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## Research Article

# A PROSPECTIVE STUDY IN EMERGENCY DEPARTMENT TO EVALUATE THE MEDICATION SAFETY WITH RESPECT TO NATIONAL LIST OF EMERGENCY DEPARTMENT IN TERTIARY CARE HOSPITAL

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### ABSTRACT

**Objectives:** To evaluate the medication safety with respect to national list of emergency department in tertiary care hospital.

**Methodology:** it was Prospective observational study. This study was conducted in the emergency department Bangalore Baptist hospital. for a period of 6 months from October 2015-march 2016. materials used: patient case sheets, patient medication chart, patient profile form and lab master. The study consisted of: selection of topics. The first step to design a data collection form, second step in the study was prescription analysis, The prescription guidelines, Micromedex, interaction checker, drug interaction. Dose of each drug in prescription was calculated according to body weight. When analysis completed all data entry and result were gained.

**Result:** in this study male patients were listed more 123(55.9%) than the female patients 97(44.1%), and route of administration were listed more in IV(67.2%), presence study showed 70(31.3%) prescription was without generic name, 15(6.7%) prescription was not legible, 91(40.8%) prescription had inappropriate abbreviations, prescription had variation of dose {overdose 4(1.8%), under. The study showed more number of moderate interaction 121(55%) as the compared to minor and major interaction, drug interaction between cefotaxime and amikacin was most common drug interaction(20.8%), out of 220 patients 4 (1.8%) of them showed adverse drug reaction.

**Conclusion:** Medication error is the most preventable causes of complication, life treating and even death. From the study of medication safety in emergency ward found. Prescription pattern of the present study concluded was the most commonly prescribed drug in emergency ward and the most common admission was due to cardiovascular disease. Quality of life seeking changes in the therapeutic approach in general this can be achieved by finding medical and social alternative that have a favourable influence on QoLAs a whole stimulating a better doctor-patient relationship and the development of drug that not only provide treatment efficacy but also beneficial effect on QoL this requires intervention of health professionals to evaluate each case separately and create an action plan include the withdrawal of guidance and even psychological question for these purpose. Out of 236 patient under study an adverse drug reaction found to be about injection piptaz showed with redness and itching in one patient and one other patient on treatment with local irritation had been observed.

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## INTRODUCTION

Emergency departments (EDs) play a significant role in an acute healthcare system. Their services include emergency and disaster management. Emergency departments should use cost-effective strategies such as instituting a five-level triage process, a "pull-to-full" strategy, split-flow models, fast tracks, Quick-Pass and Lean. (Merlin C Thomas et al, 2006) (These strategies can have a significant impact on patient flow.

A strong risk management program is also essential for the fast-paced and efficient emergency medicine environment. A program grounded in evidence-based medicine can even reduce unnecessary ancillary costs and also reduce the physician's-and

thus the hospital's-risk of a malpractice suit. "As the front door to the hospital, a top-performing emergency department improves the hospital's image within its community, resulting in an increase in the hospital's overall market share and downstream revenue.(StavroulaGerogianni 2014)

Strong leadership is essential for any organization that desires to effect change, and the ED is no different. The medical director sets the tone for the entire department and for this reason, directly impacts staff morale, medical staff involvement, patient satisfaction, core measure compliance, patient throughput and finances. (Clauson KA et al, 2014)

Emergency departments (EDs) are characterized by simultaneous care of multiple patients with various medical

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conditions. Due to a large number of patients with complex diseases, speed and complexity of medication use, working in under-staffing and crowded environment, medication errors are commonly perpetrated by emergency care providers. (StéphanieBelaiche2012)

Estimating the prevalence of medication errors is difficult due to the varying definitions and classification systems employed. Rates can vary depending on the denominator used (e.g., patient, prescription or a specific medication). The challenge is compounded by variations in health care system organization and the availability and use of incident reporting systems . (Teresa M2003)These issues are reflected in the widely varying error prevalence rates reported in different parts of the world . For example, a United Kingdom study found that 12% of all primary care patients may be affected by a prescribing or monitoring error over the course of a year, increasing to 38% in those 75 years and older and 30% in patients receiving five or more drugs during a 12-month period. Overall, 5% of prescriptions had prescribing errors ( MYRNA Y. MUNAR et al,2007) Swedish study found a medication error rate of 42%. However, two-thirds were related to a failure to state the purpose of the treatment on prescriptions and only 1% of errors resulted in an incorrect dose. A study from Saudi Arabia reported that just under one-fifth of primary care prescriptions contained errors, but only a small minority were considered serious. Another study in Mexico observed that 58% of prescriptions contained errors, with dosage regimen accounting for most cases (27.6%). These examples are provided to show that medication errors are a global issue.( Rama M 2014)

