
**CORRELATION BETWEEN MEAN PLATELET VOLUME AND
SEVERITY OF SEPSIS IN PATIENTS ADMITTED IN THE
INTENSIVE CARE UNIT AT KLE DR.PRABHAKAR KORE HOSPITAL
AND MEDICAL RESEARCH CENTRE, BELAGAVI –
A ONE YEAR CROSS-SECTIONAL STUDY**

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IN

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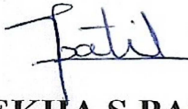
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ABSTRACT

TITLE: CORRELATION BETWEEN MEAN PLATELET VOLUME AND SEVERITY OF SEPSIS IN PATIENTS ADMITTED IN THE INTENSIVE CARE UNIT AT KLE DR.PRABHAKAR KORE HOSPITAL AND MEDICAL RESEARCH CENTRE, BELAGAVI – A ONE YEAR CROSS-SECTIONAL STUDY

BACKGROUND: Sepsis is defined as a life threatening organ dysfunction caused by a dysregulated host response to infection. APACHE – II is a scoring system which is used to classify the severity of sepsis. It is done using patient parameters measured within the first 24 hours after admission to the Intensive Care Unit. A higher score is associated with a more adverse outcome. In an inflammatory process such as sepsis, there is an interplay between the immunological and the haemostatic systems. Platelets while being primarily haemostatic cells, show characteristic changes in morphology in response to inflammatory mediators. These morphological changes can be assessed using the Platelet Indices which are routinely measured by the 7 part CBC analyser, one of which is the Mean Platelet Volume.

AIM: To establish the correlation between the Mean Platelet Volume and severity of sepsis based on APACHE II score in patients of sepsis admitted to the Intensive Care Unit of KLE's Dr.Prabhkar Kore Hospital and MRC.

METHODS: In this study, 126 adult patients admitted to the ICU of our hospital, who were diagnosed as cases of sepsis based on the Sepsis – 3 guidelines, were enrolled into the study. The Mean Platelet Volume was noted on the day of admission. Clinical and laboratory parameters required for the calculation of APACHE II score were obtained. Statistical analyses comparing the Mean Platelet Volume to the calculated APACHE II score, as well as other parameters was done and inferences made.

RESULTS: A positive correlation between Mean Platelet Volume and the APACHE – II score was noted with a p value of 0.002, i.e. higher Mean Platelet Volume on the day of admission was associated with a higher APACHE – II score. A positive correlation between the Mean Platelet Volume and Male gender was also noted, with a p value of 0.048. A correlation between the Mean Platelet Volume and the length of hospital stay was noted, a higher MPV being associated with a longer duration of hospital stay, regardless of outcome (P = 0.038).

KEY WORDS: Sepsis, Mean Platelet Volume, Septic shock, ICU, inflammation, Platelet indices

LIST OF ABBREVIATIONS

ADP	Adenosine Diphosphate
APACHE II	Acute Physiology and Chronic Health Evaluation II
DIC	Disseminated Intravascular Coagulation
ICU	Intensive Care Unit
IL 1	Interleukin 1
IL 6	Interleukin 6
MPV	Mean Platelet Volume
PAF	Platelet Activating Factor
SIRS	Systemic Immune Response Syndrome
SOFA	Sequential Organ Failure Assessment
TNF ALPHA	Tumour Necrosis Factor Alpha
TXA2	Thromboxane 2

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INTRODUCTION

Sepsis is a life-threatening condition which is characterized by a dysregulated host immune response to infection, leading to multi-system organ dysfunction.^[1] It remains a significant cause of morbidity and mortality worldwide, posing a considerable challenge to healthcare systems.

Mean Platelet Volume (MPV), a marker of platelet size and activity, has garnered attention in recent years as a potential prognostic indicator in various diseases, including sepsis. The Acute Physiology and Chronic Health Evaluation II (APACHE II) score, widely used in the Intensive Care Units (ICUs), provides a standardized method for assessing the severity of critical illness and for prognostication of the condition^[12].

