Improving Adherence of Ethiopian Hospital Reform Implementation Guideline Patient Flow Standard in Adigrat General Hospital, Tigray, Ethiopia.

A capstone project submitted to Addis Ababa University, School of Public Health for the Partial Fulfillment Master of Health Care and Hospital Administration (MHA)

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September **Declaration**

Declaration

Declaration

Declaration

I, the undersigned, declare that this capstone project is my original work and has not been presented for a degree in this or other university and all sources of materials have been fully acknowledged

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This capstone project work has been submitted for examination with our approval as university advisors.

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Acronyms

BOR -Bed Occupancy Rate

CCO-Chief Clinical Officer

CEO-Chief Executive Officer

EC- Ethiopian Calendar

ED- Emergency Department

EHRIG- Ethiopian Hospital Reform Implementation Guideline

ER –Emergency Room

GP - General Practitioner

HMIS- Health Management and Information System

HO – Health Officer

KPI – Key Performance Indicator

MD- Medical Director

MHA- Master of Health care and Hospital Administration

OPD _Outpatient Department

RHB- Regional Health Bureau

SMT –Senior Management Team

SPH –School of Public Health

TRHB – Tigray Regional Health Bureau

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Operational definition

Patient flow: patient flow refers to the movement of patients, information or equipment between departments, staff groups or organizations as part of a patient's care pathway

Triage: is the prioritization of patient care (or victims during a disaster) based on illness, injury severity, and prognosis and resource availability

Emergency Mortality Rate: The number of death in emergency room from patients who were alive (i.e. any vital signs present) on arrival per 100 emergency room attendances

Emergency Room patients triage within 5 minutes of arrival: proportion of all patients presenting to the emergency room who were triaged within 5 minutes of arrival at the emergency room.

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Abstract

Problem statement: assessment of patient flow standard met is too low in Adigrat general hospital.

Objective: Increasing the number of completed (met) patient flow standards in Adigrat general hospital in order to improve patient outcome.

Result: The percentage of patient flow standards showed an improvement from 23% to 85%. Patients triage within five minute also increased from 40% to 90% as the result of this improvement emergency mortality rate decreased from 0.3% to 0.1 %.

Method: pre-post intervention study was conducted in Adigrat general hospital which is located in Adigrat town, Tigray Northern Ethiopia. Paired sample t-test pre-post used to determine whether statistical difference exists between pre and post intervention result.

Conclusion: provision of training on emergency case management can plays great role in reduction of mortality in emergency Room.

Moreover, establishing patient flow team has a great impact for adopting different type of protocols and procedures according the contexts of the hospital and also adherence to the Ethiopian hospitals reform implementation guide line can result significant (p value .001) improvement in patient flow standards in Health facility.

Recommendation: Full Implementation of the Ethiopian Hospital Reform Implementation Guide line (EHRIG) strategies should be made and it is better to establish patient flow standard teams from different departments and professions.

1.Introductinon

Introduction

1 Introduction

Introduction

1.1 The health facility

Adigrat hospital is located in Adigrat, Eastern Zone of Tigray Regional State. The hospital was established during Emperor Haileselassie I in 1946. The hospital is governed by a board of directors, it's senior management team (SMT) that consists of chief clinical officer (CCO) , chief nursing officer (CNO), Quality Head, Laboratory Head e.t.c. The senior management team (SMT) helps the chief executive officer (CEO) in developing strategic planning, annual planning, problem identifying and solving, monitoring and evaluation of hospital performance.

The mission of Adigrat general hospital is

Ø To be the center of excellence in clinical teaching and secondary health care services.

Ø To provide patient centered quality Health care service

Ø To satisfies the health care needs of the society

Adigrat Hospital offers the following two major services

Ø Outpatient services such as

- Pediatrics and child health
- Gynecology and obstetrics unit
- Psychiatric clinic
- Minor operation unit
- Dental service unit
- Emergency unit
- TB/ART clinic

- Laboratory unit
- Pharmacy Unit
  - Ø Inpatient services
- Free Laboring mothers services
- Internal medicine ward
- Surgical ward
- Pediatrics ward and
- Obstetrics and Gynecology ward

Adigrat general hospital is the only general hospital in Eastern Zone of Tigray and provides services to around 1 million people. The Hospital was staffed with three specialists, 7 general practitioners (GP), 80 diploma and degree nurses, 11 laboratory technicians and technologists, 10 pharmacy technicians and pharmacist and other health professionals. The hospital has 178 operational beds; and the average length of stay is 4 days.

1.2 Problem Statement and Research Objectives.

One of the major elements in the delivery of Health care services is improving patient flow. (1) Improving patient flow is one way of improving Health services. Evidence suggests that enhancing patient flow also (1-3).