There is an important role for EDs in providing urgent care for elderly patients referred by long-term care institutions, such as nursing homes (NH), to deal with sudden-onset diseases or injuries, or as the first step towards hospital admissions. (.elen J. Nye et al, 2011) Although NH residents account for a small proportion of all ED patients, their complex care needs take up a large share of resources. It is also common knowledge that many of the referrals to EDs involving patients coming from long-term care facilities could have been prevented (these situations are also known as ambulatory care-sensitive conditions; ACSCc) , and that is why new strategies are needed to avoid institutionalized patients being transferred to EDs by providing an appropriate level of care in the right setting, especially bearing in mind the increasing strain on EDs reported in many publications.(.Joshua Caballero et al, 2009).

### Method of data collection

The newly admitted case in emergency department was randomly selected on daily basis and reviewed for data collection and evaluation of medication safety which follow by physician.

### Study procedure

The patient demographic and all medically relevant information was noted in a predefined data collection form. Alternatively, these case charts were reviewed to identify medication error in emergency department, such as drug \_drug interaction, route of administration, adverse drug reaction, nurse note, and etc. Advers drug interactions occurred due to drug \_drug interaction in category of ADR.

## RESULT AND DISCUSSION

Table No 1 Demographic Details of Patients

Age	Patient No.				Total	Percentage (%)
	Male		Female			
	No	%	No	%		
20-40	73	55.3%	59	44.6%	132	55.9%
40-60	24	57.1%	18	42.8%	42	17.7%
60-80	27	64.2%	15	35.7%	42	17.7%
80 Above	11	55%	9	%	20	6.47%

Table No 2 Diagnosis of the Study Patients

Diagnosis	%	DISEASE	%	DISEASE	%
Cardiovascular disease	50.7	IHD	13	PBPTT	1
		HTN	8	LVD	1
		DYSLIPIDEMIA	3	BRADICARDIA	3
		AF	13	UA	2
		ACS	23	SYNCOPIAL ATTACK	9
		PEDAL EDEMA	6	PMVRS/P CABG	2
		ANGINA	8	CCF	8
		COPD	10	LRTI	
		ACUTE PULMONARY EDEMA	2	URTI	18
		TYPE 1 RESPIRATORY FAILURE	1	ASTHMA	4
Neurosurgery disease	16.9	TB	1		1
		CVA	17	TIA	1
		HEMIPARESIS	2	NEUROPATHY	3
Psychology disease	2.1	SIEZURE	1		1
		DEMENTIA	1	AFFECTIVE DIS	
Onocology disease	4.2	ALCHOHOL DEPENDENCE			1
		ALC	1	MALIGNANT EXTERNAL OTIT	1
		FOLLICULAR NEOPLASM THYROID	1	GLIOBLASTOMA MULTIFORM	1
		RECTUM CANCER	1	STOMACH CANCER	1
Blood disease	2.8	ANEMIA			4
Infection disease	1.4	LEG CELLULITIS	1	PHOSPHOROUS POISONING	1
		GALL STONR	1	GASTIRITIS	2
Git disease	2.8	BLEEDING GASTRIC CANCER			1
Obg disease	0.7	HYSTERECTOMY			1
Orthopedic disease	2.1	RHEUMATOID ARTHERTITIS	2	HIP FRACTURE NECK OR FEMUR	1
		UTI	1	ARF	1
Urology disease	2.1	CKD	1		1
		DM	79	HYPOTHYROIDISM	6
		CHRONIC ENCEPHALOPATHY	1	POORLY CONTROLLED DM	3

**Table No 3** Route of Administration

Route of Administration	No. of Patients	Percentage (%)
IV	210	88.9%
p/o	70	78.5%
GEL	5	2.1%
OINTMENT	10	4.2%
IM	70	29.6

