The impact of pharmacist participation in a multidisciplinary team on an oncology ward compared with a ward clinical pharmacy service

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Abbreviations:
DRP- Drug Related Problem
NCC MERP- National Coordinating Council for Medication Error Reporting and Prevention
SVPH- St. Vincent's Private Hospital
PCNE- Pharmaceutical Care Network Europe
BNF- British National Formulary

1. Introduction

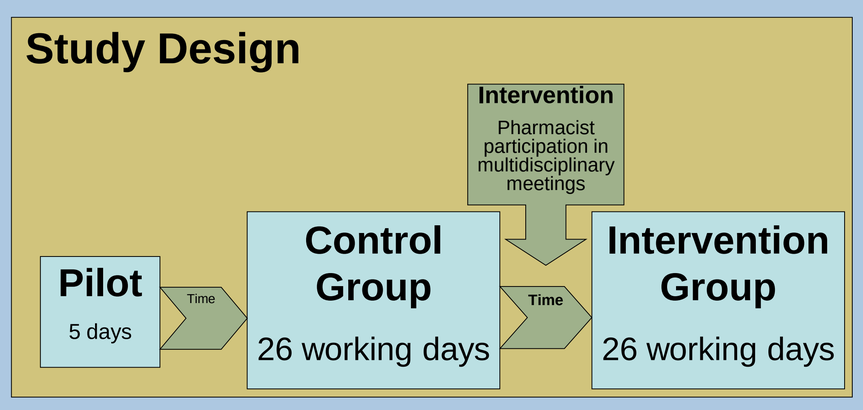
Integration of pharmacists in multidisciplinary teams has been shown to have a positive impact in several clinical, pharmaceutical and financial indicators(1-15). Literature on the oncology setting and in non teaching facilities is sparse and no literature in fully private healthcare facilities or in Irish hospitals is available. Differences in methods, outcome measures and working frameworks make the available evidence difficult to generalise.

2. Methods

Study Setting

• Oncology ward of SVPH (25 bed unit with over 1200 patient admissions yearly)

Study Design



Sampling Method

• Sequential enrolment (no randomization)

Inclusion Criteria

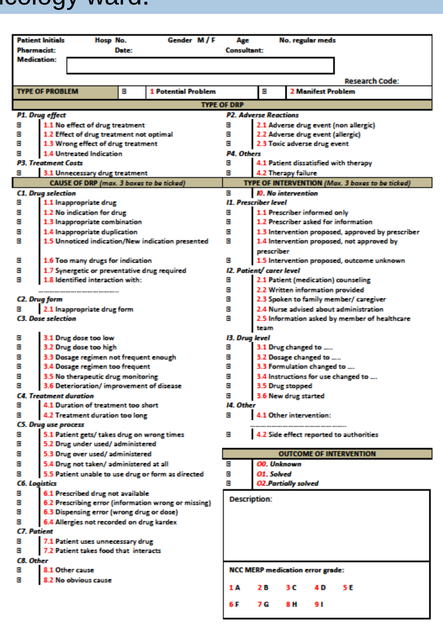
• Patients 18 years old and over.
• Patients had to be admitted under the care of an Oncology Consultant.

Primary Outcome Measure

• Number of DRPs identified by the pharmacist.

Secondary Outcome Measures

•type, causes and outcomes of DRPs .
•type of intervention needed to solve a DRP.
•classification according to the NCC MERP classification system.
•acceptance rate by medical staff.
•time needed to provide the clinical pharmacy service to the Oncology ward.



Patient Initials | Hosp No. | Gender M / F | Age | No. regular meds
Pharmacist: | Date: | Consultant:
Medication:
Research Code:

TYPE OF PROBLEM: 1 Potential Problem | 2 Manifest Problem

TYPE OF DRP

P1. Drug effect
1.1 No effect of drug treatment
1.2 Effect of drug treatment not optimal
1.3 Wrong effect of drug treatment
1.4 Untreated Indication
P3. Treatment Costs
3.1 Unnecessary drug treatment

P2. Adverse Reactions
2.1 Adverse drug event (non allergic)
2.2 Adverse drug event (allergic)
2.3 Toxic adverse drug event
P4. Others
4.1 Patient dissatisfied with therapy
4.2 Therapy failure

