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UTILIZATION OF FMEA TOOL TO UNDERSTAND THE CAUSES AND ADVERSE EFFECTS OF OVERCROWDING IN EMERGENCY DEPARTMENT, HJ HOSPITALS, KINSHASA, DRC

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INTRODUCTION

- Emergency Department plays a crucial role in treating and stabilizing the life threatening urgent cases 24*7. Emergency department becomes the first point of care for patients having urgent and life saving health care needs.
- Also known as Accident and Emergency(A&E) department, Emergency Room (ER), Emergency Ward (EW) or Casualty Department is a medical treatment/care facility specialized in Emergency Medicine and provide acute care to patients who arrive at emergency by themselves or through ambulance.
- Although there are few loopholes in healthcare system which causes the Emergency Department to be abused or overused.

RESEARCH QUESTIONS

- What are the underlying causes of ED overcrowding and their adverse effects ?
- Available solutions to reduce Average Length of Stay (ALOS) of patients admitted in ED?
- What was the ED patient’s conversion to IPD (Wards, OT and ICU) ?

OBJECTIVE OF STUDY

- To understand the underlying causes of ED overcrowding and their adverse effects .
- To provide solutions to reduce Average Length of Stay (ALOS) of patients admitted in ED.
- The objective of the study is to analyze the ED patients conversion to IPD (Wards, OT and ICU).

REVIEW OF LITERATURE

- Utilization of Failure Mode and Effects Analysis (FMEA) Method in Increasing the Revenue of Emergency Department; a Prospective Cohort Study by Shahrami A, Rahmati F, Kariman H, Hashemi B, Rahmati M, Baratloo A, Forouzanfar MM, Safari S.
- Causes and adverse effects from overcrowding of Emergency departments : the solution by Breanna M. King.
- Efficiency of the Critical Care Unit Usage in the Emergency Department by Gokhan Evren, Muge Gulen, Akkan Avci, Ibrahim Ozgur, Semih Muhammed, Muhammed Semih Gedik, Salim Satar

METHODOLOGY

- **STUDY DESIGN:**

1500 sample data of emergency department in the HJ Hospitals . Data is gathered from the 1st quarter of 2024 through HOPS and excel daily data tracker.

