ADDIS ABABA UNIVERSITY
DEPARTMENT OF EMERGENCY MEDICINE

FINAL YEAR RESEARCH PROJECT

TITLE :-SEPSIS IN THE EMERGENCY DEPARTMENT IN TIKURE ANBESSA SPECIALIZED HOSPITAL ADDIS ABABA ETHIOPIA

PROSPECTIVE CROSS SECTIONAL STUDY

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Operational definition

- *SIRS (systemic inflammatory response syndrome) is systemic manifestations due to infection characterized by at least two of the following criteria*

❖ *Temperature > 38.3 oC or < 36 oC (>100.1 oF or <96.8 oF)*
❖ *Heart Rate > 90*
❖ *Respiratory Rate >20 or PaCO2 <32*
❖ *WBC > 12,000 or < 4,000 or > 10% bands*

- *Sepsis -suspected infection +two or more of the SIRS criteria.*
- *Severe sepsis -is sepsis with an acute associated organ failure.*
- *Septic shock-a subset of severe sepsis, is defined as a persistently low mean arterial blood pressure despite adequate fluid resuscitation. (Sepsis induced hypotension is defined as SBP less than 90mmHg or greater than 40 mmHg from baseline).*
- MODS - Multiple Organ Dysfunction Syndrome
  - ❖ More than one major system failure.
  - ❖ Related to significant mortality. > 50%
- *Refractory septic shock -is a persistently low mean arterial blood pressure despite vasopressor therapy and adequate fluid resuscitation.*

- *Adult- For the purpose of this study refers to individuals above the age of 14.*
- *ED – Emergency Department*
- *WHO – World Health Organization*
- *LMICS_ in low-income and middle income countries*
- *ARDS_ acute respiratory distress syndrome*
- *ARF_ acute renal failure*

ABSTRACT

Background: Sepsis is a medical emergency and one of the leading causes of death worldwide. It is best defined as a life threatening inflammatory disorder representing deraignment of the immune response to infection.

Sepsis likely contributes to the high burden of infectious diseases morbidity and mortality in low income countries .data regarding sepsis management in sub-Saharan Africa is limited.

Available data on sepsis management of adults in resource-limited settings suggest that this high mortality is associated with ineffective management including delayed and improper empiric antimicrobial therapy as well as sub-optimal fluid resuscitation [10,11]. Thus, attention to reducing the mortality from sepsis by focusing on improved management in these settings is urgently needed.

THE OBJECTIVE OF THIS STUDY IS TO KNOW THE OCCURRENCE RATE, DEMOGRAPHICS, CLINICAL CHARACTERSTICES AND TO KNOW THE CURRENT EMERGENCY MANAGEMENT OF PATIENTS WITH SEPSIS FROM THE ADULT ED IN TIKUR ANBESSA HOSPITAL, ADDIS ABABA,

Method: A prospective cross sectional study will be conducted from October 2013 to May 2014 in adult emergency department of Tikur Anbessa hospital

BACKGROUND

Infection and sepsis are among the leading causes of death worldwide. The annual burden of sepsis in high income countries is estimated to approach 2.8 million with cases a mortality of 40% [1]. Despite these figures from industrialized countries, the largest part of the global sepsis burden occurs in middle- and low-income countries. Ninety percent of the worldwide deaths from pneumonia, meningitis or other infections occur in less developed countries [2]. Although few data exist on the burden of sepsis in LMICs, the prevalence of HIV and other co morbid conditions in some LMICs, Ethiopia being one of them, suggest that sepsis is a substantial contributor to mortality in these regions.

Because of the absence of a single gold standard marker of this disease, attempting to identify evidence to support decision-making is extremely difficult[3]However, an organized, evidence-based approach can have an immediate impact in reducing morbidity, mortality, and even cost in sepsis care.4,5 Of sepsis patients initially presenting to the ED, 1 in 5 will remain more than 6 hours, meaning that a majority of the early interventions that have demonstrated short- and long term improvements are dependent on the emergency clinician's competence.6 This issue of Emergency Medicine Practice will seek to provide an update on the current understanding of sepsis pathophysiology, to place sepsis in the context of clinical decision making, and to promote early and comprehensive critical care to improve patient outcomes.

In 2004 and 2008, the Surviving Sepsis Campaign released guidelines for severe sepsis and septic shock management [6, 7]. Implementation of these guideline together with timely administration of essential therapies (e.g., fluid resuscitation, antibiotics, source control measures) improved management and outcome [8, 9]. Similar initiatives have been undertaken in children resulting incomparable improvements in outcome [10, 11]. Despite their benefits, the Surviving Sepsis Campaign and the American College of Critical Care Medicine pediatric guidelines cannot be implemented in most middle- or low-income countries due to lacking resources [12–15].This leaves those clinicians caring for the majority of sepsis patients worldwide without standardized and adoptable guidance for sepsis care.

The aim of this study is to analyze the occurrence rate, demographics, CLINICAL CHARACTERSTICES and to evaluate current emergency management of sepsis from the Adult Emergency department of Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia. This hospital is currently the only governmental hospital with established emergency and critical care department all over the country to give emergency medical services by its own trained emergency specialist in Ethiopia, so, in future this study might be as a ground to do sepsis guide line and to advocate emergency management of sepsis all over the country The Ethiopian Health Sector Development Program give high infancies to infectious disease like HIV and TB .But we worry that the burden of sepsis in Ethiopia is not known and has not been given enough attention. So this study will help much.

STATEMENT OF THE PROBLEM

According to the National Institute of General Medical Sciences (2012) the incidence of sepsis is increasing in the United States due to an aging population, increased longevity of individuals with chronic medical conditions, an increase in antibiotic resistance, and an increase use of immunosuppressant's and chemotherapy. The global burden of sepsis is unknown but is estimated that approximately 18 million cases of sepsis occur each year and cause more deaths than prostate cancer, breast cancer, and HIV/AIDS combined (Global Sepsis Alliance, 2012). In a study to estimate the incidence, prevalence, and mortality of sepsis globally, Jawad, Luksic & Rafnsson (2012) were unable to locate any published studies from developing countries between 1980 and 2008. After review of available studies from developed countries, Jawad et al. (2012) estimated the population incidence of sepsis to be 149-240/ 100,000 persons, severe sepsis to be 56-91/100,000 persons, and septic shock to be 11/100,000 persons. The case fatality rate for sepsis approximated 30% for sepsis, 50% for severe sepsis, and 80% for septic shock (Jawad etal., 2012).

Sepsis is a medical emergency but is often missed, misdiagnosed, or undertreated by healthcare providers leading to significant morbidity and mortality (Baez et al. 2013; Burney et al., 2012). Sepsis may rapidly progress to severe sepsis and septic shock, therefore early recognition of sepsis is crucial for rapid implementation of early goal directed therapy including but not limited to fluid resuscitation and antibiotics (Nelson, LeMaster, Plost & Zahner, 2009; Sawyer et al., 2011).Recognition of sepsis is often complicated by the atypical presentation of sepsis in certain populations such as elderly and pediatric patients (Destarac & Ely, 2002).

In HICs, algorithmic approaches to sepsis management which focus on early diagnosis and antimicrobial treatment, aggressive fluid resuscitation and concomitant monitoring of such parameters as central venous pressure, central venous oxygen saturation, and hematocrit can decrease sepsis-associated mortality [13], [14]. In LMICs, data regarding the management and outcomes of sepsis syndromes are limited [15]. Factors thought to contribute to poor outcomes of critically ill patients in these settings include limitations due to cost, deficiency of diagnostic laboratories, microbiologic and radiologic capabilities and delayed presentation of severely sick patients [6], [16], [17].

The scarcity of data on this topic in developing countries necessitates further studies to evaluate cost-effective approaches to sepsis in these settings [20]. While HIC approaches to sepsis are not feasible in the current resource-constrained environment of SSA, the timely provision of IV fluid resuscitation and empiric antibiotics alone may improve outcomes [21].