CAUSE OF DRP (max. 3 boxes to be ticked) | TYPE OF INTERVENTION (Max. 3 boxes to be ticked)

C1. Drug selection
1.1 Inappropriate drug
1.2 No indication for drug
1.3 Inappropriate combination
1.4 Inappropriate duplication
1.5 Unnoticed indication/New indication presented
1.6 Too many drugs for indication
1.7 Synergetic or preventative drug required
1.8 Identified interaction with:
C2. Drug form
2.1 Inappropriate drug form
C3. Dose selection
3.1 Drug dose too low
3.2 Drug dose too high
3.3 Dosage regimen not frequent enough
3.4 Dosage regimen too frequent
3.5 No therapeutic drug monitoring
3.6 Deterioration/ improvement of disease
C4. Treatment duration
4.1 Duration of treatment too short
4.2 Treatment duration too long
C5. Drug use process
5.1 Patient gets/ takes drug on wrong times
5.2 Drug under used/ administered
5.3 Drug over used/ administered
5.4 Drug not taken/ administered at all
5.5 Patient unable to use drug or form as directed
C6. Logistics
6.1 Prescribed drug not available
6.2 Prescribing error (information wrong or missing)
6.3 Dispensing error (wrong drug or dose)
6.4 Allergies not recorded on drug kardex
C7. Patient
7.1 Patient uses unnecessary drug
7.2 Patient takes food that interacts
C8. Other
8.1 Other cause
8.2 No obvious cause

I0. No intervention
I1. Prescriber level
1.1 Prescriber informed only
1.2 Prescriber asked for information
1.3 Intervention proposed, approved by prescriber
1.4 Intervention proposed, not approved by prescriber
1.5 Intervention proposed, outcome unknown
I2. Patient/ carer level
2.1 Patient (medication) counseling
2.2 Written information provided
2.3 Spoken to family member/ caregiver
2.4 Nurse advised about administration
2.5 Information asked by member of healthcare team
I3. Drug level
3.1 Drug changed to .....
3.2 Dosage changed to .....
3.3 Formulation changed to .....
3.4 Instructions for use changed to .....
3.5 Drug stopped
3.6 New drug started
I4. Other
4.1 Other intervention:
4.2 Side effect reported to authorities

OUTCOME OF INTERVENTION
O0. Unknown
O1. Solved
O2.Partially solved

Description:

NCC MERP medication error grade:
1 A 2 B 3 C 4 D 5 E
6 F 7 G 8 H 9 I

Figure 1 - Data Collection Form. Adapted from the PCNE DRP classification system

3. Results

	Control Group	Intervention Group	
Patients included	124	130	
No. of DRPs	86	129	
DRPs/1000patient days	**155**	**228**	**p=0.024**
% patients with 1+ DRPs	**29.8%**	**43.8%** RR=1.47 (95% CI, 1.05 – 2.05)	
DRPs/Total no. of patients	0.69	0.99	

Table 1 – No. of DRPs and rates

- Manifest/Potential DRP rate was 60/40.
- The most common types of DRP were: *unnecessary drug therapy*, *untreated indication* and *effect of drug therapy not optimal*.

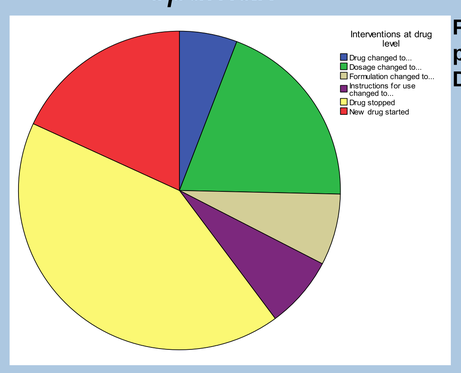


Figure 2 - Pie chart of interventions proposed at drug level to solve DRPs

- The main causes of DRPS related to issues of *drug selection*, *dose selection* and *treatment duration*.

