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Follow-up Study of Mortality after Clinical Protocol Based Intervention at Emergency of Patan hospital

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ABSTRACT

Introduction: Decreasing the mortality of patients is one of the major concerns of emergency department. Mortality decreases after implementation of protocol based intervention. This follow up study has been done to see the benefit of protocol based approach.

Methods: This was a cross sectional study conducted at emergency department of Patan hospital from January 2013 to June 2013. All records of patient with mortality were reviewed excluding those who were brought dead.

Results: Total mortality in six months was 31. Mortality rate was 1.7 per thousand emergency visits. Mean duration of stay at emergency was five hours, range 30 minutes to 25 hours. The common diagnoses at presentation were Pneumonia 12 (45.1%), Upper gastrointestinal tract bleeding 4 (13%), Hypoglycaemia 3 (9.7%) followed by blunt abdominal trauma, penetrating neck injury, pneumothorax, spinal shock, head injury and zinc phosphide poisoning 2 (6.5%) each. The most common causes of death were septic shock 9 (29%), hypovolaemic shock 7 (25.8%), respiratory failure 6 (19.4%), hypoglycaemia 3 (9.7%), cardiogenic shock, raised intracranial pressure and spinal shock 2 (6.5%) each.

Conclusions: Protocol based management are important tools to decrease mortality but it is not the only factor that decreases the mortality.

Keywords: clinical protocol, emergency, mortality

Plain Language Summary

This study was done to see if implementing protocol based management improves mortality or not. This study highlighted the fact that protocol based management are important sufficient to decrease mortality.

INTRODUCTIONS

Mortality indicates the quality of service we provide in any department of the hospital. After a mortality review in 2011 at emergency department of Patan Hospital (PH), Patan Academy of Health Sciences (PAHS), a clinical protocol based approach was implemented to overcome three major causes of death which were respiratory failure, sepsis and hypovolaemic shock.¹

There is evidence suggesting that mortality decreases after an implementation of protocol based intervention to the cause of mortality.² So after finding out the major cause of mortality in emergency department a protocol based management was carried out. This follow up study was then conducted with an intention to find out the causes of mortality and overall mortality rate in emergency department after implementation of protocol. This study has also explored the presenting complaints and cause of mortality.

METHODS

This was a cross sectional, descriptive study reviewing records of the patient having mortality at emergency department, PAHS, Nepal, from 1st December 2012 to 30th May 2013. After reviewing mortality in 2011, an emergency department protocol was developed to treat three major causes of death; septic shock, respiratory failure and hypovolaemic shock. The protocol for septic shock was based on "surviving sepsis guidelines".³ Hypovolaemic shock was based on "clinical review"⁴ and expert opinion. Management of respiratory failure was based on "expert opinion". All three protocols were internally validated through in the department. One day training was conducted for all the nurses and doctors of emergency department in groups of 16 in a session on communication skills, sepsis and respiratory distress protocol developed by the faculties. Mortality records were reviewed for sex, age, duration of hospital stay, cause of death, initial diagnosis and whether vital signs was recorded on initial assessment. Incompletely documented cause of death and patients brought dead at emergency were excluded. Frequency analysis was done through SPSS 16.0. Ethical approval was taken from institutional review board of PAHS.

RESULTS

Out of 42 patients, 11 patients were excluded as they were brought dead. There was no incomplete record to be excluded. Among, the rest of 31 who died in emergency, male were 20 (64.5%) and female 11 (35.5%). Mean age was 51.9 years (range 2 to 82 years). Mean duration of stay was 5 hours, range 30 minutes to 25 hours.

Table 1. Duration of emergency stay in patients with different causes of mortality (n=31)

Cause of death	Total Number	Duration of stay		
		Less than 6 hours	6-12 hours	More than 12 hours
Septic shock	9	7	0	2
Hypovolaemic shock	7	6	2	0
Respiratory failure	6	7	0	2
Hypoglycaemia	3	3	0	0
Raised intracranial pressure	2	2	0	0
Spinal shock	2	2	0	0
Cardiogenic shock	2	2	0	0
Total (n)	31	25	2	4

Mortality rate was 1.7 per thousand emergency visits and 11.1 per thousand admissions.

The common diagnoses at presentation were Pneumonia 12 (45.1%), Upper gastrointestinal tract bleeding 4 (13%), Hypoglycaemia 3 (9.7%) followed by blunt abdominal trauma, penetrating neck injury, pneumothorax, spinal shock, head injury and zinc phosphide poisoning which accounted for 2 (6.5%) each. The most common causes of death were septic shock 9 (29%) due to pneumonia followed by hypovolaemic shock 7 (25.8%) due to upper gastrointestinal tract bleeding, blunt abdominal trauma and penetrating neck injury (4, 2 and 1 patients respectively); respiratory failure 6 (19.4%) which was due to pneumonia, pneumothorax and penetrating neck injury (3, 2 and 1 patients respectively); hypoglycaemia 3 (9.7%); cardiogenic shock due to zinc phosphide poisoning, raised intracranial pressure due to head injury and spinal shock due to trauma accounted 2 (6.5%) each for mortality.

On initial evaluation heart rate was recorded in 94.4%, blood pressure on 72.2%, respiratory rate on 32.3% and temperature on 16.7% of cases.

DISCUSSIONS

We were able to decrease the mortality after implementation of protocol on three major cause of mortality. Mortality rate of 1.7 per thousand emergency visits after clinical protocol based intervention was lower than earlier figure of 2.1 during 2011 (unpolished hospital data). However, it cannot be stated that this decrease was due to implementation of protocol only. A multicentre study published about weekly mortality on emergency admission showed that mortality on weekdays was 4.9% and 5.0% on weekends.⁵ In another study after the intervention, early mortality decreased from 47.6 to 37.9 deaths per 1000 admissions.²

In an earlier study in 2011 done in our department had concluded that goal directed early treatment was effective and recommended protocol based approach.¹ The study emphasized multiple approaches to reduce mortality. In this study, the common causes of death were respiratory failure 18 (30%), raised intracranial pressure 7 (11.7%), septic shock 7 (11.7%), cardiogenic shock and hypovolemic shock 5 (8.3%).¹ After protocol based intervention in present study, the death due to respiratory failure decreased from 30% to 19.4%. The duration of stay did not change from earlier study and the higher figures for death due to septic and hypovolemic shock may be because of detection of these conditions after introduction of protocol.

Present study showed that the vital sign recording should be improved as the evidence suggests it is as a predictor of mortality.⁶

The interventions aimed at increasing emergency care are effective but requires rigorous evaluation before implementation.⁷ The clinical protocol based intervention was useful in present study but should not be seen as the only factor that decreased mortality.

This study did not evaluate the patients who were successfully resuscitated for respiratory distress and septic shock. Further study could explore this and other possible factors that may decrease the mortality.

CONCLUSIONS

Implementing clinical based protocol for management of the patient is important to decrease mortality.

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