In addition there is no organized sepsis protocol in our ED and also monitoring modalities for our sepsis management is lacking. so we worry that our patient are not getting the standard management and we need to do such researches in order to develop standard and functioning for our set up.

LITRETURE REVIE

Sepsis is a medical emergency and one of the leading causes of death worldwide (Global Sepsis Alliance, 2012). It is best defined as a life-threatening inflammatory disorder representing derangement of the immune response to an infection (Martin et al., 2006). Sepsis and its associated syndromes are common and associated with substantial morbidity and mortality in the general population (Rivers et al., 2001)

From clinical studies sepsis can be seen as a continuum of severity that begins with an infection, followed in some cases by sepsis, severe sepsis – with organ dysfunction – and septic shock. There has been a substantial increase in the incidence of sepsis during the last decades, and it appears to be rising over time, with an increasing number of deaths occurring despite a decline in overall in-hospital mortality (Bone, 1992). Advanced age, underlying co morbidities and number of organ dysfunction are factors which are consistently associated with higher mortality in severe sepsis and septic shock.

Occurrence rate of sepsis

Sepsis is now the 10th most common cause of death in the United States.9 It is estimated that 571,000 cases of severe sepsis present to U.S. EDs each year.10 Mortality rates from sepsis are estimated between 20 and 50%.[3,7,8,11–16]Sepsis accounts for 4 out of 1000 ED visits in the United States.17][The incidence of sepsis as a reason for hospitalization is rising at a disproportionately high rate among elders, compared to the young .The incidence of sepsis in patients under age 65 years is less than 5 in 100,000, while it is 26 in 100,000 in those 65 or older.[18] The cost of caring for septic patients is estimated to be $17 billion per year in the United States.[]11 Hospital discharge data have shown that the incidence of sepsis is increasing as identification improves and the population ages. Estimates have suggested that the incidence will rise 1.5% per annum or more.[11,12] The number of ED visits for sepsis has risen proportionally with the rise in ED volume over the past 15 years.[17]

Similarly, in a separate study of Patients presenting for medical care at a rural district hospital in Zambia, 30% were found to have vital signs and physical examination findings consistent with sepsis. Several studies have added to the understanding of bacteraemia in LMICs. Notably, a retrospective hospital chart review from Zambia revealed that 79 (86%) of 92 hypotensive patients with suspected sepsis received no intravenous (IV) fluid resuscitation [18]. Additionally, a study of bacteremic children in Tanzania highlighted increased mortality when empiric antibiotics were discordant with antibiotic susceptibility profiles [19].

Few data exist to describe the burden of sepsis in LMICs. Given the incidence of sepsis in high-income countries (HICs), [1] sepsis is likely to contribute substantially to morbidity and mortality in LMIC populations.[7]

The few primary data that are available do confirm this conclusion.

The Brazilian Sepsis Epidemiological Study assessed\1383 consecutively admitted patients in five different intensive care units.[8[The incidence density rates for sepsis, severe sepsis, and septic shock were 61·4, 35·6, and 30·0 per 1000 patient-days, respectively in brazil accounted 6.4% of medical emergencies the In other countries, the incidence of sepsis ranged between 7.9 and 11.4% on ICU admission.16-18 A multicentre study18 evaluated sepsis epidemiologic data in France and reported a higher incidence of sepsis in teaching or regional hospitals (15.3%), and general hospitals (14.9%), Other studies showed higher incidences of sepsis on ICU admission, which varied from 22.9% to 42%.7, 19-23. Albert and colleagues (2002) conducted a multicentre cohort study in 28 ICU from Europe, Canada, and Israel and observed variability in sepsis incidence that ranged from 1.5% in a Canadian ICU to 66.5% in a British ICU.20 A recent SOAP (Sepsis Occurrence in Acutely Ill Patients) study7 evaluated 198 ICU in 24 European countries and found similar variability with reports of 18% sepsis incidence in Switzerland and 73% incidence in Portugal.

Age and Sex

There is a direct relationship between advanced age and the incidence of severe sepsis and septic shock, with a sharp increase in incidence in elderly people (Wang, 2007; Angus, 2001).

The incidence of severe sepsis in infants is also elevated, with an annual rate of 5.3 cases per 1,000 population (Angus, 2001).The median age of patients with severe sepsis in most studies is between 60 to 65 years, and when the patients are stratified at the age of

65, the relative risk for sepsis was 13 times higher for patients aged 65 and above. Martin et al (Martin, 2006) found that the incidence rates of sepsis increased 20.4% faster among older patients 65 years of age or older than among younger patients from 1979 to 2002 (mean increase per year, 11.5% versus 9.5%; P<.001). Epidemiological studies analyzing data from the 1990s found an increased incidence of severe sepsis in young people, especially men in their thirties, which could be attributed to patients with human immunodeficiency virus related conditions. However, the better control of the HIV epidemic in developed countries is changing this trend.

Study in France, Australia and Newzeland, brazil and India had reported the mean age of sepsis to be 65 ,61, 73.3 and 59.2 years respectively. Men are more likely than women to develop sepsis, with a mean annual relative risk of 1.28 (95% CI 1.24-1.32) (Martin, 2003). However, it is not clear whether this difference could be due to a higher prevalence of co morbidities in men, or whether women are protected against the inflammatory changes that occur in severe sepsis and septic shock (Angus, 2001).A study in Brazil in which male account 57.1% Similarly, there were 59.6% men in the Australian and New Zealand study and twice as many men as women in the French EPISEPSIS study [9, 10].

Co morbidities

HIV-positive individuals are at greater risk for sepsis because of their immunosuppression.[12,13] In areas of high HIV prevalence, sepsis might contribute substantially to overall mortality. In a prospective study of consecutive HIV-seropositive patients admitted to an Ethiopian teaching hospital, sepsis and septic shock were among the most common causes of mortality.[14] Similarly, Sani and colleagues15 reviewed the causes of death among patients with AIDS over 4 years in a teaching hospital in Nigeria. 455 (9·9%) of 4574 adult medical admissions were due to HIV/AIDS-related diagnoses. Overall HIV mortality was 38·7%, with sepsis involved in 23·8% of these deaths[.15]

Other common LMIC infectious diseases such as malaria and typhoid fever can also progress to sepsis.16–19 Furthermore, malnutrition and chronic illness have independent negative effects on immunity, potentially further increasing the frequency of sepsis in LMICs.20 Despite substantial improvements in HIV/AIDS-related programming in many resource-poor settings, no clear reduction in critical illness mortality has been reported. Although the explanation for this observation is undoubtedly multifactorial, the public-health focus on HIV prevention and treatment has probably not substantially improved the care of critically ill patients with AIDS. Furthermore, because of limited resources and incomplete uptake of voluntary counseling and testing, many patients with HIV do not present until they are critically ill.12 Thus, the burden of critical illness and sepsis secondary to HIV/AIDS in LMICs probably remains quite high

Annane et al analyzed 8,251 cases of septic shock from 22 intensive care units and found a high proportion of patients having underlying disease with presumably reduced life expectancy (Annane, 2003). In this series the most common co morbidities were: Immune deficiency (21.9%), chronic pulmonary disease (9.2%) and hematologic malignancy (8.4%). Martin et al over a 22-year period identified 10,319,418 cases of sepsis with a proportion of organ failure in 33.6 percent of patients during the most recent sub period, resulting in the identification of 184,060 cases of severe sepsis in 1995 and 256,033 in 2000. In this series the most frequent co morbidities were diabetes (12.2-18,7%), hypertension (7.0-18.6%), cancer (14.5-18.0%) and congestive heart failure (8.6-15.2%)