**Table No 4** Medication Error

SL.NO	TYPES OF MEDICATION ERROR	NO. OF PATIENTS	PERCENTAGE
A	ROUTE OF ADMINISTRATION	7	3%
B	FREQUENCY	5	2%
C	IV FLUIDS	5	2%
D	DOSAGE FORM	7	3%
TYPES OF MEDICATION ERROR AND INTERVENTION			
	NAME OF THE DRUG	ADMINISTERED	SUGGESTION
	pantoprazole	IM	IV
	Tetanus toxoid	IV	IM
	BUSCOPAN	IM	IV
	Ondansetron	P/O	IV
	acetaminophen	P/O	IV
	CEFTRIAZONE	P/O	IV
	AZITHROMYCIN	IV	P/O
FREQUENCY IN MEDICATION ERROR			
	NAME OF THE DRUG	ADMINISTERED	SUGGESTION
	INJ TRAMADOL	2-0-0	1-0-0
	INJ BUSCOPAN	2-0-0	1-0-1
	Inj pantoprazole	2-1-0	1-1-0
	Inj furosemide	0-2-0	0-1-0
	Inj MANNITOL	0-0-2	0-0-1

Study on drug use in emergency medicine is important not only for the emergency physicians, but also for the general practitioners, who are often the first responders to emergencies in the middle and low income countries. In the present study, the drug use pattern in emergency medicine department for different clinical emergencies was studied for the first 48 h.

It is probably impossible to detect every treatment error and so this series is inevitably incomplete. Medication error is a preventable event that may lead to inappropriate medication use or patient's harm which can contribute to an undesired outcome of patients. Only few observational studies were done to assess the prevalence of medication errors within a teaching hospital in Bangalore. This may be due to the fact that clinical PharmD is a novel profession in India with limited number of graduates.

There were 236 patients who met the inclusion criteria most patients under study were women. We have found that the mean number of medication errors per patient was 1.98 in this study. Surprisingly the rate of medication error per patient hospitalized Polypharmacy is routinely applied for patients who hospitalized in emergency, because these patients have many medical problems simultaneously, therefore the range of encountered medication error in emergency ward should be logically higher compared to those hospitalized in internal wards. According to study done by (musinivijaya *et al* 2011) the range of medication error in emergency ward is higher compared to hospitalized in internal ward It's is believed that the attendance of clinical pharmacist in medical care system can reduce the number of medication errors, maximized safety and lowered the health care costs Out of 236 patient under

study 56% were male and 44% were female had been admitted mostly due to cardiovascular disease ,then respiratory disease 26.1%, neurosurgery disease 16.9 % ,psychology disease 2.1%, oncology disease 4.2%, blood disease 2.8%, infection disease 1.4%, GIT disease 2.8%, OBGY disease 0.7%, orthopedic disease 2.1%, urology disease 2.1%, internal disease 62.7 according to study by (aysha almas *et al* 2009) in medication error the prevalence of cardiovascular disease is the most reason of admission to emergency ward and the second place is for internal disease especially diabetics patients among 360 Number of drugs had been prescribed for 236 patients admitted to emergency ward in Baptist hospital route of administration 88.9% were intra vascular , 71.1% were per oral ,29.6% were intra maculating this study there found to be route of administration error 3% ,frequency error 2% ,iv fluid error 2% ,dosage forms error 3% and storage condition error was not found there found to be 1... major drug interaction and 2... moderate drug drug interactions and 20... minor drug drug interaction

### Adverse Drug Reaction

There were 236 patients who met the inclusion criteria monitoring of adverse drug reaction out of 360 drugs had been prescribed 2 adverse drug reaction injection piptaz and injection amikacin had been recorded both cases were under control after discontinue of the respective Drug. According to Robert Sheldon MD demonstrated that piptaz injection adverse drug reaction may include itching redness in mild reaction .Michelle adlernormando study in adverse drug reaction of amikacine demonstrate that mild reaction of amikacine injection has some local irritation.

### Quality of Life

Out of 236 patients under study had controlled effectively the medication error the quality of life and treatment and efficacy of working and living had been improved

According silqueira study decrease range of medication error will increase the satisfaction of life and improve efficacy of working.

### CONCLUSION

Medication error is the most preventable causes of complication, life treating and even death .From the study of medication safety in emergency ward found .Prescription pattern of the present study concluded was the most commonly prescribed drug in emergency ward and the most common admission was due to cardiovascular disease. Quality of life seeking changes in the therapeutic approach in general this can be achieved by finding medical and social alternative that have a favorable influence on QoL As a whole stimulating a better doctor patient relationship and the development of drug that not only provide treatment efficacy but also beneficial effect on QoL this requires intervention of health professionals to evaluate each case separately and create an action plan include the withdrawal of guidance and even psychological question for these purpose. Out of 236 patient under study an adverse drug reaction found to be about injection piptaz showed with redness and itching in one patient and one other patient on treatment with local irritation had been observed.

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