Platelets play a crucial role in haemostasis and the host response to infection. Mean Platelet Volume (MPV) is a measure of the average size of platelets in the blood and is often considered a marker of platelet activity and function. Higher MPV levels are associated with increased platelet activation and turnover, reflecting a more reactive state. While MPV is influenced by various factors, including age, gender, and underlying medical conditions, alterations in MPV have been observed in several inflammatory and thrombotic disorders^[10].

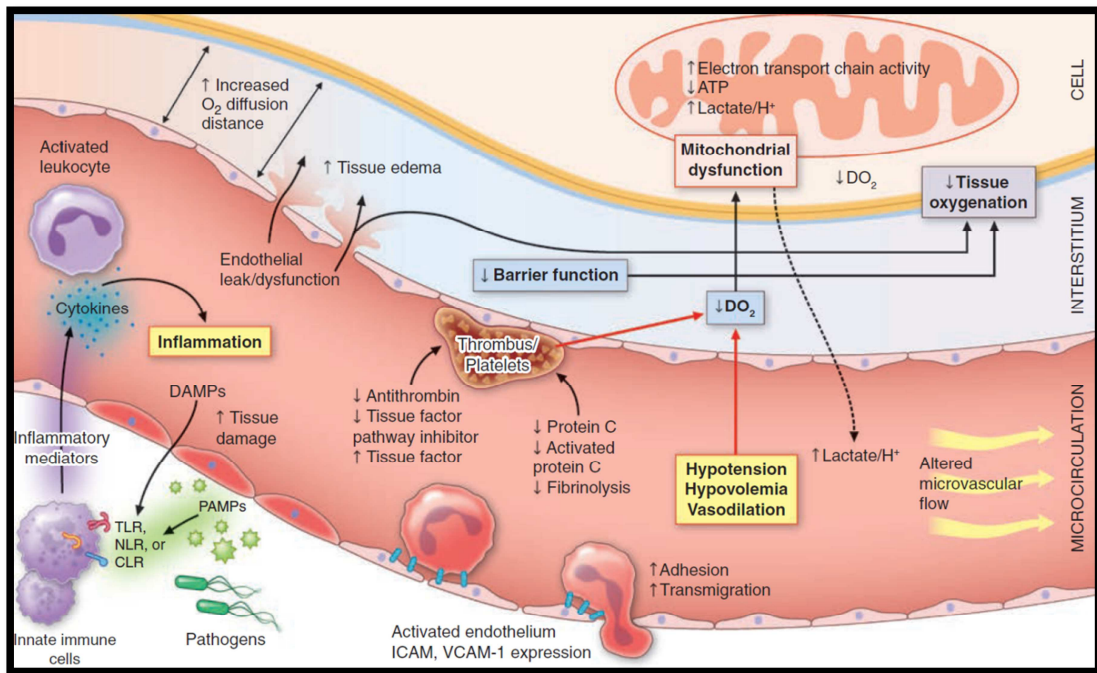


Fig.1 Pathophysiology of sepsis

Sepsis induces a complex cascade of inflammatory and coagulation responses, leading to endothelial dysfunction, microvascular thrombosis, and, ultimately, organ dysfunction. Platelets not only contribute to the host immune defence; they also conversely contribute to pathological thrombosis^[8]. Elevated MPV levels have been reported in patients with sepsis, suggesting increased platelet activation and consumption in response to infection.

The APACHE II score, initially developed in the early 1980s, is a widely used severity-of-illness classification system for critically ill patients. It incorporates physiological parameters, such as vital signs, laboratory values, and comorbidities, to assess the severity of critical illness and predict patient outcomes. Components of the APACHE II score include variables such as temperature, Mean Arterial Pressure, arterial pH, serum Creatinine, hematocrit, and Glasgow Coma Scale score, among others.