Source of infection

The lung is the primary source of infection both in severe sepsis and in septic shock, followed by the abdomen, the urinary tract, soft tissues and primary blood stream infection (Annane 2003, Blanco 2008, Kumar 2010).A study done in west India in which the most common sources of sepsis were pneumonia (67%) and urinary tract infection (46%).this also the same with research done with brazil in which The most frequent infection site was pulmonary (66.5%), followed by the urinary system (13.6%), abdomen (6.6%), skin/soft tissues (4.4%), and others (8.9%)

Mortality and morbidity

Despite technological and therapeutic advances, mortality among sepsis patients remains high, varying from 30% to 60%.6 In 1995, an epidemiological study that included seven states in the United States identified a 28.6% mortality rate among sepsis patients, resulting in 215,000 deaths per year.2 More recently, an European study conducted in 198 ICU in 24 countries showed 32.2% mortality at 60 days of follow-up of patients with severe sepsis and 54% mortality in patients with septic shock.7 Mortality was

higher in patients with severe sepsis (46.9%) and septic shock (52.2%), compared to sepsis (33.9%).10 Sepsis mortality is multifactorial and there are several risk factors identified in literature, including prognostic scores,7,18,25 associated chronic diseases,28 acute organ dysfunction,3,7,18,25 alcoholism,29 age,2,4,7,25,30 and infection characteristics.7,23,25,28,31 Additionally, sepsis management according to Surviving Sepsis Campaign can also change the disease prognosis and reduce patient mortality.[32]

Mortality rates depend on the sepsis stage and co-morbidity and range from 4.1% in patients with uncomplicated sepsis to as high as 50% in patients with septic shock [1]. Although patients with severe sepsis or septic shock have a higher a-priori chance of having an unfavorable outcome than patients with uncomplicated sepsis, the latter group is responsible for the majority of sepsis hospitalizations in developed countries [2]. In a study of inpatients in Malawi, mortality was 18% among general medical admissions and 38% among patients with bacteraemia, with a strong correlation between HIV infection and bacteraemia.[9]Furthermore, a study in The Gambia reported that patients with bacteraemia were more Likely to die while in hospital (odds ratio 2·79, 95% CI 1·17–6·65; p=0·017).[10]

Similarly, from a study in hospitalized Ugandan patients suspected of having severe sepsis confirmed bloodstream infections in 72 (18·9%) of 381 patients of whom a third (24 of 72) died in hospital. The bacteriology of bloodstream infections across LMICs varies substantially depending on regional and population characteristics. In a meta-analysis of 19 prospective studies on community-acquired bacteraemia in Africa, the most common organisms isolated were Salmonella spp (predominantly non-typhi), Streptococcus pneumonia, and Gram-negative organisms such as Escherichia coli.11 Among cases for which mortality data were recorded, patients with bloodstream infections had an average mortality of 21·5%. Although data are lacking, appropriate antibiotic treatment for these infections on the basis of bacterial resistance patterns will ultimately depend on the ecological pressures resulting from local antibiotic availability and patterns of use antibiotics. As unrecognized sepsis continues to be a problem in HICs, a large percentage of patients with sepsis might go unrecognized in LMICs.21 A dearth of educational efforts targeted at sepsis in many LMICs has led to substantial under-reporting.

For example, although the 2004 WHO Integrated Management of Adult and Adolescent Illness guidelines mention sepsis, neither case definitions nor management re commendations are delineated.22 The provision of targeted sepsis education for clinicians is particularly important because the diverse signs and symptoms associated with sepsis often disguise the disease process and diagnosis requires detailed physical examination, as well as laboratory and radiographic tests. However, many LMIC health-care facilities lack the required diagnostic capability, which makes it difficult for practitioners to arrive at accurate diagnoses.[23] Applying the consensus conference definition, rough estimates of fatality rates (the percentage of patients who die) are Sepsis: 10–20%Severe sepsis% 20–50%Septic shock: 40–80%

Patients with sepsis who had any organ failure have higher mortality. Besides, organ failure has a cumulative effect on outcomes: mortality in patients without organ failure is approximately 15 percent, whereas it reaches 70 percent in patients with three or more failing organs (classified as having severe sepsis and septic shock) Turkish in which the most common organ dysfunction that developed during sepsis was renal insufficiency (52·2%), followed by respiratory failure (30·4%) and DIC (30·4%). renal failure has been associated with a particularly poor prognosis [7, 19]

Approximately 751 000 new cases of severe sepsis are diagnosed each year with about 500 deaths daily across the United States of America [USA] (4, 7, 8). Prolonged length of stay (LOS) is common, with the average patient requiring hospitalization for 19.6 days (9, 10). A study done in west India in emergency department in which the Mean (SD) length of hospital stay was 9.5 (10.3) days. In hospital mortality was 25% also in the same study brazil show the median hospital length of stay was 10 (4.7–17) days. Surviving septic patients had a median ICU length of stay of 8 (4-18) days, while non-septic patients had a shorter stay in ICU (median = 2 days; IQ: 2-3 days) (p < 0,001). Septic patients also remained in the hospital longer (median = 27 days; IQ: 16-48 days) compared to non-septic patients (median = 15 days; IQ: 9-27 days) (p < 0.001)

Regardless of the era and the organisms, the treatment of infection is the cornerstone of antisepsis therapy. There are two particular components of antimicrobial therapy that are important. The first is early antimicrobial therapy, with initiation of antibiotics in an appropriate time interval depending on the location of the patient. There are particular data from patients with pneumonia, and from those with septic shock, that show that delays in antimicrobial therapy lead to a significantly increased risk of dying [29,30]. Especially critical for septic shock, the risk of dying increases by approximately 10% for every hour of delay in

receiving antibiotics [30]. The other important component of antimicrobial therapy is appropriateness of the antimicrobial regimen. It may be intuitive that coverage of the appropriate organisms is critical, as failure to cover the appropriate organisms is synonymous with delays of antimicrobial therapy. A variety of studies of infected and septic patients show that inappropriate antimicrobial therapy is a consistent predictor of poor outcomes [31,32]. From a clinical perspective this means that the antimicrobial therapy must almost always be empiric. The choice of antibiotics, and the timing of their administration, cannot wait for isolation and identification of the causative organism and determination of the organism's sensitivity to various antibiotics. These principles underlie the observation that combination antimicrobial therapy may be superior to monotherapy [33]. In addition, in certain circumstances antibiotic therapy alone is not sufficient to treat the infection causing sepsis, in which case source control is also necessary to eradicate the infection [34,35].

OBJECTIVES OF THE STUDY

1) General Objective

- ✓ To know the occurrence rate, demographics, clinical characteristics and to know the current emergency management of patient with sepsis from the adult ED in Tikur Anbessa hospital, Addis Ababa Ethiopia.

2) Specific Objective

- ✓ To know demographic data of patient diagnosed with sepsis
- ✓ To determine the commonest focus of infection which predispose to sepsis
- ✓ To asses commonest underling illness that predisposed the patient at a different age groups to sepsis
- ✓ To know pattern of sepsis severity in the ED
- ✓ To assess the current management of sepsis in the ED
- ✓ To determine the length of stay in the ED
- ✓ To determine occurrence rate of sepsis in the ED
- ✓ Ultimately the goal of this research is to contribute in developing a standard guideline for emergency management of patients with sepsis and to lay a ground for further sepsis research for future.

METHODOLOGY

Study setting**-** The study will take place in the adult emergency department of Tikur Anbessa specialized hospital. The hospital is both a teaching and a tertiary referral hospital with different specialties in it. It is situated in Addis Ababa, the capital city of Ethiopia. It the only governmental hospitals where emergency medicine and critical care is established as a department.

Study design- A prospective cross sectional study will be conducted.

Source population- The source population will be patients that come to the hospital in the specified time frame.

Study population – patients with sepsis that come to Tikur Anbessa secialized hospital from October 2013 to April 2014.