- Increases patient safety and is essential to ensuring that patients receive the right care, in the right place, at the right time all of the time.
- Improves patient out come and improved services quality.
- Reduces time that patient stay in hospital, improves patient experience and freeing up inpatient capacity.
- Improves resource utilization.
- Improves discharge path way and reduces variation in length of stay.

Poor infection prevention, poor patient flow and poor facility management are among the major challenges the hospital faces. After a thorough key informant interview with pertinent hospital staff including SMT, physicians and outpatient department head it has been learned that 0 out of 6 standards were met with regard to infection prevention while , 3 out of 13 standards were met with regard to patient flow and 3 0ut 13 were met as far as facility management is considered. In addition data from EHRIG has also been used as secondary sources in this analysis.

Therefore, based on these poor performances, this paper intends to focus on unmet EHRIG patient flow standards. As mentioned above, the EHRIG patient flow standards were hardly met in Adigrat hospital. This has had its own negative implication on the health

service provision of the hospital which would in turn affect the Health status of the population. Some of the problems were manifested through the following :(4).

- Emergency department crowding
- Increasing waiting time
- Decreased patient and staff satisfaction

Table 1**: Base line assessment of Ethiopian hospital reform implementation guide line patient flow standards.**

	Standards	Met	Unmet	Remark
1	Procedures are established to ensure efficient patient flow; such procedures are specific to emergency, outpatient, and inpatient settings and seek to reduce patient crowding		ü	
2	Emergency triage staffed with appropriately trained personnel and equipped with necessary equipment and supplies		ü	
3	Central triage staffed with appropriately trained personnel and equipped with necessary equipment and supplies		ü	
4	All patients (except laboring mothers, patients with an appointment for an outpatient clinic or admission and private wing patients) undergo triage	ü		
5	Outpatient appointment systems are in place for all disciplines provided by the hospital		ü	
6	Appointment systems are in place for elective inpatient admissions in all disciplines that are provided by the hospital			
			ü	

7	The hospital has a Liaison and Referral Service that: a. Manages bed occupancy, b. Facilitates emergency and non-emergency (elective) admissions, and c. Receives referrals from, and makes referrals to, other facilities in the referral network		ü	
8	The hospital has a written protocol for the admission and discharge of patients that is known, and adhered to, by all relevant staff		ü	
9	The hospital has a Referrals Service Directory, listing facilities which the hospital may refer patients to or receive patients from, categorized by the type of clinical services they provide		ü	
10	Criteria for the referral of patients from the hospital to other health facilities are established, Including standardized referral and feedback forms and necessary clinical documents to accompany referred patients, in accordance with the national referral implementation guidelines.		ü	
11	The hospital has a standardized method for managing referrals.	ü		
12	Hospital staff members are familiar with the referral systems including relevant referral protocols		ü	

	and forms			
13	The hospital promotes and publicizes the referral system throughout the community in order to ensure that all constituents are aware of the applicable service pathway.	ü		
	Total	3	10	

1.3 Objectives

General objective

Increasing the number of met patient flow standards in Adigrat general hospital.

Specific\ objective

- Increasing the number of fulfilled patient flow standards met from 23% to 60% by the end of August 2013.
- Increasing emergency patient triage within five minutes of arrival from 40% to 70% by the end of August.
- Reducing emergency mortality rate 0.3 % to 0.2 % by the end of August 2013.

1.4 Root cause analysis

Using the fish bone tool, many cases were identified as contributors to the existence of poor patient flow standards and flow chart tool was carried out to see the process of taking medical supply from pharmacy store.

Figure 1: Fish bone diagram

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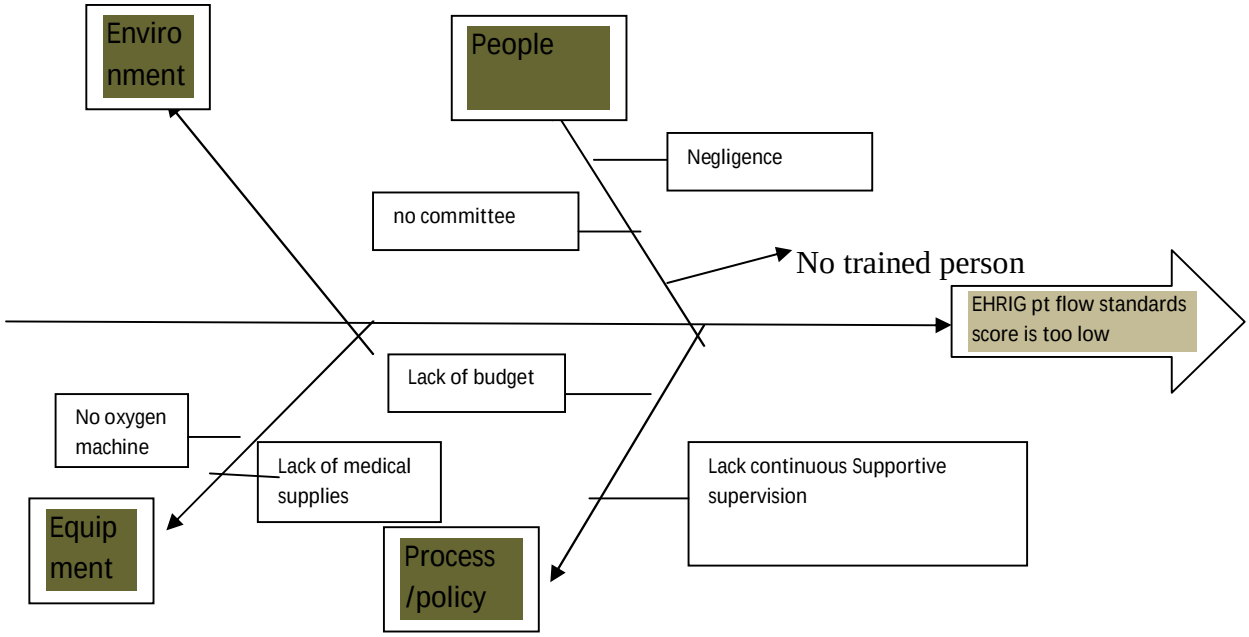