- **SETTING:**

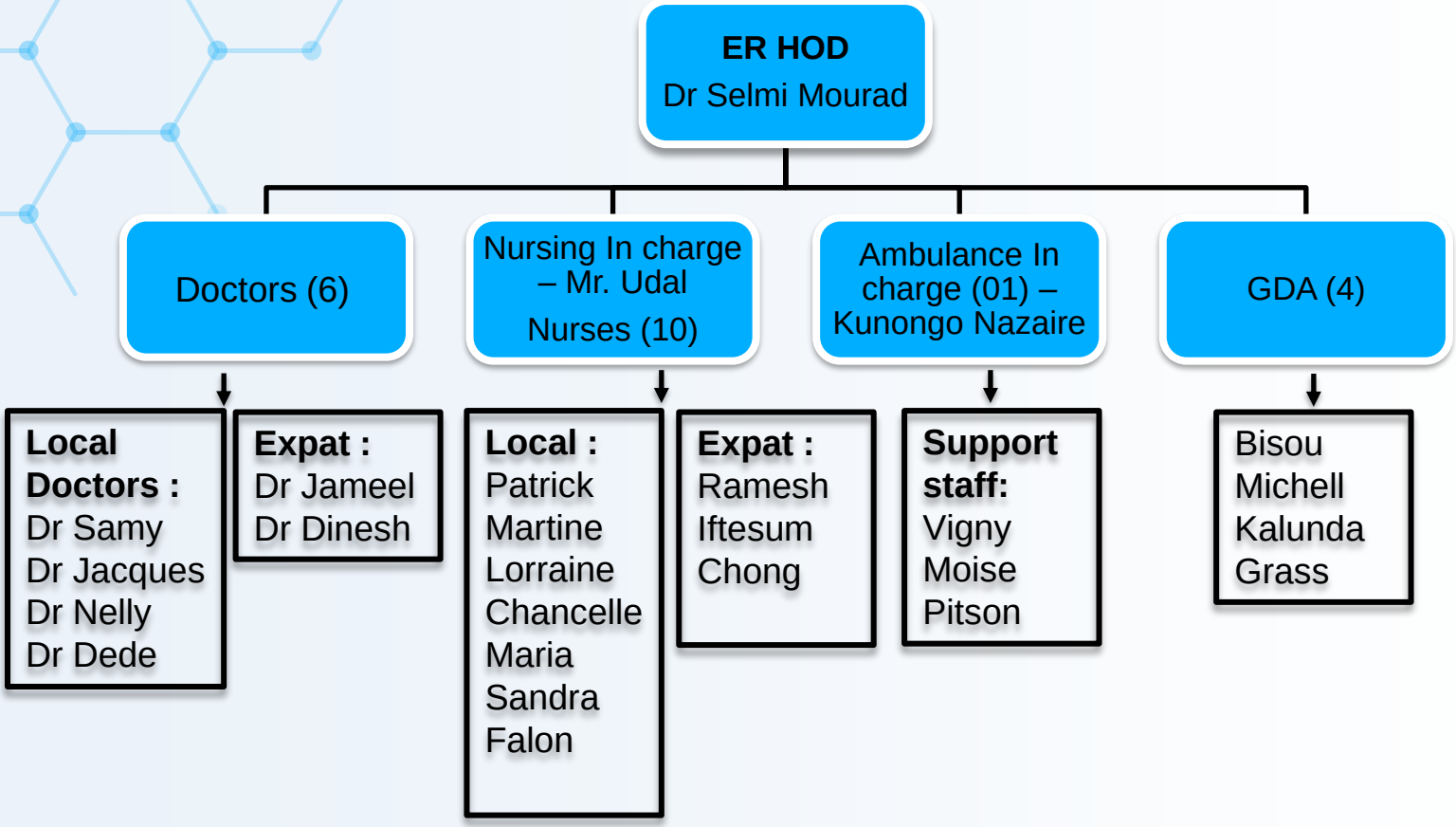
HJ Hospitals – Emergency department in the hospital.

- **STUDY POPULATION**

- **Inclusion criteria**: 1500 samples for 1st quarter of 2024 data was collected from HOPS in Emergency Department of HJ Hospitals, Kinshasa, DRC.

- **Study tools:** Prospective Cohort Study was used. Hospital Operating System (HOPS) was extensively used to import data. Microsoft Excel was used to track data in ED.

Organogram - ER Staff



Top 3 recurrent specialties

IP Conversion									
Doctor Name	DEPARTMENT	23-Dec	23-Nov	24-Jan	24-Feb	24-Mar	24-Apr	24-May	Grand Total
Dr. Kaushik Parmar	INTERNAL MEDICINE	43	44	120	86	102	78	180	653
Dr. Abdul Zilani	NEUROLOGY	19	11	6	12	17	21	11	97
Dr. Sabarimalai	GASTROENTEROLOGY			3	9	14	10	18	54
Grand Total		62	55	129	107	133	109	209	804

Takeaways :

- Average internal medicine conversion to IPD in 1st quarter is 103(102.66)
- Average neurology conversion to IPD in 1st quarter is 12(11.66)
- Average gastroenterology conversion to IPD in 1st quarter is 9(8.66)