Sample size and sampling method

All patients who is diagnosed with sepsis syndrome and who meet the inclusion criteria and who are willing to participate in the study from the month of October 2013 to March 2014 will be included.

Inclusion and Exclusion criteria

1. Inclusion criteria

- ✓ All patients who will be diagnosed to have sepsis with evidence of infection in the adult ED
- ✓ All patient with evidence sepsis with of hypo perfusition
- ✓ Patient who had at least one sepsis induced organ dysfunction
- ✓ All patient age 14 and above who is diagnosed with sepsis, sever sepsis and septic shock
- ✓ All patients who meet the above criteria and are willing to participate in the study.

2. Exclusion criteria

- ✓ Those patients who don't fulfill the above criteria.
- ✓ Those who are younger than 14 years of age.

Data collection and Data Analysis

DATA COLLECTION: All patients who is diagnosed with sepsis in the adult emergency department, from the month of October 2013 to the month of March 2014 will be selected from kept patient will be picked. After identifying patients with sepsis and getting their consent, data will be collected using a pre tested, standard questioner prepared both in Amharic and English. The data will be collected by trained nurses and emergency residents.

DATA ANALYSIS: The data will be entered and analyzed using SPSS 20. Descriptive statistics, chi-square and the t-test will be used where appropriate. The results will be analyzed for association between different variables.

DATA QUALITY ASSURANCE: The data collectors will be first trained on how to collect data. The pretested and modified questionnaire for data collection will be checked for completeness by the supervisor and principal investigator. Then it will be cleaned, coded, entered and analyzed using SPSS version 20.

Ethical considerations

A written legal permission regarding the study will be obtained from the department of Emergency medicine or AAU-medical faculty institutional review board prior to the study. Confidentiality of the patient and parents will be kept during the study and during dissemination of the result. Written consent will be prepared both in Amharic and English.

Result

A total of 4443 medical emergency patients were evaluated in the ER of TASH in the study period 60 (1.35%) were diagnosed to have sepsis.

A total of 60 patients with sepsis were evaluated in the ER of TASH, whose data was collected over the past 06 months was analyzed

Demographic data.

Age and sex distribution: the sex distribution of patients was 31(51.7) males and 29(48.3) females, giving a sex ratio of (M:F) of 1.07 :1.

The ages of patients ranges from 14 to 90 years with the mean age of 41.13 years and median age of 35.5 years, 51.7% of the patients were age 31 to 60 years old.

The age distribution of patients is shown on table 1

Table 1.demographic characteristics of patients who is evaluated as a cases of sepsis in the ED of TASH from October 1 ,2013 to may 1,2014

Table 1.1. sex distribution

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	31	51.7	51.7	51.7
	Female	29	48.3	48.3	100.0
	Total	60	100.0	100.0	

Age (years)

Table 1.2.age distribution

Age In Cluster		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	14 to 30	21	35.0	35.0	35.0
	31 to 60	31	51.7	51.7	86.7
	greater than 60	8	13.3	13.3	100.0
	Total	60	100.0	100.0	

Mean $\pm$ SD 41.1333 $\pm$ 22.78

Median of age 35.5

Place of Residence		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Addis Ababa	32	53.3	53.3	53.3
	out of Addis	28	46.7	46.7	100.0
	Total	60	100.0	100.0	

Place of residence: - majority of patients came from Addis Ababa 32 (53.3). see residence distribution on table1.2

Table.1.3.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	6.5	6.5	6.5
	Student	4	12.9	12.9	19.4
	Daily laboror	5	16.1	16.1	35.5
	Gov't employee	2	6.5	6.5	41.9
	Unemployed	11	35.5	35.5	77.4
	Other	2	6.5	6.5	83.9
	retired	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Occupation: - majority of patients are unemployed 11(35.5%) . see occupation distribution on table 1.3

origine of referral

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A.A referal	16	26.7	26.7	26.7
	regional hospital	23	38.3	38.3	65.0
	health center	14	23.3	23.3	88.3
	private hospital	3	5.0	5.0	93.3
	self	4	6.7	6.7	100.0
	Total	60	100.0	100.0	

Table1.4 Origin of referral. Majority of patients referred from Addis Ababa which accounts 23(38.3 %) of a total of 60 patients.

Clinical profile

Complaint and duration of illness during presentation to ED: The main presenting compliant for sepsis in the ED was respiratory30(50%), followed by GU 13 (21.7%), and GU 10 (16.7%) and the presumed focus of infection also the same percentage as there compliant. The complaint is presented table 2.1.the mean duration of symptoms during presentation To ED was 5.9 days. and the median was 6 days.

Presenting symptoms

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pulmonary	30	50.0	50.0	50.0
	GI	10	16.7	16.7	66.7
	GU	13	21.7	21.7	88.3
	Skin/Soft tissue	3	5.0	5.0	93.3
	CNS	4	6.7	6.7	100.0
	Total	60	100.0	100.0	

Table2.1 show distribution of presenting symptoms

The SIRS criteria for diagnose of sepsis were full field by 57(95%) of the patients of 60 patients of which 38(63.3%) full field three of the SIRS criteria,10(19.2%) full field all of four the SIRS criteria and 9(15%) full field two SIRS criteria of which 54(90%) 0f them had RR above20bpm, 51(85%) of them heart rate above90, 49(81.7%) of them temperature above 38.3 or below 36 and only 26(43.3% were had fulfilled WBC above 120000 or below 4000 of the SIRS criteria among 60 patient. Figure 1 show the percentage of distribution of SIRS criteria among 60 patient