It is well documented that fish bone does not tell the real cause of the problems so it needs further analysis in order to know the real cause of the problem (5). Therefore, thorough discussions were conducted with key stakeholders at Adigrat hospital, according to which: Data were collected through interview, focused group discussions and checklists.

Interviewees and focused group participants were selected using purposive sampling techniques. These data elements were selected purposively because they were found to be familiar with and responsible to the patient flow standards under study. Interview was

conducted with 10 senior management team (SMT) members and a focused group discussion was made with 15 outpatient department (OPD) members.

1. No patient flow committees exist for developing different protocols and monitoring and evaluation. In a discussion conducted with the senior management team about the problem, it was found that patient flow committee was not established. In addition to this, there was no evidence that assured the existence of patient flow committee. For example, in the minutes of senior management team there was no any documentation and mention of the existence of patient flow committee.

2. Though lack of budget for training of central and emergency triage officers was supposed to be a problem, this cause was excluded from real root cause because there was adequate annual budget for the overall onsite training activities.

3. Lack of medical supply equipment: this was initially mentioned by the staff as unavailable, however, as we have checked in the hospital pharmacy store this was not also the right cause of the problem. A checklist we developed indicated that there were adequate number of oxygen cylinders (10), suction machine s(4), B/P apparatus(20) , wheelchairs and stretchers etc. in the pharmacy store.

4. Lack of supervision is also excluded because, in the region, there is continuous supervision every three months for all hospitals by Tigray Regional Health Bureau. Lack of supportive supervision could be a factor as continuous and regular supportive supervision helps professionals in noting their gaps and correct timely and also helping them in some technical gaps where the supervisory is having better capacity and share the supervisee so as to improve the service delivery in the institution. But in Adigrat general

Hospital integrated supportive supervision was/is given by the Tigray Regional Health Bureau (TRHB). Therefore, it is excluded from the listed contributing factors.

5. Negligence was included because though the hospital received feedback every three month from regional health bureau (RHB) but the head nurses of outpatient department didn't not take action to fill the gaps based on the feedback as identified by the lack of action plan to avert this. Though it is very difficult to measure negligence directly but it can be measured indirectly, that is, in spite of adequate medical supply in pharmacy store, the responsible person does not bring from the store which shows the prevalence of negligence. The major reason behind negligence is believed to be lack of incentives given to department heads.

6. No trained person: this was also proved to be the reason for the low patient flow of standards because there are no trained individuals for central and emergency triage officer as per the file obtained from human resource office.

Generally, the absence of patient flow committee; negligence on the part of the department heads, and lack of trained persons have been identified as the major reasons for low standard of patient flow in Adigrat hospital.

1.5 Literature Review

In healthcare, patient flow refers to the movement of patients, information or equipment between departments, staff groups or organizations as part of a patient's care pathway (5).

A number of hospitals have implemented patient flow improvement strategies that have resulted in Reductions in measures of ED crowding. As a result, numerous organizations including the Institute for Healthcare Improvement, the Joint Commission, and the Institute of Medicine have encouraged hospital leaders to adopt patient flow improvement (13).

Improving patient flow is one way of improving health services. Evidence suggests that enhancing patient flow also increases patient safety and is essential to ensuring that patients receive the right care, in the right place, at the right time, all of the time (2)

Reducing delays and making sure that patients receive the right care at the right time. This will have a significant beneficial effect on the quality of care patients receive. In turn, this will improve patient outcomes and reduce the cost of care (2).

To improve patient flow in the emergency departments, hospitals should: Establish a measure of patient demand by hour, and design a system to handle it. Appropriately capacitate triage processes and systems. Use a system for patient segmentation and establish distinct processes for different patient segments. Consider using team triage, and examine current triage protocols. Devise a method of tracking patients and results. Field a willing staff with a burning platform (2).

