0-1, IQR 0-1)
Community pharmacy personal communication	11/93 (11.8)	11 (11.3)	810/1055 (76.8)	810 (72.9)	2.6	16 (0-132, IQR 6-25)
Previous inpatient kardex	1/27 (3.7)	1 (1.0)	217/363 (59.8)	217 (19.5)	5.4	67 (3-191, IQR 23-145)
Previous discharge summary	1/22 (4.5)	1 (1)	148/320 (46.3)	148 (13.3)	7.8	50.5 (3-185, IQR 23-130)
Nursing home personal communication	8/8 (100.0)	8 (8.2)	113/113 (100.0)	113 (10.2)	0	88.5 (1-363, IQR 19-208)
Nursing home referral document	1/5 (20.0)	1 (1.0)	77/85 (90.6)	77 (6.9)	1.6	
HSE-PCRS	15/90 (16.7)	15 (15.5)	757/1018 (74.4)	757 (68.1)	2.9	33 (7-89, IQR 24-44)

GSPAML Gold Standard Pre-Admission Medication List; GP General practitioner; HSE-PCRS Health Service Executive Primary Care Reimbursement Service.

- GSPAML: the complete and correct list of what the patient was taking before admission
- When available, nursing homes, community pharmacy, PCRS record and GP reliable.
- For all patients, community pharmacy and PCRS record most reliable.

- Grimes T, Fitzsimons M, Galvin M, Delaney T. J Clin Pharm Ther 2013
- Fitzsimons M, Grimes T, Galvin M. International Journal of Pharmacy Practice 2011

# What works?

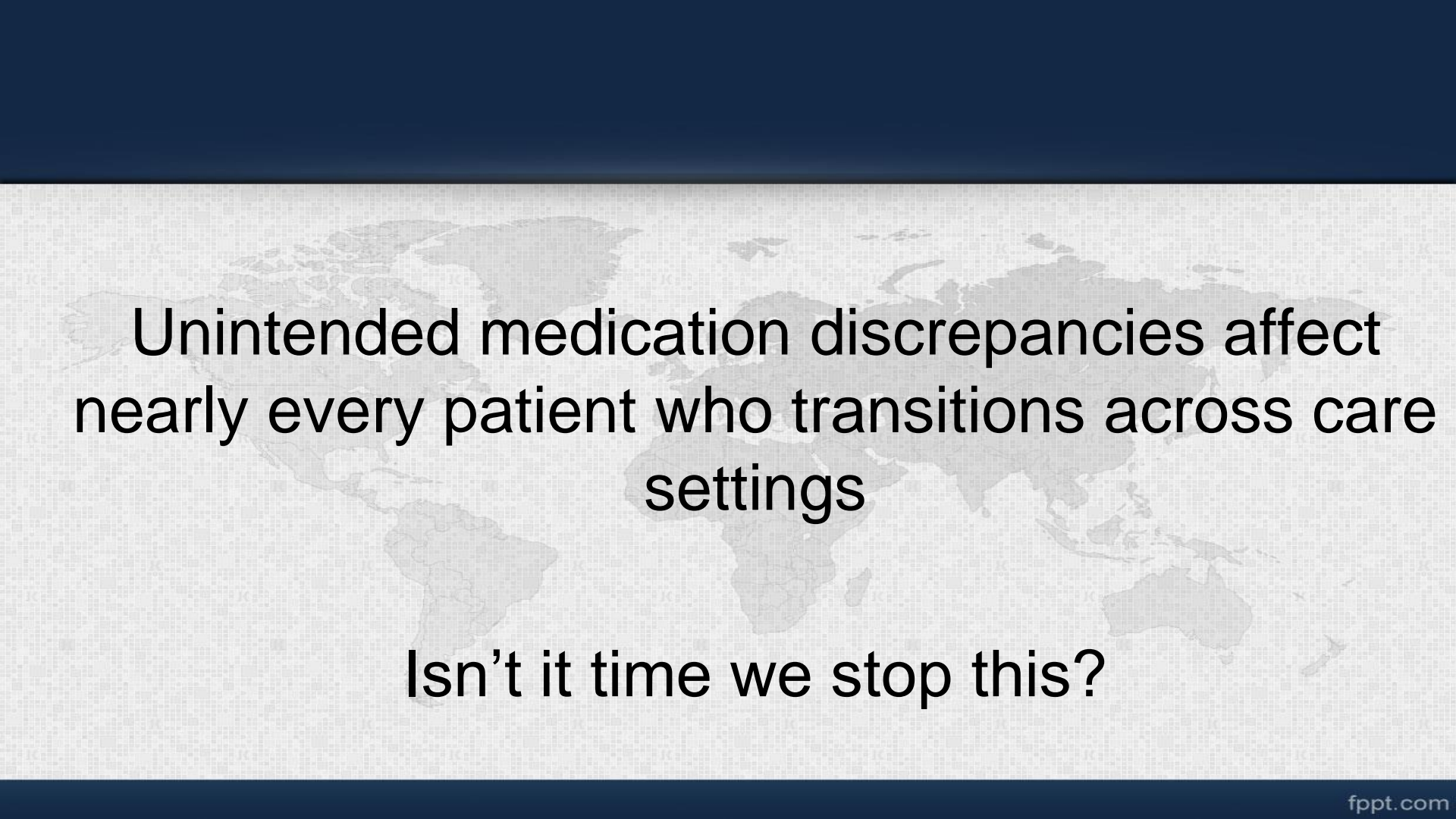
- Medication reconciliation interventions with intensive pharmacy staff involvement
  - Mueller et al. Arch Intern Med 2012
  - Mekonnen. J Clin Pharm Ther 2016
  - Etchells et al. BMJ Quality & Safety 2012
- Prioritise patients at high risk for ADEs
  - Gleason KM et al. J Gen Intern Med 2010
- Measure, evaluate, adapt, improve

# 2 - Better information

- Up-to-date and accurate shared medication record
  - Healthcare professionals and patients view, update and communicate reasons for changes
    - Paper, simple electronic, electronic health record
- Patient understand their medication, involved in choices, agree with plans
- Communication – interoperable electronic systems, shared record, standardised forms

# 3. Restructure & invest

- Will not fix this problem without investment in human resources (and IT) and process change
- Opportunities for efficiencies – pro-active med rec
- Clear return on investment Etchells 2012, MARQUIS ROI calculator
- Northern Ireland Scott MG et al. Eur J Hosp Pharm 2015
  - Reduced morbidity, mortality, length of stay, readmissions, error rate, improved medication appropriateness and communication
  - Return on investment of £5-8 per £1 invested



Unintended medication discrepancies affect  
nearly every patient who transitions across care  
settings

Isn't it time we stop this?

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