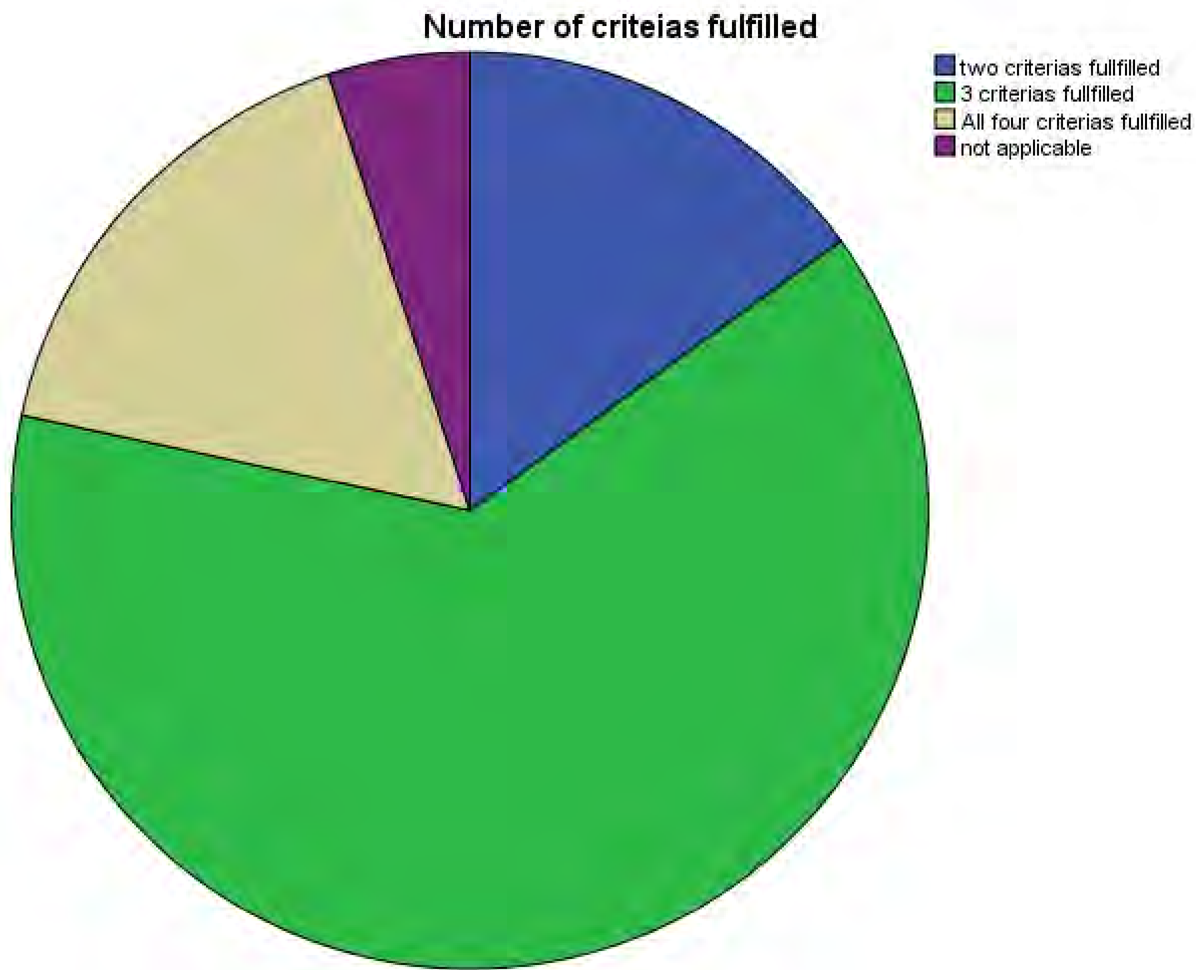


Figure2. 1 show the percentage of distribution of SIRS criteria among 60 patient

3.Diagnosis of sepsis in the ED

in the study majority of patients were diagnosed as septic shock 41(68.3%) followed by 19(31.7%) as sever sepsis. Diagnosis pattern of sepsis presented in table 3.1

ED diagnosis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Severe Sepsis	19	31.7	31.7	31.7
	Septic shock	41	68.3	68.3	100.0
	Total	60	100.0	100.0	

3.1. Diagnosis pattern of sepsis in the ED

From a total of 60 patients who is diagnosed as a case of sepsis majority were focus of pulmonary 30(50%) followed by GU 13(21.7) and GI 10(16.7%). See table 3.2

Focus of infection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pulmonary	30	50.0	50.0	50.0
	GI	10	16.7	16.7	66.7
	GU	13	21.7	21.7	88.3
	Skin/Soft tissue	3	5.0	5.0	93.3
	CNS	4	6.7	6.7	100.0
	Total	60	100.0	100.0	

Table 3.2 show focus of infection for sepsis,

Among 19 patients who is diagnosed as sepsis in the ED 12 of them were fulfilled criteria for sever sepsis. Table 3.2 show patient who diagnosed as sepsis when they were sever sepsis.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	20.0	20.0	20.0
	not applicable	48	80.0	80.0	100.0
	Total	60	100.0	100.0	

Table 3.3 patient who is misdiagnosed as sepsis when they were sever sepsis.

In this study in majority of patients diagnosis of sepsis was considered when they failed to respond to fluid 38(63.3%) followed by when the patient condition deteriorate 16(26.7%) and only in 6(10%) patient sepsis diagnosis was considered initially at admission.

		Frequeny	Percent	Valid Percent	Cumulative Percent
Valid	initially at admission	6	10.0	10.0	10.0
	when the patient failed to responded to fluid	38	63.3	63.3	73.3
	when the patient condition deteriorate	16	26.7	26.7	100.0
	Total	60	100.0	100.0	

Table 3.4 show number and percentage of patients which show when the sepsis diagnosis considered in the ED.

The major predisposing factors for sepsis identified in our ED are HIV 24(40%) and malignancy 18(30%) followed by DM 7(11.7%) and TB with HIV 5(8.3%). Table 3.4 show predisposing factors for sepsis.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIV	24	40.0	40.0	40.0
	Autoimmune like SLE	4	6.7	6.7	46.7
	DM	7	11.7	11.7	58.3
	Elderly	2	3.3	3.3	61.7
	Malignancy	18	30.0	30.0	91.7
	TB and HIV	5	8.3	8.3	100.0
	Total	60	100.0	100.0	

Table 3.5 predisposing factor for sepsis

In this study the sepsis the common sepsis complication identified is ARF 37(61.7%) followed by ARDS 9(15.7%) and combination of both ARF and ARD2 (3,3%).in 7 (11.7%) there is no sepsis complication documented. table 3.5 show the sepsis complication documented in the ER

what is the patient sepsis complication based on the above evidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ARDS	9	15.0	15.0	15.0
	ARF	37	61.7	61.7	76.7
	no complication documented	7	11.7	11.7	88.3
	ARF&ARDS	2	3.3	3.3	91.7
	ARDS and CNS dysfuction	1	1.7	1.7	93.3
	ARDS ,DIC and ARF	2	3.3	3.3	96.7
	ARF ,CNS dysfunction and ARDS	2	3.3	3.3	100.0
	Total	60	100.0	100.0	

Table 3.6.The sepsis complication documented in the ED.

4. Management of sepsis in the ED

4.1 IV fluid.

Only 31 (51.7%) of patient was given fluid from a total of 60 patient who is diagnosed as a case of sepsis from which 36(60%) of 60 patient were diagnosed as septic shock of which 5(13.9%) were not received iv fluid. the types of fluid they were received was normal saline26 (43.3%) and only 5(8.3%) of the total 31 patient were received ringer lactate. table 4.1 show the number and the percentage of patient who received iv fluid and figure 4.1 show the types of fluid the patient received.

iv fluid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	51.7	51.7	51.7
	No	29	48.3	48.3	100.0
	Total	60	100.0	100.0	

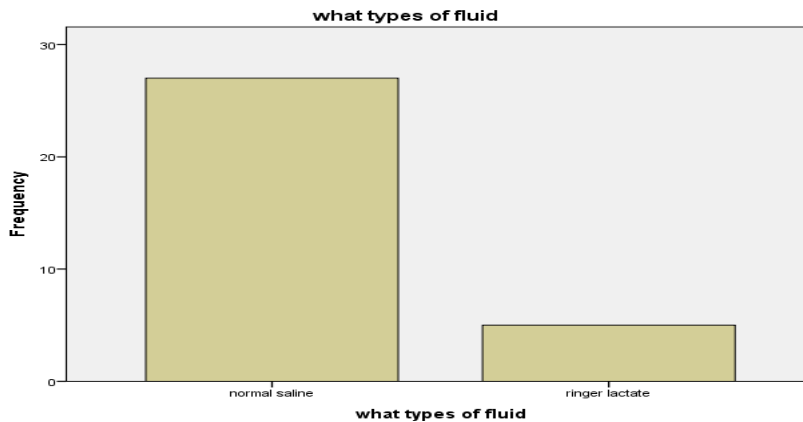
Table4.1 the number and the percentage of patient who received iv fluid

Figure 4.1 show the types of fluid the patient received.