Heath care systems have been challenged in recent years to deliver high quality care with limited resources (6). Adigrat hospital also has the same challenges in order to give high quality care especially in emergency department.

Factor affecting emergency department operation

1. Emergency department in put

Input consists of any “condition, event, or system characteristic that contributes to demand for emergency departments’ services (10-11).

2. Emergency departments through put

Emergency department through put focuses on the length of time patients spend in emergency departments. Through put includes triage, placement, and Initial evaluation as well as diagnostic testing and treatments provided in the emergency departments. Through put is often determined by the cohesiveness of care giver teams and the efficiency of processes used in the emergency departments (10-11).

3. Emergency departments out put

Refers to the discharge of patient from the emergency departments to the next phase of care as appropriate. Depending on the medical circumstances, the next phase may involve admission to the hospital, transfer to a psychiatric hospital, or release from the ED (10-11).

Triage is the prioritization of patient care (or victims during a disaster) based on illness, injury, severity, prognosis and resource availability. The purpose of triage is to identify patients needing immediate resuscitation, to assign patients to a predestinated patient care area, there by prioritizing their care; and to initiate diagnostic/therapeutic measures as appropriate. (13).

In most cases the separation of emergent and urgent cases with in the current call system will be the first significant and helpful step in improving patient flow (12).

In South Africa, a simple new triage system and scoring sheet was developed. During the development, they considered factors like physiologic derangement, discriminators such as mechanism of injury (severe trauma), presentations (level of consciousness, hemorrhage and pain), pain and senior healthcare personnel's opinion and finally, nomenclature (color coding to show priority). The triage system comprised of 5-color coding system printed in posters and cards so that it could be used by health personnel. This system was made to contain three versions: Adult, child and infant versions. This system encouraged professionals to actually measure the physiologic parameters which are very much important in prioritizing which patient should be treated first (14).

The new triaging system has shown significant improvements in South African Emergency units. According to Chris Bateman, death in emergency department reduced by half as a result of this prioritizing system in many healthcare provision areas of this country (15). The same is true in Adigrat general hospital. Mortality rate reduced from 0.3% to 0.1 % due to the improvement of our triaging system. This improvement constitutes 66.6% reduction rate in mortality rate in Adigrat hospital.

Retrospective, prospective cohort and cross-sectional studies in South Africa after the implementation of the new triage system revealed that the system was effective in significant reduction of waiting time to treatment, which in turn enables critical patients to get timely life saving treatment and care. According to these studies, waiting time for critical patients (red colored code) showed dramatic reduction and all other colors showed significant reduction except green. Green coded patients' waiting time has reduced even if it was not significant (16).

In 2008 there were 123.8 million visits to U.S emergency departments. Of those visits, only 18% of patients were seen within 15 minutes, leaving the majority of patients waiting in the waiting room (17). In Adigrat general hospital, out of 1210 patients seen, 90% were triaged within five minute during the intervention period. The achievements made in our case are better than the findings in U.S

2. Methodology

2.1 Setting:

The study was conducted in Adigrat Hospital which is located in Adigrat town Eastern Tigray, Northern Ethiopia.

2.2 Study Design:

Pre-post intervention study was used to evaluate the performance of patient flow standards. A pre-intervention baseline data were collect in November 2012. Based on the baseline, it was found out that the Ethiopian hospital reform implementation guideline (EHRIG) patient flow standards were low. Therefore, an intervention was conducted to improve the Ethiopian hospital reform implementation guideline standards and a follow up data was collected in August 2013 after three month of implementation. The same indicator was used for the assessment of performance.

2.3 Study population

All Ethiopian hospital reform implementation guideline of standards (124)

2.4 study sample

13 standards of patient flow

2.5 Measures and data collection procedure

The percentage of patient flow standards of the 13 standards was made and compared with the findings at the baseline. The number of patients who were, number of emergency room mortality rate and numbers of patient triage with in 5 minute in emergency triage were also measured.

2.6 Data collection technique

Data were collected through interview, focused group discussions and checklists.

Interviewees and focused group participants were selected purposive sampling techniques. These data elements were selected purposively because they were found to be familiar with and responsible to the patient flow standards under study. Interview was conducted with 10 SMT members and a focused group discussion was made with 15 OPD members. Baseline data were collect in November 2012 by Tigray regional health bureau for the purpose of integrative supportive supervision and the investigator also checked the patient flow standard in order to sure the data quality. .

2.7 Data analysis procedure

Data was analyzed using Excel sheets. Moreover, figures, tables and SPSS and paired samples t-test used to determine whether statistical difference exists between pre and post intervention result.

2.8 Ethical consideration

Ethical clearance from public health, research ethics committee and faculty institutions review board was obtained. Moreover, permission was obtained from senior management team of Adigrat general hospital.