APACHE II SCORE										
AGE Points		CHRONIC HEALTH Points				TOTAL APACHE SCORE = AP + CHP + APS				
≤ 44y	0	Non-operative, or emergency post-op & any conditions below*				Sum Age Points (AP) + Chronic Health Points (CHP) + Acute Physiologic Score (APS) points.				
45-54y	2	Elective operation & any conditions below*				*1 Sum all variables 1-12 for Acute Physiologic Score (APS) (use one variable each for 5 and 9).				
55-64y	3	*Cirrhosis w/ portal Hypertension or encephalopathy; class IV angina, chronic hypoxia, ↑CO ₂ or polycythemia; chronic dialysis; immunocompromised				Use the worst value from the preceding 24h.				
65-74y	5					APACHE II: a severity of disease classification system.				
≥75y	6					Crit Care Med 1985;13:818-29.				
ACUTE PHYSIOLOGIC SCORE*1 (APS)										
Physiologic Variable		Points								
		4	3	2	1	0	1	2	3	4
1	Temp °F	≤85.9	86.0-89.5	89.6-93.1	93.2-96.7	96.8-101.2	101.3-102.1		102.2-105.7	≥105.8
	°C	≤29.9	30-31.9	32-33.9	34-35.9	36 - 38.4	38.5-38.9		39-40.9	≥41
2	HR, bpm	≤39	40-54	55-69		70-109		110-139	140-179	≥180
3	MAP, mmHg	≤49		50-69		70-109		110-129	130-159	≥160
4	RR, bpm	≤5		6-9	10-11	12-24	25-34		35-49	≥50
5	Oxygenation: Use A-a Gradient (5a) if FiO ₂ ≥0.5 or use PaO ₂ (5b) if FiO ₂ <0.5 (see page 17)									
5a	A-a Gradient					<200		200-349	350-499	≥500
5b	PaO ₂	≤54	55-60		61-70	>70				
6	Na ⁺ (S, mmol/L)	≤110	111-119	120-129		130-139	150-154	155-159	160-179	≥180
7	K ⁺ (S, mmol/L)	≤2.4		2.5-2.9	3.0-3.4	3.5-5.4	5.5-5.9		6.0-6.9	≥7.0
8	Cr (S, mg/dL)			<0.6		0.6-1.4		1.5-1.9	2.0-3.4	≥3.5
9	Arterial pH is preferred. Use venous HCO ₃ if no ABGs.									
9a	pH (arterial)	≤7.14	7.15-7.24	7.25-7.32		7.33-7.49	7.5-7.59		7.6-7.69	≥7.7
9b	HCO ₃ (venous)	≤14	15-17.9	18-21.9		22-31.9	32-40.9		41-51.9	≥52
10	WBC, cells/uL	≤1.0		1.0-2.9		3.0-14.9	15-19.9	20-39.9		≥40
11	Hct, %	≤20		20-29.9		30-45.9	46-49.9	50-59.9		≥60
12	GCS coma	Score = 15 – GCS Score (see below, Record e.g.: "GCS 9 = E2 V4 M3 at 17:35h")								
Score		Mortality								
0 - 4		4%								
5 - 9		4%								
10 - 14		15%								
15 - 19		25%								
20 - 24		40%								
25 - 29		55%								
30 - 34		75%								
> 34		85%								
GLASGOW COMA SCALE (GCS) *Teasdale G, Jennett B. Lancet 1974;2:81-84.										
EYE Opening		Best VERBAL		Best MOTOR		Points				
		oriented		follows commands		6		SCORE: Sum Points (eye+verbal+motor categ). Severe ≤ 8. Mod = 9-12. Minor ≥ 13.		
spontaneous		confused		localizes pain		5				
to command		inappropriate words		withdraws to pain		4				
to painful stimuli		incomprehensible		flexor response		3				
no response		no response		extension (abnl)		2				
		no response		no response		1				