IV Antibiotics

53(88.3%) of the total 60 patients w ho is diagnosed as sepsis were started on IV antibiotics of which only 7(11.7%) of them started iv antibiotics immediately and in remaining 46(76.7%) patients time of antibiotics were not documented.7(11.7%) were nor received any antibiotics

Culture were requested in 2(3.3%) of the total of 53 patients who received iv antibiotics before initiation of antibiotics. Of the 53 patients 16(26.7%) were started on ceftriaxone and metrindazole, 14 23.3(%) on ceftriaxone, 8(13.3%) ceftriaxone and azitromycine and 7(11.7%) o them on vancomycine and ceftazidm.



iv antibiotics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	53	88.3	88.3	88.3
	no	7	11.7	11.7	100.0
	Total	60	100.0	100.0	

Table 4.2 number and percentage of patient on iv antibiotices

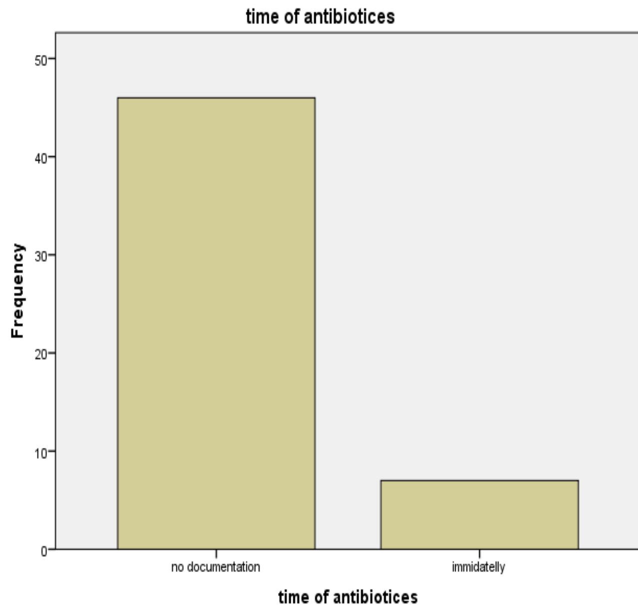


Figure 4.3 show time of antibiotic s initiation

Culture request before antibiotic		Frequency	Percent	Valid Percent	Cumulative Percent
	yes	2	3.3	3.3	3.3
Valid	No	58	96.7	96.7	100.0
	Total	60	100.0	100.0	

Table 4.4 show number and percentage of culture request before antibiotices

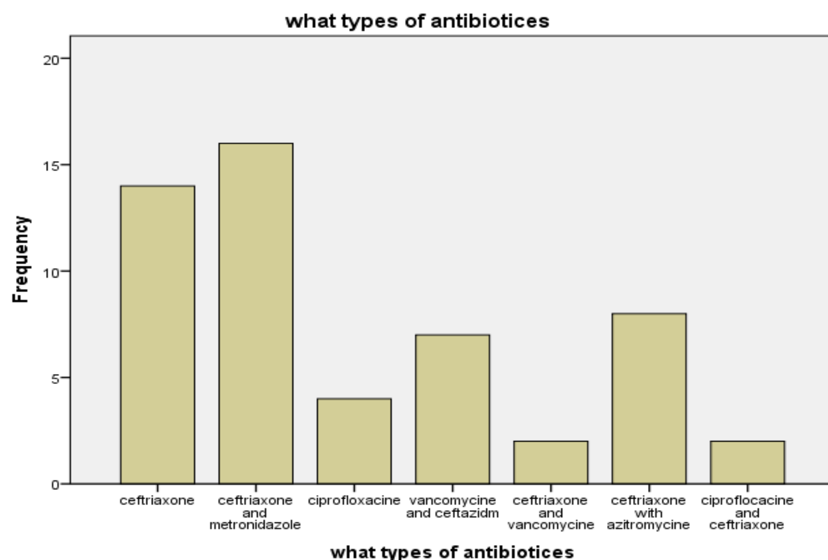


Figure 4.5 show choices of antibiotics for patient who diagnosed as sepsis in the ED

Oxygen

25(41.7%) of patients from a total of 60 were failed to maintain oxygen saturation of which 23(38.3%) of were put on oxygen. table 4.2 show the number and percentage of patient who received oxygen.

Oxygen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	38.3	38.3	38.3
	No	37	61.7	61.7	100.0
	Total	60	100.0	100.0	

Table 4.6 the number and percentage of patient who received oxygen

Cardiac monitor

6(10%) of the total 60 patient were put on monitor. Table 4.3 show the number and percentage of patient on cardiac monitor

cardiac monitor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	6	10.0	10.0	10.0
	no	54	90.0	90.0	100.0
	Total	60	100.0	100.0	

Table 4. 7the number and percentage of patient on cardiac monitor

Urine output monitor

43(71.7%) of the total 60 were complaining decreased urine of which only 27(45%) of them had urine output monitoring in the ED. Table 4.6 show the number and percentage of patient who had urine monitoring.

urine output monitor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	45.0	45.0	45.0
	No	33	55.0	55.0	100.0
	Total	60	100.0	100.0	

Table 4.6 show the number and percentage of patient who had urine monitoring.

Steroid

27(45%) of patient from a total of 36 patient who is diagnosed as septic shock were received IV steroid. table 4.7 show number and percentage of patient who received steroid.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	45.0	45.0	45.0
	No	33	55.0	55.0	100.0
	Total	60	100.0	100.0	

Table 4.7 show number and percentage of patient who received steroid.

Inotropic agent
35 (58.3%) patients were put on inotropic agent from a total of 36 patient who is diagnosed to have septic shock. and of which 22(36.7%) of them were put on dopamine and 13(21.7%) on adrenaline. Table 4.8 show number and percentage of patient who put on inotropic agent and figure 4.4 show types of inotropes.

patient started on inotropic agent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	58.3	58.3	58.3
	No	25	41.7	41.7	100.0
	Total	60	100.0	100.0	

Table 4.8 show number and percentage of patients who put on inotropic agent

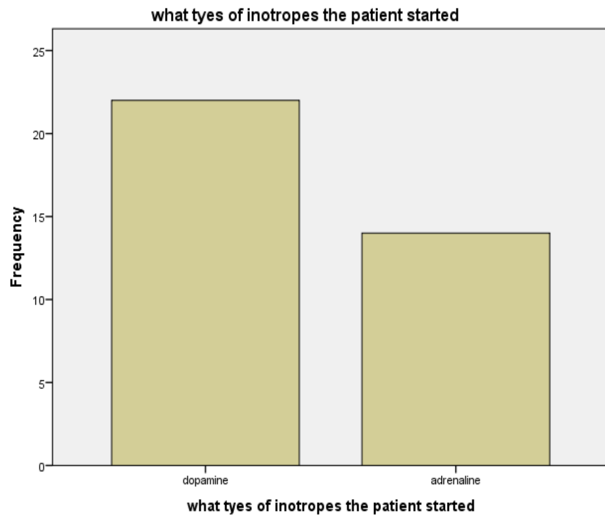


Figure 4.4 show the types of inotropes used in patient who is diagnosed as sepsis in ED

Blood transfusion.

3(5%) of the total 5 patient who as a case of sever sepsis were presented as with bleeding tendency and 3 of the patients also managed with blood transfusion.

Final disposition from ED.

From a total of 60 patient 34(56.7%) died in the ED, 11(18.3%) of patient discharged from ED, 9 (15%) of patient admitted to ward 5(8.3%) admitted to ICU and 1(1.7%) of patient referred to other hospital. Figure 4.5 show disposition in the ED.

Making our in hospital mortality rate 56.7%

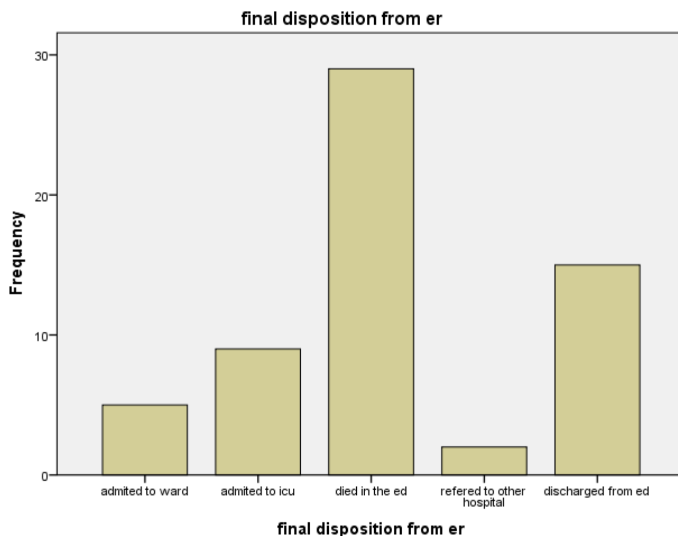


Figure 4.8 show disposition in the ED

Length of stay in the ED

16(26.7%) of patients stayed in the ED for less than one and equal to one day,16(26.7%) stayed 3 days 7(11.7%) stayed 4 days and 7(11.7%) stayed 7 days.