2.9 Plan for dissemination

The findings of this study were disseminated to local and external partners including Adigrat General Hospital, Tigray Regional Health Bureau and efforts will be made to present it in conferences and possibility of publication will also be sought.

3. INTERVENTION

3.1 Selected strategies

Alternative intervention: to mitigate the identified real cause of the problem.

1. Motivating staff by material and financial incentives.

2. Forming patient flow committee/ team

3. Conducting regular meeting

4. Onsite training

Table 2: Comparative analysis of alternative

	Impact	feasibility	cost	Time	Total
forming patient flow committee(team)	5	5	5	4	19
Regular meeting and orientation	2	3	3	4	12
Motivating staff by materials and financial incentives	5	5	3	2	15
Onsite training	5	5	4	4	18

A .Forming patient flow team

Impact

Numerous research studies have shown the importance of creating multidisciplinary teams to plan quality improvement interventions. One of the benefits of a multidisciplinary team is that members will bring different perspectives and knowledge about problems, their underlying causes, and potential solutions. Members may also be able to offer different resources and encourage buy-in for the solutions among their peers. For all these reasons, identifying the right individuals to participate in implementing the patient flow improvement strategies was central to the success of our effort. Once formed, the team has

been meeting on a regular basis (i.e. weekly) throughout the planning and implementation stages (2).

Feasibility: this intervention proved to be feasible technically as there were capable and motivated staffs who were willing to be members of the committee.

Cost: The intervention was also feasible in terms of cost as forming a patient flow team does not incur much cost.

Time: Though committee work is an additional burden for the Hospital staff, the staff member were willing to commit their time for this activity due to the benefit it bring about. In addition committee work is also part of their job.

B. Onsite training:

Impact

According to the Ethiopian hospital implementation guideline (EHRIG) patient flow standards check list, a person who worked in emergency and central triages needs training so that he/she will do all the activities required to meet the standards. Four topics will be included in the training. These are: Emergency case management path, Emergency case management, Emergency care management Human resource needs and Emergency case management equipment and supply needs.

Feasibility: Onsite training is found to be feasible as the training was provided for the staff at their own premises which did not require much time and money. In addition, the training was given by an inside staff member which minimized time and financial costs of brining outsiders for the training.

Cost: The cost of this intervention was small and could be afforded by the hospital.

Time: this intervention needed three days and was implemented with the planned implementation period.

Incentivize Head Nurse

Impact:

Improved staff satisfaction as a result, quality of service delivery will be increased that ultimately increase patient flow and client triage .This will result in the reduction of patient mortality rate.

Feasibility

In terms of feasibility. As the cost for the incentivizing head Nurses is not much but its impact very much great this has to be recommended and applicable.

Cost: The expected or needed cost of Head nurse Incentivize is un comparable with that of the impact both in terms of patient flow and that of patient death.

Time: Head nurse Incentivize can be implemented immediately as far as it is accepted, believed and confirmed budget availability though it is not as such significant cost.

Based on the result of comparative analysis the best strategies were

- Forming patient flow committee
- Onsite training
- Incentivize the head of outpatient department

Ø Forming patient flow committee in order to adopt different type of protocols according the contest of Adigrat hospital.

Health care institution need to forming patient flow team to plan quality improvement interventions. One of the benefits of multi disciplinary team is that members will bring different perspective and knowledge about problems, their underlying causes and potential

solutions. Therefore, an Adigrat general hospital has planned to forming patient flow team. The hospital will recommend that, at a minimum our team Include a team leader (i.e. day –to-day leader), senior hospital leader (e.g chief quality officer), ED physicians and nurses, ED support staff (e.g. clerks, registrars) , Representatives from Inpatient units, It is important to include representatives from all Department that will be affected by our strategy, Individuals who will serve as champion for our strategy, and those who may oppose our strategy so that their concerns may be heard.

Ø Provision of onsite training for emergency triage officers.

To provide quality care in health care institution all emergency triage clinical staff should be trained to conduct triage and emergency treatment, following the established triage protocols.

A. Emergency case management path

Patient enters the emergency case management pathway up on referral from the emergency triage officer. Appropriate care is then initiated by the emergency physicians and based on the outcome the patient is either admitted, discharged (with or without a follow up appointment) or Referred.

B .Emergency case management

The emergency physician on duty should take a full history and examine the patient and arrange for any investigation required.

c. Emergency care management Human resource needs

A case team comprised of clinical and support staff will provide emergency services.

D. Emergency case management equipment and supply needs.

Each triage and treatment room should be equipped with equipment and supply needed to provide care.

Ø Incentivize the head of outpatient department.

Incentivized the head nurses can play a significant role in the minimization of negligence. In this case incentivize could be in terms of different strategies, material , capacitating either on the gob or off the job training or could be certification of good performing professionals that could motivate others in doing similar or better job.

