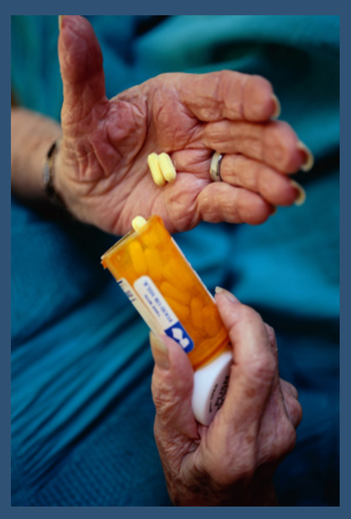

Development and validation of a standardised method to identify drug-related hospital admissions in older people

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Introduction

Drug-related admissions (DRAs) are hospitalisations resulting from adverse drug events (ADEs) and contribute to up to 30% of all admissions in older people. The OPERAM multicentre randomised controlled trial aims to assess the impact of pharmacotherapy optimisation on DRAs. Currently, no validated DRA identification method exists.

We aimed to develop and validate a method to screen for and adjudicate DRAs in older people caused by adverse drug reactions, overuse, underuse and misuse of medications.

Methods

1. **Literature review:** review of existing approaches of ADE/DRA identification and common causes of DRA in older people
2. **Content validation:** validation of a trigger list for DRA using a 2-round modified Delphi survey with 15 experts from 8 countries
3. **Pilot test:** Evaluation of feasibility of use on 15 cases by a physician and a pharmacist (adjudication pair)
4. **Reliability test:** Evaluation of inter-rater reliability on 16 cases between adjudication pairs from 4 countries

Results

- A DRA adjudication guide was developed consisting of definitions, examples & instructions for identifying DRA based on comprehensive medical record review in 3 steps (*Figure 1*):
  1. Standardised data abstraction
  2. Screening for potential ADEs using a new trigger tool & screening questions for non-triggered events
  3. Adjudication of ADE causality, contribution to hospital admission & preventability based on existing algorithms i.e. WHO causality and Hallas criteria
- Experts reached consensus on 26 triggers for DRA in older people. Each trigger has an associated list of potential causative drugs or causes of underuse (*Figure 2*).
- Inter-rater reliability was moderate for DRA identification (71% agreement, kappa = 0.41). Detailed case analysis showed that disagreements arose mainly from cases with potential underuse or contributory reasons for admission.

Conclusion

A standardised DRA identification method was successfully elaborated and validated for content. DRA identification is based on comprehensive medical record review with the aid of a trigger tool. Inter-rater reliability across adjudication pairs was moderate. Further measures including in-depth training will be implemented to optimise inter-rater reliability.

The DRA adjudication guide will be used in 4 study centers to measure the primary outcome DRA in the OPERAM trial.