With the mean length of stay in the ED is 3.6 days. table 4.9 show the length of stay in the ED.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than or equal to one day	16	26.7	26.7	26.7
	2 days	3	5.0	5.0	31.7
	3 days	16	26.7	26.7	58.3
	4 days	7	11.7	11.7	70.0
	5 days	3	5.0	5.0	75.0
	6 days	5	8.3	8.3	83.3
	7 days	7	11.7	11.7	95.0
	8days	2	3.3	3.3	98.3
	9 days	1	1.7	1.7	100.0
	Total	60	100.0	100.0	

Table 4.9 shows the length of stay in the ED.

Discussion

This study has demonstrated that sepsis was accounted for 1.35% of the total medical emergencies seen in the ED of TASH during the study period. This figure was lower than that of reported in brazil where sepsis accounted 6.4% of medical emergencies the study was done in emergency department with same period of time In other countries, the incidence of sepsis ranged between 7.9 and 11.4% on ICU admission.[16-18] A multicentre study[18] evaluated sepsis epidemiologic data in France and reported a higher incidence of sepsis in teaching or regional hospitals (15.3%), and general hospitals (14.9%), Other studies showed higher incidences of sepsis on ICU admission, which varied from 22.9% to 42%.[7,19-23] Possible explanations include difference in health care policies, hospital characteristics, admission ICU criteria, and population characteristics. Albert and colleagues (2002) conducted a multicentre cohort study in 28 ICU from Europe, Canada, and Israel and observed variability in sepsis incidence that ranged from 1.5% in a Canadian ICU to 66.5% in a British ICU.[20] A recent SOAP (Sepsis Occurrence in Acutely Ill Patients) study[7] evaluated 198 ICU in 24 European countries and found similar variability with reports of 18% sepsis incidence in Switzerland and 73% incidence in Portugal. The low incidence rate could be due the low socio economic and our cultural attitude for seeking early medical treatment and late referral system in which most septic patient will die before they reach to hospital.

The mean age of the patients with sepsis was 41.1333 $\pm$ 22.78 years this was lower than the study in France, Australia and Newzeland, brazil and India had reported the mean age of sepsis to be 65 ,61, 73.3 and 59.2 years respectively. The discrepancy may be due to socio demographic differences. In this study male outnumbered female was 31(51.7) males and 29(48.3) females, giving a sex ratio of (M:F) of 1.07 :1. This agrees with a study in brazil in which male account 57.1% Similarly, there were 59.6% men in the Australian and New Zealand study and twice as many men as women in the French EPISEPSIS study [9, 10]. However it is not clear whether this difference could be due to a higher prevalence of co morbidities in men, or whether women are protected against the inflammatory changes that occur in sepsis.

From a total of 60 patient who is diagnosed as a cases of sepsis majority were diagnosed as septic shock 41(68.3%) followed by sever sepsis 19(31.7%) .This is comparable with study done in teaching hospitals in South Brazil describing sepsis incidence reported the occurrence of 31.9% sepsis cases, 24.5% severe sepsis cases and 31.4% septic shock cases during ICU stay.[27] in the multicenter cohort study on sepsis and infection in intensive care unit patients (Artigas2002) infections had a crude incidence of 21.1%.among those 24% were associated with sever sepsis and 30% with septic shock. In both studies the incidence of sepsis is high compare to ours. It could be explained by methodological variations in epidemiologic studies make it difficult to compare results across studies. Even with the application of the same diagnostic criteria, there are variations in study design, and inclusion and exclusion criteria, which probably account for some of the differences seen. And the frequency of septic shock increasing with more resistant strains.

The most frequent source of infection identified in our research was pulmonary 30(50%) followed by GU 13(21.7%) and GI 10(16.7%) this is similar to the study done west India in which the most common sources of sepsis were pneumonia (67%) and urinary tract infection (46%).this also the same with research done with brazil in which The most frequent infection site was pulmonary (66.5%), followed by the urinary system (13.6%), abdomen (6.6%), skin/soft tissues (4.4%), and others (8.9%)

The major risk factors identified in our study was HIV 24(40%) and malignancy 18(30%) followed by DM 7(11.7%) and TB with HIV 5(8.3%)

Similarly, Sani and colleagues15 reviewed the causes of death among patients with AIDS over 4 years in a teaching hospital in Nigeria. 455 (9·9%) of 4574 adult medical admissions were due to HIV/AIDS-related diagnoses. Overall HIV mortality was38·7%, with sepsis involved in HIV-positive individuals are at greater risk

for sepsis because of their immunosuppression.[12,13] In areas of high HIV prevalence sepsis might contribute substantially to overall mortality. In a prospective study of consecutive HIV-seropositive patients admitted to an Ethiopian teaching hospital, sepsis and septic shock were among the most common causes of mortality. [14]23·8% of these deaths [15] Furthermore, malnutrition and chronic illness have independent negative effects on immunity, potentially further increasing the frequency of sepsis in LMICs.[20]. This is different with the study done in west India where the most underling illness identified were hypertension (29%),diabetes mellitus (26%), stroke (8%), heart failure (6%) and HIV (6%).) another study done in Turkey The most common underlying diseases were hypertension (46·4%), malignancies (36·2%) and diabetes mellitus (30·4%). Hematological malignancies constituted 32·0% of cancer in our patients. This could be due to the socio economic difference.

Our sepsis in hospital mortality rate was 56.7%   in west India In hospital mortality was 25% which is lower than ours it could be explained by the high prevalence of HIV in our cases. Our mortality rate results somewhat corresponds to those of Albert and colleagues (2003), who described similar hospital mortality for localized infection (25.5%) and sepsis (25.5%), as well as increased mortality in patients with severe sepsis (40.9%) and septic shock (60.5%).[28] The Brazilian Sepsis Epidemiological Study also show comparable result with our study. The mortality of patients with sepsis, severe sepsis, and septic shock increased progressively from 34·7%, through 47·3%, to 52·2%, respectively. [8] Sepsis tends to be detected only when multiple organ dysfunctions are seen, compromising the proper treatment. Thus, early markers of the disease are necessary, and several studies have noted the usefulness of tissue perfusion markers such as serum arterial lactate,[34,35] central or mixed venous saturation,[8] base excess,[36] PCO_2 gap,[37] or metabolic variables, such as glycemia as potential early markers.[38] Vital signs such as arterial pressure or diuresis are later markers and are often unchanged, even in patients in septic shock.[39]Since we don't have such material for the detection of early marker of sepsis our sepsis mortality is also higher. A French study involving 35 ICUs revealed that patients with severe sepsis and two or more dysfunctional organs had a greater mortality rate.[32]

In this study the common sepsis complication identified is ARF 37(61.7%) followed by ARDS 9(15.7%), Renal failure was the most common organ dysfunction that developed during the course of sepsis in our patients. This is important because renal failure has been associated with a particularly poor prognosis [7, 19]. This was similar to the study done Turkish in which the most common organ dysfunction that developed during sepsis was renal insufficiency (52·2%), followed by respiratory failure (30·4%) and DIC (30·4%).