3.2 .Implementation accomplishments.

As part of this project, the following results were accomplished.

1. Forming patient flow team to adopt different type of protocol according to the context of Adigrat general Hospital. Based on the implementation plan the senior management team (SMT) established patient flow team from different departments after that the patient flow team adopted it.

- Procedures were established to ensure efficient patient flow; such procedures are specific to emergency, outpatient, and inpatient settings and seek to reduce patient crowding.
- Outpatient appointment systems log book was established.
- Protocol for the admission and discharge of patients was formed.
- Criteria for the referral of patients from the hospital to other health facilities were established, including standardized referral and feedback forms and necessary clinical documents to accompany referred patients, in accordance with the national referral implementation guidelines.

2. Training

Short on site training on the Emergency case management pathway, emergency care management activity, emergency case management human resource needs and emergency case management equipment and supply needs were given for emergency triage officers. The 5 days training was given to 3 emergency staff members by TRHB with the collaboration of International training and education center for HIV and the trained 3 staff members in turn trained the remaining staff members. Generally, the five emergency staff members who got the training from I-TECH with the collaboration of TRHB have shared it to other staff members.

3. Incentivized the head nurse.

Before the intervention, there was no any incentive to head nurses. This problem led to negligence. Therefore the senior management team decided to incentivize all department heads with a monthly 180 birr incentive.

4. RESULTS

A total of 13 standards were included in this capstone project both in the pre and post intervention. During the intervention period the improvement of patient flow standards were in May from 23 to 46 % (3 standards met), June 46 to 60% (1 standard met) and July 60 to 85% (4 standard met). A major improvement has been achieved each passing month.

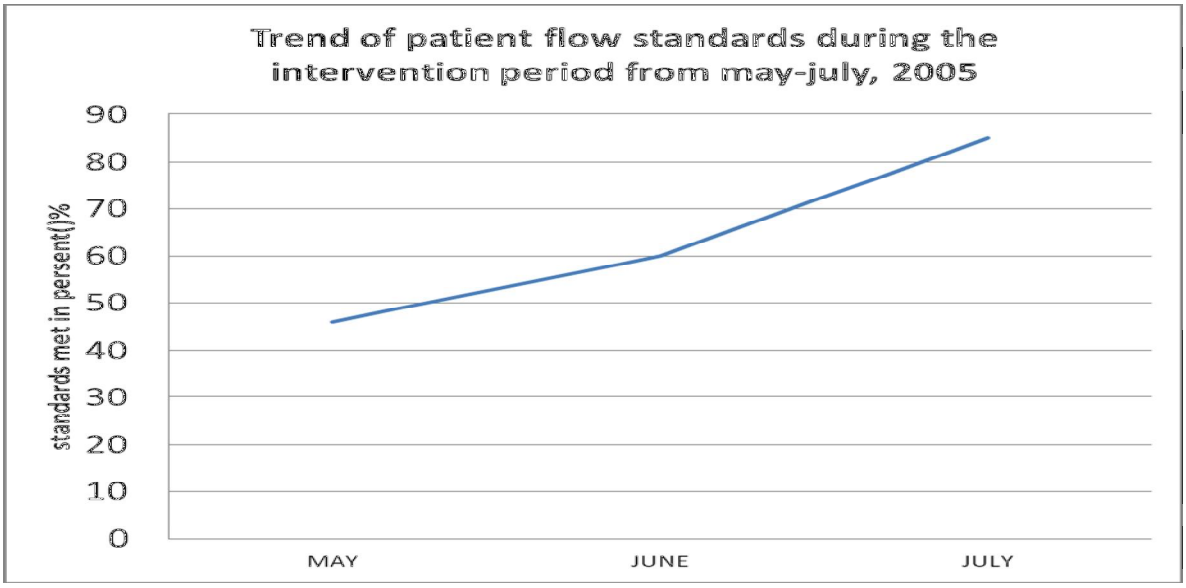

Figure 2: Trend of patient flow standards during the intervention period from May – July, in Adigrat general Hospital, Tigray Northern Ethiopia, 2013.

The analysis of data from the baseline regarding the number of met standards showed a change from 23% to 85% and also showed the emergency mortality rate decrease from 0.3 % to 0.1% and patient triage with five minute increased from 40% to 90%.

Generally, the change in the number of patient flow standards in Adigrat hospital ranged from 23% in pre-intervention to 85% in the post intervention. (Calculated paired t test p-value .001). This implies there were significant association between the intervention and the improvement.