Fig 2 – Parameters of APACHE II score

The exact mechanisms underlying the correlation between MPV and the severity of sepsis remain incompletely understood. However, several factors may contribute to this relationship. First, sepsis-induced inflammation and endothelial activation can lead to increased platelet production and turnover, resulting in larger and more reactive platelets, as reflected by elevated MPV levels. Second, platelet activation in sepsis may contribute to the formation of microthrombi and disseminated

intravascular coagulation (DIC), further exacerbating organ dysfunction and tissue injury.^[8]

In an inflammatory process such as sepsis, there is an interplay between the immunological and the hemostatic systems. Platelets while being primarily hemostatic cells, show characteristic changes in morphology in response to inflammatory mediators.^[3]

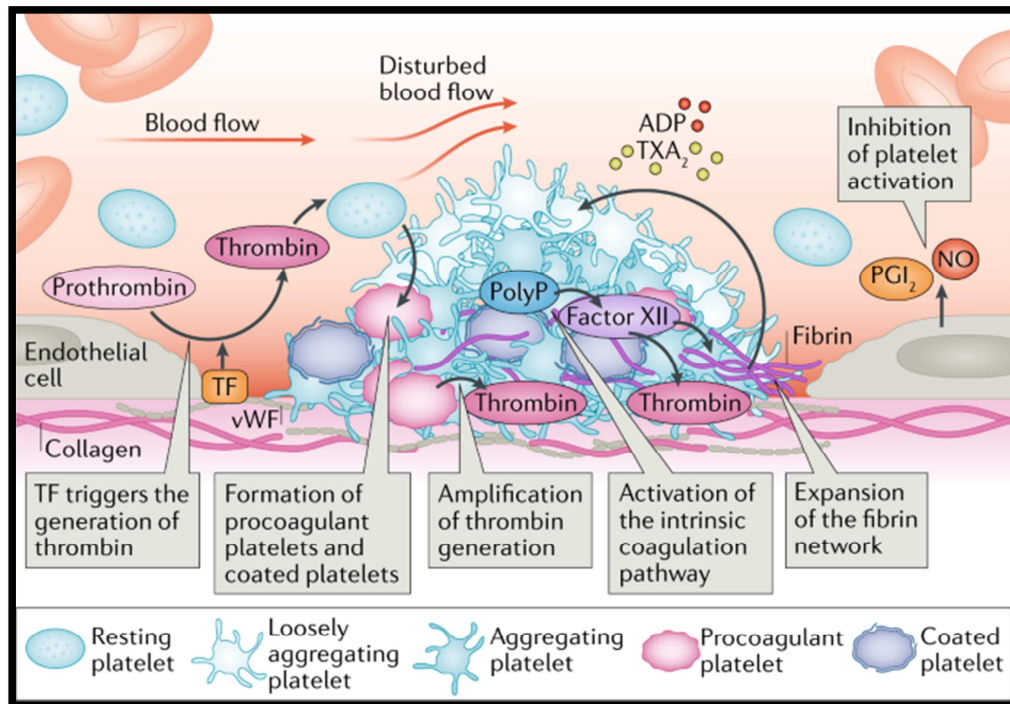


Fig. 3 – Platelet physiology

Platelets are the first to accumulate at any site of damage, where they exhibit a change in shape by forming pseudopodia and then release the contents of their cytoplasmic granules when activated by substances such as ADP, TXA₂, PAF and inflammatory cytokines such as IL-1, IL-6 and TNF – alpha.^[4]

These morphological changes can be assessed using the Platelet Indices which are routinely measured by the 7 part CBC analyzer, one of which is the Mean Platelet Volume.

The correlation between MPV and the severity of sepsis based on APACHE II scores has important clinical implications. Elevated MPV levels may serve as a prognostic indicator of disease severity and poor outcomes in patients with sepsis, prompting closer monitoring and aggressive management strategies. Incorporating MPV measurements into existing clinical scoring systems, such as APACHE II, could enhance their predictive accuracy and help guide therapeutic interventions.