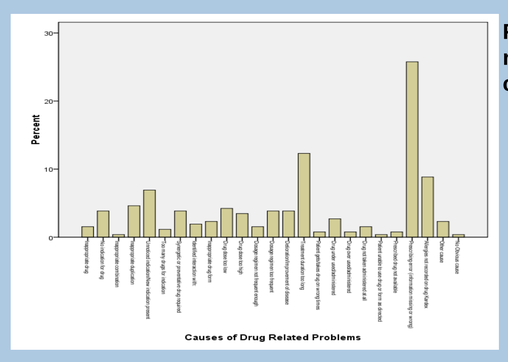


Figure 3 – Bar Chart of all recorded DRPs causes sub-categories

- 89.5% of proposed interventions were accepted by medical staff

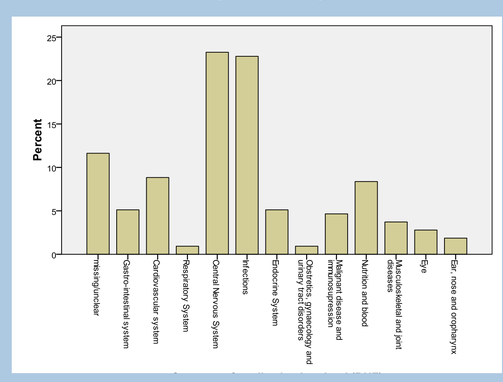


Figure 4 – Bar Chart of categories (BNF) of drugs involved in DRPs.

- 83.3% of DRPs involved patients prescribed over 5 regular drugs

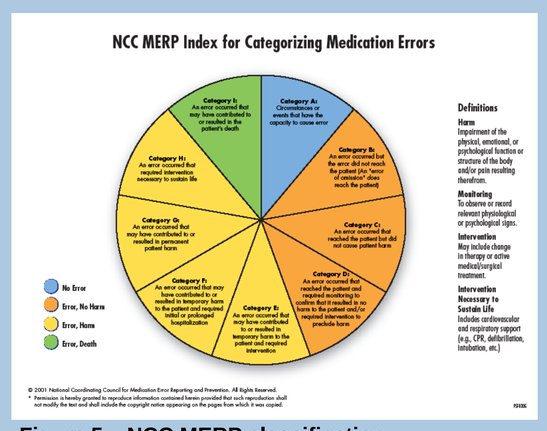


Figure 5 – NCC MERP classification system

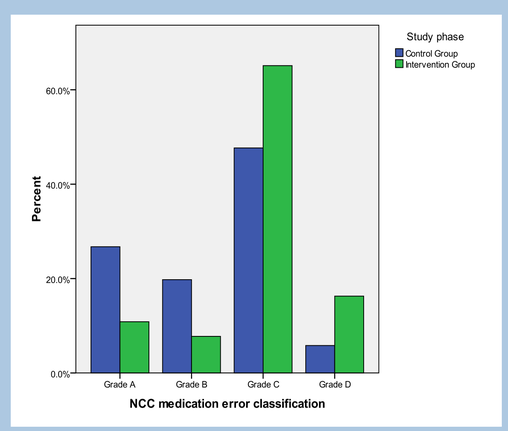


Figure 6 – Classification of DRPs in the control and intervention group according to NCC MERP scale.

4. Discussion

The increase in total number, rates and patients with DRPs could be explained by the more complete patient's clinical information available to the pharmacist when present in the multidisciplinary meetings. This allows the pharmacist to assess patient's drug therapy more effectively.

In general, DRPs were graded as more severe in the intervention group than in the control group. One possible reason for this was that the better clinical picture obtained by the pharmacist allowed him/her to have a better understanding of the impact of the DRP for the patient. It is highly unlikely that this difference is due to differences in the intrinsic nature of DRPs since these differences were not found in this study.

Limitations:

• No randomization

• Historical control group

• Patient population might not be reflective of oncology population in public hospital settings

• Study uses intermediate outcomes and not final outcome measures such as mortality rates or disease related outcomes

5. Conclusions

The study provides evidence of the benefits of pharmacists participating in multidisciplinary models of care in private and non teaching health care facilities:

• Higher number of DRPs were prevented and resolved when the pharmacist participated in the multidisciplinary team.

•More patients were decteded with DRPs in the intervention group

•Improved quality of drug use with potential clinical benefits for patients, potential cost savings and costs avoidance for the hospital and pharmacy department.

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