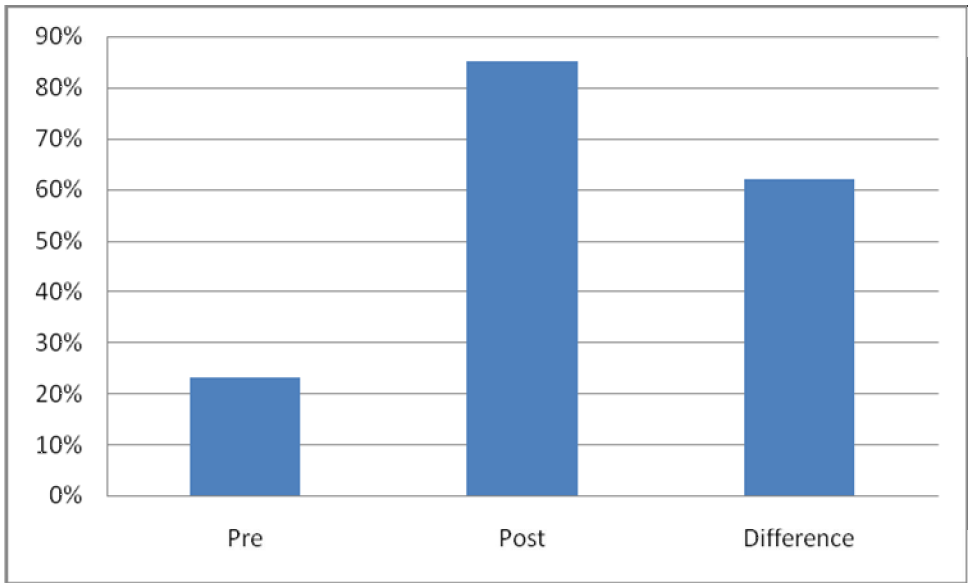

Figure 3: compliance of EHRIG patient flow standards pre-post intervention in Adigrat general hospital, Ethiopia

Table 3: Paired Samples t-test pre-post intervention study of patient flow in Adigrat general hospital, North Ethiopia 2013

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pre - post	-.615	.506	.140	-.921	-.309	-4.382	12	.001

4. DISCUSSION

In this capstone project, it was found out that the number of met and unmet patient flow standards. The main finding of this project is compliance with Ethiopian hospital reform implementation guide line standards for patient flow increased from 23% to 85 %. Emergency room patient triage within five minutes of arrival increased from 40% to 90 % and emergency room mortality rate reduced from 0.3 to 0.1.

Similar study conducted in US in 2008, there were 123.8 million patient visits the U.S Emergency departments, of those visits only 18% of them were seen within 15 minutes. According to this study and when we compare ours with that of the US there is great improvement in Adigrat hospital. Generally, the intervention has brought a significant change in the compliance of Adigrat general hospital's patient flow standards after the same strategy (3).

According to the center for diseases and prevention(CDC) and Prevention National Center for Health category of patient arrival acuity, there are five levels based on how urgently patients need to be seen by the physician or healthcare provider and these are: immediate(immediately), emergent (1-14 minutes), urgent (15- 60 minutes), semi-urgent (1-2 hours), and non-urgent (2-24 hours). In our hospital's emergency departments patient triage within five minutes has improved from 40% to 90 %. This shows that better patient triage is being practiced in Adigrat hospital when we compare it with this study (6).

Following the improved emergency room triage system, Emergency room death rate decreases at Adigrat Hospital. This study is supported by the study conducted In South Africa, according to Chris Bateman, Death in emergency department reduced by half as the result of the prioritizing system in many health care provision areas of the country (15).

According to this finding, compliance of Ethiopian hospital reform implementation guide line standards for patient flow at Adigrat General Hospital increased .But In the pre – intervention period only three of the thirteen standards were met. Following the establishing patient flow team and training eleven out of the thirteen operational standards were met to improve the implementation guide line as per the Ethiopian Hospital reform implementation guide line. This indicates that establishing patient flow team and strengthening the team with different capacity building trainings plays key role to improve the compliance of the Ethiopian Hospital reform implementation guide (19).

Study conducted on Hospital quality improvement in Ethiopia: a partnership–mentoring model support this study that training and mentoring in Quality improvement seemed to have a positive overall effect in key areas in the overall hospital service delivery (19). Creating multidisciplinary teams is also other way that improves the patient flow and plays great role to plan quality improvement interventions and delivery of quality services. As hospital leaders participating in the formation and strengthening of the multi disciplinary team intervention, it

is able to improve their relationships with these key constituent groups. These relationships may foster longer-term improvements in the management and integration of the hospital with its healthcare system (19).this is also true in our study and Patient flow team establishment has play great role in Adigrat Hospital.

Strength and Limitation

- Ø The strength of this project is creating of multidisciplinary team from different departments and profession. Because of this the achievement of this project is greater than the intended objectives.

Limitation

- Ø Shortage of enough time and budget.