Future research directions may focus on elucidating the mechanistic pathways linking MPV to the pathophysiology of sepsis and exploring its potential as a therapeutic target. Additionally, large-scale prospective studies are needed to validate the prognostic value of MPV in septic patients across different populations and settings. Ultimately, a better understanding of the correlation between MPV and the severity of sepsis could lead to improved risk stratification, management strategies, and patient outcomes in this challenging yet very salvageable clinical condition.

In conclusion, Mean Platelet Volume (MPV) holds promise as a potential biomarker for assessing the severity of sepsis, based on its correlation with the Acute Physiology and Chronic Health Evaluation II (APACHE II) score. Elevated MPV levels reflect increased platelet activation and turnover, which may contribute to the pathophysiology of sepsis and predict adverse outcomes. Further research is warranted to elucidate the underlying mechanisms and validate the prognostic value of MPV in septic patients. Integrating MPV measurements into clinical practice could enhance risk stratification and guide therapeutic decision-making, ultimately improving patient care, streamlining resource utilisation and outcomes in sepsis.

AIM

To establish the correlation between the Mean Platelet Volume and severity of sepsis based on APACHE II score in patients of sepsis admitted to the Intensive Care Unit of KLE's Dr.Prabhkar Kore Hospital and MRC.

REVIEW OF LITERATURE

Sepsis

Sepsis is broadly defined as a life-threatening organ dysfunction caused by a dysregulated host response to infection^[1]. The inflammatory response which is set up to combat the infection ends up dealing collateral damage to the vital organs of the body. Clinically, organ dysfunction is represented by an increase in the SOFA (Sequential Organ Failure Assessment) score of 2 points or more, which is associated with an in-hospital mortality of more than 10% as per the Sepsis-3 guidelines.^[1]

Sepsis was initially defined as simply the presence of an infection and the patient being in SIRS (Systemic Immune Response Syndrome). This definition was established in 1992^[2]. A patient was diagnosed to be in sepsis based on the presence of a suspected infection and clinical or microbiological evidence of infection in the presence of at least two out of the four SIRS criteria which are:

1. Body temperature above 38 degrees Celsius or below 36 degrees Celsius
2. Heart Rate greater than 90 beats per minute
3. Respiratory rate greater than 20 cycles per minute (or) partial pressure of carbon dioxide less than 4.3 kPa
4. Neutrophilia above 12,000 per mm³ or neutropenia below 4000 per mm³ with 10% or more of non-segmented peripheral blood neutrophils.

This definition, however, was not specific and often over diagnosed patients to be in sepsis, even though they might have been having a normal inflammatory response to an infection or if they were having an inflammation due to some non-infective aetiology.

The Sepsis-2 guidelines which were established in 2001 and 2003 included a wider variety of clinical and laboratory parameters which helped to stratify patients into different degrees of sepsis, hence aiding clinical decision making and resource allocation ^[3] . However, the revised guideline did not resolve the issue of lack of specificity as many patients who were not in sepsis were diagnosed with the same.

The Sepsis-3 guidelines did away with the SIRS criteria and instead incorporated the SOFA score – the Sepsis-related Organ Failure Assessment ^[1] . A change of 2 points or more is associated with an in-hospital mortality of 10 percent or more. The definition of septic shock is also more specific in the Sepsis 3 guidelines: severe hypotension requiring intravenous vasopressor medication to sustain mean arterial pressure (MAP) >65 mmHg and serum lactate levels greater than 2 mmol/L after appropriate management of hypovolemia ^[4] . Presence of septic shock is associated with in-hospital mortality of more than 40% ^[1] .