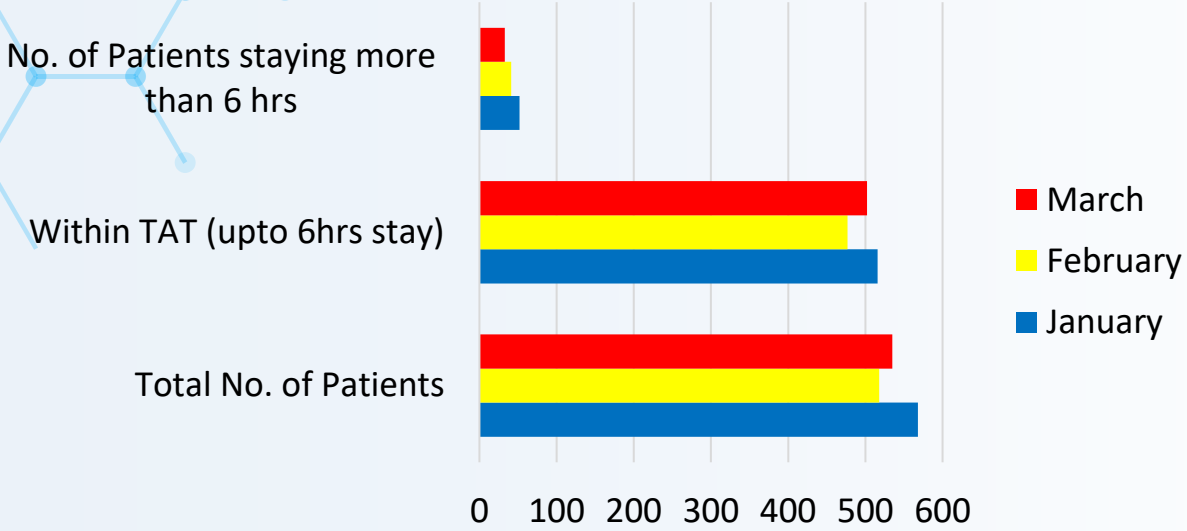
Patient flow in ER and Conversion to IPD

ER TO IPD Conversion Ratio (2024)														
	Qtr. I			Qtr. II			Qtr. III			Qtr.IV			Total	Average
	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-23	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24		
Patient Flow	577	522	537	572	739	739							3686	614
Admission	212	188	195	200	295	295							1385	231
% Conversion	37%	36%	36%	35%	40%	40%							38%	37%

Takeaways :

- Average patient flow in 1st quarter of 2024 is 540
- Average admission in 1st quarter of 2024 is 198
- Average patient conversion in 1st quarter of 2024 is 36.33 %

ER Turn-Around-Time



Takeaways :

- The number of long stay patients dropped by 19 patients that adds up to a substantial decrease by 36% in 3 months.

Month	Total No. of Patients	Within TAT (upto 6hrs stay)	No. of Patients staying more than 6 hrs
January	568	516	52
February	518	477	41
March	535	502	33

Mortality rate in ER

Month	No. of Mortality	Brought Dead
January	1	0
February	1	5
March	0	4

Takeaways :

- Mortality rate in 1st quarter of 2024 = 0.12 %
- Average brought dead patients per month = 3

DISCUSSION

Areas for Evaluation:

- Healthcare Providers:
- Doctor's response time
- Availability of doctors for emergency and addressing concerns.
- Competence and expertise of doctors and nurses based on examination

Nursing Care:

- Responsiveness and attentiveness of nurses to triaging
- Adequacy of patient management and other primary procedures.
- Emergency triaging system and priority basis of treatment

Hospital Amenities:

- Availability of ED beds and facilities.
- Quality and timeliness of service provided
- Efficiency of first encounter intervention and admission to IPD

RECOMMENDATIONS

Implement Organizational Structures :
To manage patient efficiently, the patients need to be addressed in priority basis of urgency. Any patients that require surgical interventions should be admitted into IPD, and ED bed should be vacated for the next patient. The lab investigation report TAT must be within the standard time in order to shift patients to wards or discharge them after providing primary care at Emergency.

Developing Nursing Triage Systems : Triaging of non-urgent patients needs to be stringent in-order to manage the crowding and prevent over-use of Emergency Department. Many patients come to ED to escape the hassle from waiting in OPD for consultations. The next category of patients include those who are the credit or insured patients, these patients exploit the ED by presenting them in non-threatening health issues just because they are insured.

CONCLUSION

Major causes of overcrowding in ED in broader perspective :

1. Non-emergent Visits
2. Limited In-patient Beds
3. Hospital Downsizing

Adverse Effects of Overcrowded Emergency Department :

1. Unwarranted costs
2. Medical errors
3. Delay in bed availability
4. Increased mortality and morbidity
5. Prolonged length of stay (ALOS)
6. Poor patients’ outcomes

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