Challenges

As far the challenges encountered is concerned, some staff members were against the Project and the intervention thinking the intervention was only useful for the researcher. However, after a thorough discussion on the importance of the intervention of course for both purpose, research as well as intervention purpose, and its importance especially for the clients coming to the institution in terms of quality service delivery and in terms of decreasing hospital mortality and morbidity rate was made especially with the specialists and other technical and supportive staffs, change in attitude has been achieved and problem solved and they were really supportive for the work and was successfully finalized.

Through discussion with staff members on the role of the intervention on enhancing quality care and the hospital's performance, a consensus has been reached with regard to the importance of the intervention not only to this research but also to the hospital as a whole. In addition, the leadership of the hospital found out that out of the thirteen chapters, patient flow was low. Therefore, the role the leadership played in creating a consensus was vital. In this regard the role of medical director was of high significance in addressing the staff's concerns.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion:

The findings of this capstone project suggest a number of implications.

- Ø Provision of trainings on emergency triage and emergency case management can result in a significant improvement in reduction of emergency room mortality rate
- Ø Establishing patient flow team from different professions has a great impact in the achievement of the intended objective.
- Ø Adherence to the Ethiopian hospitals reform implementation guideline can improved quality care in health facilities.

6.2 Recommendations

- Ø Full implementation of the Ethiopian hospitals reform implementation guideline strategies should be made.
- Ø Provision of training on patient flow should be given.

7. APPENDICES

Annex – A: Evaluation and monitoring indicators

The following indicators can be monitored on regular basis to assess the outcome of the implementation. (20)

S.NO	Indicator	Formula	Unit of measure	Frequency of monitoring
1	Compliance with Ethiopian hospital reform implementation guideline	Number of EHRIG standards met/ Total * 100	%	Quarterly
2	ER patients triage within 5 minutes of arrival	Number of surveyed patients who undergo triage within 5 minutes of arrival in emergency room/ Number of patients included in	%	Monthly

		emergency room triage time survey*100		
3	ER room mortality	The number of death in ER room from patient who were alive/No ER	%	Monthly

Annex B: Patient flow check list

		Yes	No
1	There is an emergency triage.		
2	There is a central triage		
3	There are personnel trained in triage processes working in both the central and emergency Triages		
4	Emergency and central triages are equipped with necessary supplies and equipment.		
5	Outpatient appointment system is in place		
6	There is an appointment system for elective inpatient admission		

7	A Liaison and Referral officer has been assigned.		
8	There is a written protocol for admission and discharge of patients		
9	There is a written protocol for the referral of patients (receiving into the hospital and referring outside of the hospital		
10	There is a referral directory listing which facilities that hospitals can receive patients from or refer patients to		
11	Bed occupancy information is gathered and reported		

Annex C : Patient Flow Standards

	Standards	Met	Unmet	Remark
1	Procedures are established to ensure efficient patient flow; such procedures are specific to emergency, outpatient, and inpatient settings and seek to reduce patient crowding			
2	Emergency triage staffed with appropriately trained personnel and equipped with necessary equipment and supplies			
3	Central triage staffed with appropriately trained personnel and equipped with necessary equipment and supplies			
4	All patients (except laboring mothers, patients with			

	an appointment for an outpatient clinic or admission and private wing patients) undergo triage			
5	Outpatient appointment systems are in place for all disciplines provided by the hospital			
6	Appointment systems are in place for elective inpatient admissions in all disciplines that are provided by the hospital			
7	The hospital has a Liaison and Referral Service that: a. Manages bed occupancy, b. Facilitates emergency and non-emergency (elective) admissions, and c. Receives referrals from, and makes referrals to, other facilities in the referral network			
8	The hospital has a written protocol for the admission and discharge of patients that is known, and adhered to, by all relevant staff			
9	The hospital has a Referrals Service Directory, listing facilities which the hospital may refer patients to or receive patients from, categorized by the type of clinical services they provide			
10	Criteria for the referral of patients from the hospital to other health facilities are established, including standardized referral and feedback forms			

	and necessary clinical documents to accompany referred patients, in accordance with the national referral implementation guidelines.			
11	The hospital has a standardized method for managing referrals.			
12	Hospital staff members are familiar with the referral systems including relevant referral protocols and forms			
13	The hospital promotes and publicizes the referral system throughout the community in order to ensure that all constituents are aware of the applicable service pathway.			
	Total			

Annex D: Pharmacy store check list

		y e s	No
	There is an oxygen concentrator		
	There is an suction machine		
	There is an ambo bag		
	There is an blood pressure apparatus		
	There is thermometer		
	There is an adult scale		

	There is an pediatric scale		
	There is an wheelchairs		
	There is coach		
	There is screen		

Annex E: Patient flow team checklist

1	Is patient flow committee existed? Checked the SMT minute	Yes	No	Remark
2	The committee has clear and achievable operational plan			
3	Regular monthly meeting was conducted by the Committee. Checked minute			
4	Monitoring of patient flow standards activities conducted and reported to SMT			
5	The committees identified gap in its meeting and Assessment			

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