





Identification of DRPs by pharmacists and pharmaconomists performing two types of medication reviews in a Danish hospital setting

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#### BACKGROUND

Drug-Related Problems (DRPs) are factors for Adverse Drug Events. An approach for identifying and intervening on DRPs are medication reviews. In Denmark, pharmaconomists constitute a major part of

the professional team in primary care pharmacies as well as hospital pharmacies. Pharmaconomists can aid the pharmacists in parts of the medication review process.

#### PURPOSE

To investigate the number, type and severity of DRPs identified by pharmaconomists and clinical pharmacists, respectively, in a Danish hospital setting.



#### FINDINGS

- · From 8 wards (6 medical, 2 surgical), 157 patients' medicine was review
- · One or more DRPs were identified in approximately half of the patients
- · There was no significant statistic difference between the number of DRPs identified by CPS (n=149) and PMM (n=157).
- · The type of DRPs were statistically significant across all groups (see table below for distribution of DRPs).
- The severity of the DRPs identified by CP5 was significantly higher than DRPs identified by PMM.
- The most frequent problem identified by PMM and CPS were related to cost-effectiveness and treatment-effectiveness, respectively, accounting for more than
- half of all DRPs

	Baseline	PMM	CPS
P1 (Effectiveness)	10 %	25 %	68 %
P3 (Costs)	90 %	46 %	22 %
P4 (Other)	-	29 %*	10 % **
* C6 (Logistics) only	** CI (Drug selec	non) = CR (Drug use	) + C6 (Lepistica)

#### METHODS

Setting: In a rural non-university hospital with established Pharmaconomist Medicine Management (PMM), hospital wards were invited to participate. In the study period of 3 weeks, the wards also received a Clinical Pharmacist Service (CPS) comprising medication review for all newly admitted adult natient

Intervention: The established PMM comprises "prescription review" corresponding to PCNE Type 1. The primary tool for the pharmaconomists was a Regional Drug and Therapeutics committee (RDTC) recommendation database, developed by local clinical pharmacists. by local clinical pharmacists. The CPS comprised a medication review with full access to clinical patient data, but no patient interview, corresponding to the **PCNE Type 2b**. A baseline review was conducted using the RDTC database

All three reviews took place simultaneously, but separately, on the same group of patients.

Outcome measure: The outcome measure was number, type and severity of DRPs. The type of DRPs was classified using the PCNE classification V6.2. The severity of the DRPs were assessed using a

classification ranging from S.5-S.1, the latter being the most severe



differed between pharmaconomists' and clinical pharmacists' reviews.

Pharmaconomists mainly identified DRPs related to costs-effectiveness, whereas pharmacists mainly identified DRPs related to treatment-effectiveness.



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# The Danish hospital pharmaconomist





- Pharmaconomists have a 3-year trainee education in pharmaceuticals and health care.
- Region Zealand Hospital Pharmacy has 2,5 pharmaconomist per clinical pharmacist.
- Pharmaconomists perform medication management (PMM) daily on all bed units.
- PMM consists of top-up service, logistics and prescription reviews.
- Prescription review is defined as: A technical review of each drug prescription with focus on prescribing and dispensing within the hospital formulary\*.
- Each pharmaconomist perform 50-100 prescription review each day.

\* Kjeldsen, LJ. et al (2014). Ugeskrift for laeger, 176(24).





# How many and what kind of DRPs are identified during the daily prescription reviews?



How are these DRPs compared to a clinical pharmacist medication review?

## **Method - Setting**



## Næstved Hospital:

- Rural non-university hospital with 11 departments and 38 wards (bed-units and out-patient clinics)
- The 14 bed-units were invited to participate
- 8 bedunits participated in the 3-week study
- Each unit received an Clinical Pharmacist Service for 1 week.





# Participants:

- Adults
- All newly admitted patients
- Had one or more prescriptions

## **Method - Intervention**





(PCNE workshop 2013)



# The different reviews was made on the same group of patients simultaneously, but separately.



**RDTC: Regional Drug and Therapeutics Committee** 

## Method – Outcome measure





#### **Number of DRPs** In total and per patient



• **Type of DRPs** Using the PCNE DRP Classification V6.2



• Severity of DRPs Using a classification ranging from S.1 (serious adverse events) to S.5 (unlikely to affect the patient)\*

\*Dutton, Karen, et al. "Prevent medication errors on admission." Clinical Governance: An International Journal 8.2 (2003): 128-137.

#### **Results**



- From 8 wards (6 medical, 2 surgical), 157 patients' medicine was reviewed.
- One or more DRPs were identified in approximately half of the patients.



• There was no significant statistic difference between the number of DRPs identified by CPS (n=149) and PMM (n=157)\*.



The type of DRPs were significantly different across all groups (x<sup>2</sup> test p<0.005).

Туре		Baseline		PMM		CPS	
Problem	Cause	n	% of all	n	% of all	n	% of all
P1 (Effectiveness)	C1 (Drug selection)	14	6,7%	16	10,7%	74	47,1%
	C2 (Drug form)	-	-	2	1,3%	-	-
	C3 (Dose Selection)	8	3,8%	8	5,4%	23	14,6%
	C4 (Treatment duration)	-	-	6	4,0%	1	0,6%
	C5 (Drug use)	-	-	4	2,7%	6	3,8%
	C6 (Logistics)	-	-	1	0,7%	3	1,9%
	Total	26	10,5%	<b>3</b> 7	24,8%	107	68,1%
P3 (Costs)	C1 (Drug selection)	60	28,7%	36	24,2%	20	12,7%
	C3 (Dose Selection)	-	-	1	0,7%	11	7,0%
	C4 (Treatment duration)	-	-	2	1,3%	-	-
	C6 (Logistics)	127	60,8%	29	19,5%	4	2,5%
	Total	167	89,5%	68	45,7%	35	22,3%
	C1 (Drug selection)	-	-	-	-	2	1,3%
P4 (Other)	C5 (Drug use)	-	-	-	-	1	0,6%
	C6 (Logistics)	-	-	44	29,5%	12	7,6%
	Total	-	-	44	29,5%	15	9,6%



The severity of the DRPs identified by CPS was significantly higher than DRPs identified by PMM\*.



### Discussion



- 1. Tools such as RDTC databases and Hospital Formularies aid the cost-effectiveness of in-hospital prescriptions
- 2. Pharmaconomists performing prescription review identify several DRPs making prescriptions more cost-effective and treatment-effective
- 3. The clinical severity of the identified DRPs are higher in the clinical pharmacist medication review
- 4. The clinical pharmacist service is more costly than pharmaconomist prescription reviews.



#### Conclusion



 The type 1 and type 2b reviews performed by pharmaconomists and pharmacists respectively, identified one or more DRP in about half of the patients.

 The type and severity of the DRPs significantly differed between pharmaconomists' and clinical pharmacists' reviews.

 Pharmaconomists mainly identified DRPs related to costs-effectiveness, whereas pharmacists mainly identified DRPs related to treatment-effectiveness.