Figure 1: DRA identification process

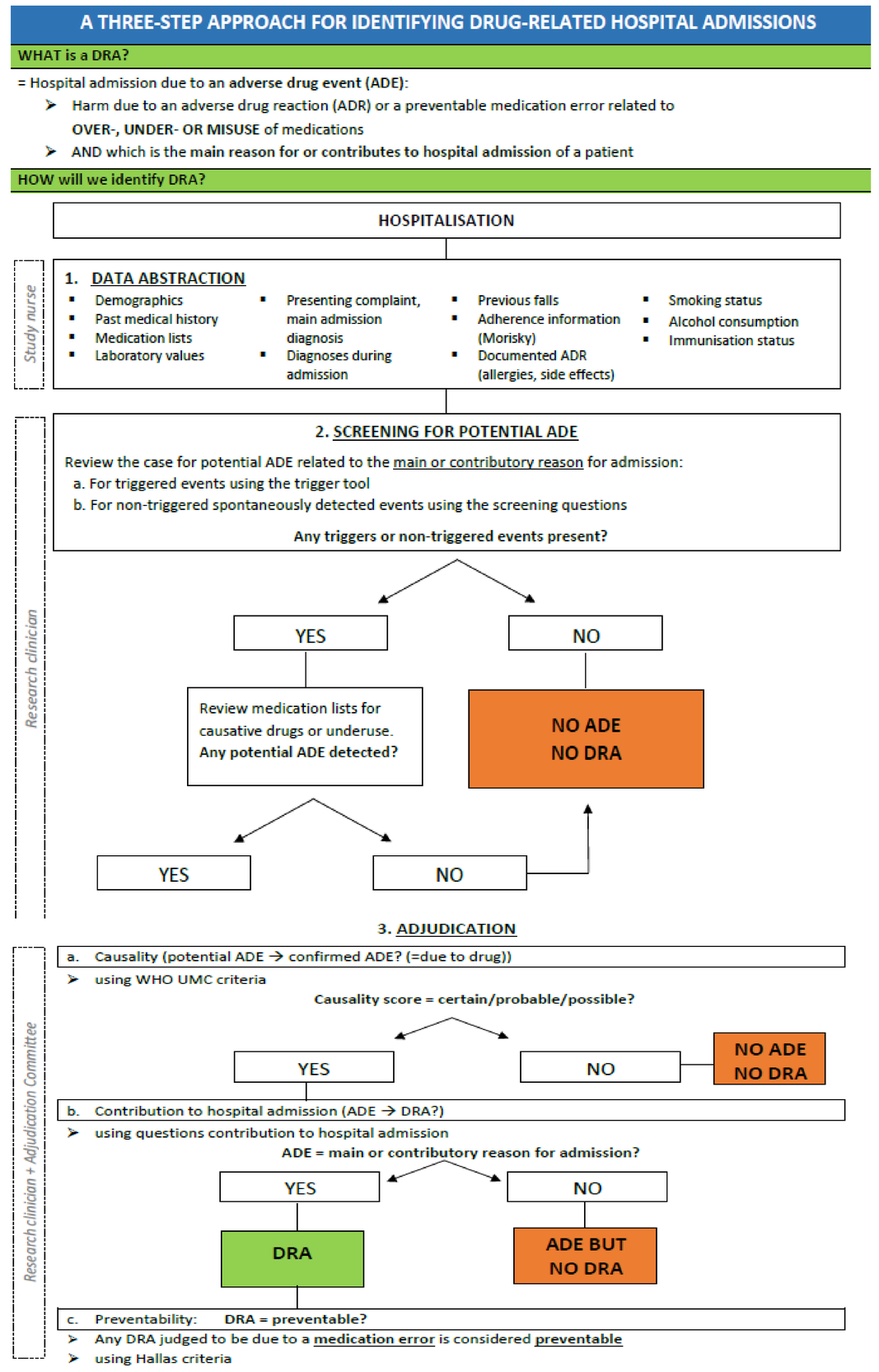

Figure 2: Triggertool for DRA in older people

Diagnoses		
Fall and/or fracture	Thromboembolic event	Dehydration
Confusion/delirium	COPD exacerbation	Bleeding
Acute renal impairment	Heart failure exacerbation	Stroke
Myocardial infarction/ ischaemic disease	Uncontrolled (non-neuropathic) pain	Gastro-intestinal disorders (severe diarrhoea, vomiting)
Major constiption or faecal impaction		
Laboratory values		
INR > 5	Sodium < 130 mmol/L	Neutrophils < 1.4 g/L
Digoxin level > 2 ng/ml	Potassium > 5.5 mmol/L	WBC < 3000/mm³
Blood glucose < 4 mmol/L	Potassium < 3 mmol/L	Platelets < 50 000/mm³
Blood glucose > 11 mmol/L		
Other		
Antidote use		
Abrupt medication stop within 24h of admission		
Documentation of ADE in the medical record		

Example: trigger heart failure exacerbation

Use of any drugs that could precipitate heart failure exacerbation?

- NSAIDs
- Corticosteroids
- Thiazolidinediones (glitazones)
- Non-dihydropyridine calcium channel blockers (verapamil, diltiazem)
- Sodium-containing formulations (effervescent, dispersible & soluble medications)
- Other (*Please specify)*:

Underuse of any of the following drugs?

- β-blockers*
- ACE-inhibitors*
- Diuretics

**: β-blockers and ACE-inhibitors in heart failure due to left ventricular dysfunction*

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