53(88.3%) of the total 60 patients who is diagnosed as sepsis were started on IV antibiotics empirically of which only 7(11.7%) of them started iv antibiotics immediately and in remaining 46(76.7%) patients time of antibiotics were not documented.7(11.7%) were not received any antibiotics. in our study there is no time documentation in west India were SSC protocol were not practiced the median time from triage to antibiotics was 126 minutes and by three hours, nearly two-thirds of the patients had received antibiotic therapy A similar study in brazil in which About 90% of the patients received antibiotics prescribed by the ED physicians within an hour show that we lack organized protocol in our ED for sepsis management. Culture was requested only for 2(3.3%) of the septic patients who started iv antibiotics empirically in fact a limitation of this study. Such a finding is inconsistent with other sepsis studies, where culture is requested in almost all septic patients started empirically based on suspected site of infection in our study most antibiotics used were ceftriaxone , metrindazole, azitromycine ,vancomycine and ceftazidm.
The Surviving Sepsis Campaign's 2008 ―International guidelines for the management of severe sepsis and septic shock" recommended that appropriate antimicrobial therapy should be administered within 1 hour of severe sepsis or septic shock recognition [3, 5] Two important factors on antimicrobial therapy pertaining to adverse events and death in septic patients were the initiation of inappropriate antimicrobial therapy [2] and the delay of appropriate antimicrobial therapy [3]. Inappropriate empiric antimicrobial therapy was attributed to 46.5% of cases, with 35% overall mortality [3]

Only 31 (51.7%) of patient was given fluid from a total of 60 patient who is diagnosed as a case of sepsis from which 36(60%) of 60 patient were diagnosed as septic shock of which 5(13.9%) were not received iv fluid. the types of fluid

they were received was normal saline26 (43.3%) and only 5(8.3%) of the total 31 patient were received ringer lactate similarly , a retrospective hospital chart review from Zambia revealed that 79 (86%) of 92 hypotensive patients with suspected sepsis received no intravenous (IV) fluid resuscitation [18] this could be the reason for our high in hospital mortality rate.

the mean length of stay in the ED to our patients was 3.6 days and the hospital mortality was 56.7% which is lower compare to the result with the study done in west India in emergency department in which the Mean (SD) length of hospital stay was 9.5 (10.3) days. In hospital mortality was 25% also in the same study brazil show the median hospital length of stay was 10 (4.7–17) days this could be explained by the high in hospital mortality in our study correspond to the short length of time compared to those. Approximately 751 000 new cases of severe sepsis are diagnosed each year with about 500 deaths daily across the United States of America [USA] (4, 7, 8). Prolonged length of stay (LOS) is common, with the average patient requiring hospitalization for 19.6 days (9, 10).

Regarding ED disposition in this study 34(56.7%) died in the ED, 11(18.3%) of patient discharged from ED, 9 (15%) of patient admitted to ward 5(8.3%) admitted to ICU and 1(1.7%) of patient referred to other hospital compare to our result with west India Most patients (95%) were admitted to the ward; 1% went to the intensive care unit (ICU) and 2% died in the ED 3% discharged home from ED.

We could transfer only 1. 7% of the septic patients to the ICU from the ED which is very low compared to turkey in which 40·7% of the septic patients were transferred to the ICU and in west India 33.5% were referred to an ICU the low number of transfer could be due to a slow turnover of the ICU population and the limited numbers of ICU beds are usually occupied with long-standing patients who have chronic diseases and sometimes irreversible organ damage, and this precludes the timely transfer of patients who need to be admitted to the ICU.

Limitation of study

This study included patients evaluated in the ED of specialized tertiary health institution, and the result was not representative to those treated at other facilities. There is also a limitation in collecting data all patient with sepsis might be not included during the time period of data collection.

Conclusion and recommendation

Sepsis has a significant impact on public health and one of the leading causes of mortality in our ED .The epidemiology of adult sepsis is not well known in our country Ethiopia. Men have high prevalence of sepsis than women. Respiratory infection is the major source of sepsis followed by GU and GI the commonest risk factor identified is HIV followed by malignancy. So we recommend Educational campaigns are important to improving diagnosis and hence the treatment of sepsis. These campaigns must include ED training, so that teams responsible for the initial evaluation can adequately recognize and treat patients during the so called ―golden hour ―and I also recommend further study in this subject area.

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Questioner

This is a study that is undertaken to know the occurrence rate, demographics, clinical characteristics and to evaluate current emergency management of sepsis from the Adult Emergency department of Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia. We believe that knowing this basic information is mandatory to form sepsis guide line and to advocate emergency management of sepsis and a background for future research. Your participation is very crucial to this study. Thank you for participating!

Card No.___________

I. Basic information, write 'X' on the correct answer

1. **Age in years________**
   Sex ☐Male ☐emale
2. **Occupation ☐armer ☐udent ☐ly laborer Go☐ Employee**
   Unemployed ☐ If other please sp☐ify____________
3. **Residence ____**

   ☐Addis Ababa 6☐mia ☐ amhara

   ☐igray ☐ debub ☐ somali

☐ if other please specify________________

II. what was the patient current sign and symptoms

a. **Respiratory symptoms**
b. **GI symptoms**
c. **GU symptoms**
d. **Soft tissue infection**
e. **CNS symptoms**
f. **If Others please specifies**

III. Which of the systemic inflammatory response syndrome (SIRS) criteria meet to diagnose sepsis?

1. **Temperature >38.3ºC**
2. **Temperature <36ºC**
3. **Heart rate >90 beats/min**
4. **Respiratory rate >20 breaths/min**
5. **WBC >12,000 cells/mm3**

6. **WBC <4000 cells/mm3**

IV. **What is the suspected source of infection for the sepsis?**

1. **Pulmonary**
2. **Gastrointestinal**
3. **Genitourinary**
4. **Skin/soft tissue infection**
5. **unknown**
6. **if others please specifies________________**

V. **what was the predisposing factors for the above diagnosis**

1. **HIV/AIDS**
2. **Autoimmune disease, like SLE**
3. **DM**
4. **Elderly**
5. **Chemotherapy**
6. **Malignancy**
7. **Malnutrition**
8. **Steroid use**
9. **Urinary catheterization**
10. **Surgical procedure**
11. **TB**
12. **If others please specifies____________________**

VI. **What was the patient ED diagnosis**

1. **Sepsis**
2. **Sever sepsis**
3. **Septic shock**

VII. **Any sign and symptoms of organ failure**

1. **Decreased urine out put**
2. **Failure to maintain oxygen saturation**
3. **Poor peripheral perfusion(systolic BP less than 90)**
4. **Decreased level of consciousness**
5. **Bleeding tendency**
6. **Yellowish discoloration of the eye**
7. **Glasgow coma score**

VIII. **Laboratory and imaging studies suggest the organ failure?**

1. **Platelet count**
2. **Serum creatinine**

3. **Serum bilirubin**
4. **Coagulation profile PT__PTT____INR____**
5. **Chest x ray**
6. **If other please specifies**

IX. What is the patient sepsis complication based on the above evidence

1. **ARDS**
2. **ARF**
3. **CNS Dysfunction**
4. **Hepatic failure**
5. **DIC**
6. **Stress ulcer and bleeding**

X. how was the patient managed in the ED?

1. **IV fluid**
   - **Yes________**
   - **No________**
2. **How much IV fluid is given if there is documentation______**
   - **Over 6hrs**
   - **Over 12hrs**
   - **Over 72hrs**
3. **Oxygen**
4. **Cardiac monitor**
5. **Catheterized for urine output monitor**
6. **IV antibiotics**
   - **What antibiotics please specifies________**
   - **Time of antibiotics if it is documented_________**
7. **Inotropic therapy**
   - **Which inotropic agent please specifies______**
8. **Steroids**
9. **Blood product transfusion**
10. **What is the final plan of disposition from ER**

XI. What is the final patient disposition from ER?

1. **Admitted to ward**
2. **Admitted to ICU**
3. **Died in the ED**
4. **Discharged from ED.**

XII. For how long did the patient stay in the ED before discharge in days or hours____________

Thank you !!!