The SOFA score encompasses both clinical and extensive laboratory criteria, which can be cumbersome and delay intervention in the emergency setting. In view of this, the qSOFA (quick SOFA) score was implemented in clinical practise. The qSOFA score does not definitively diagnose sepsis in a patient in the emergency setting, however it does aid in stratification of patients outside the ICU and predict the likelihood of clinical deterioration, enabling faster decisions to be taken regarding intervention ^[5] .

It has been observed that while following the Sepsis-3 guidelines, fewer patients are given the diagnosis of sepsis, however it is more specific than when patients are assessed using the Sepsis-2 guidelines, as evidenced by the higher mortality of the patients who are diagnosed as per the Sepsis-3 criteria. ^[6]

The initial trigger for sepsis is often an invading pathogen, be it bacterial, viral, fungal, or parasitic. In response, the immune system mobilizes an array of inflammatory mediators, including cytokines, chemokines, and prostaglandins, to combat the infection. While this immune response is typically protective, in sepsis, it becomes maladaptive, leading to a cascade of events that culminates in tissue injury, microvascular dysfunction, and impaired organ perfusion. ^[7]

The inflammatory mediators released by the white blood cells act on the endothelial cells of the blood vessels and increase the vascular permeability by both disruption of the intercellular junction proteins as well as by increasing the shear stress exerted by the flowing blood on the endothelial cells via vasodilation. ^[8] This increase in vascular permeability results in leakage of fluid from the intravascular compartment into the interstitial space, causing tissue oedema and hypoperfusion.

Hypoperfusion leads to cellular hypoxia, subsequent organ dysfunction and lactic acidosis. The functioning of the kidneys, liver, central nervous system and lungs are hence adversely affected, resulting in the constellation of clinical features that one encounters in a case of sepsis in multi-organ dysfunction. ^[8]

The septic state provides a pro thrombotic milieu by virtue of the action of the inflammatory mediators on the endothelial cells, rendering them damaged and exposing the Tissue Factor to the plasma which induces the coagulation cascade and the subsequent formation of fibrin plugs, which further entrap the platelets. ^[9] The platelets become activated on getting entrapped within the fibrin network or on exposure to the inflammatory mediators such as IL-1 , IL-6 and TNF-alpha: they exhibit an increase in size and form pseudopodia, followed by the release of the contents of the cytoplasmic granules they bear. ^[10] This sets into motion the cycle of Disseminated Intravascular Coagulation (DIC) in sepsis, a state in which there is both

formation of thrombi as well bleeding sites, contributing to the multi-system morbidity and mortality encountered in sepsis. Overall, endothelial injury and the occurrence of microvascular thrombosis result in impaired oxygen delivery and contribute to multi-organ failure.

Sepsis places a significant burden on the healthcare system worldwide, with an incidence of around 48.9 million cases in the year 2017 with sepsis related mortality tallying to around 11 million. There is significant variation in the incidence and mortality of sepsis between different regions of the world, with the highest burden being observed in Sub-Saharan Africa, Oceania, south Asia, east Asia and southeast Asia. ^[11]

APACHE-II

The APACHE II (Acute Physiology and Chronic Health Evaluation II) score is a severity-of-disease classification system in intensive care medicine. It was introduced in 1985 as an updated version of the original APACHE system. The purpose of the APACHE II score is to assess the severity of illness and predict the risk of mortality for patients admitted to the intensive care units (ICUs). This scoring system considers various physiological parameters, age, and chronic health conditions to provide a numerical score that correlates with the patient's risk of mortality.

The APACHE II score is composed of three main components: acute physiology score, age score, and chronic health score. Each component contributes to the overall score, which ranges from 0 to 71. The higher the score, the greater the severity of illness and the higher the risk of mortality.

1. **Acute Physiology Score:** This component evaluates the patient's physiological status based on several physiological variables measured within the first 24 hours of ICU admission. These variables include vital signs such as temperature, heart rate, respiratory rate, blood pressure, arterial pH, and various laboratory values such as serum electrolytes, creatinine, haematocrit, and white blood cell count. Each variable is scored based on its deviation from the normal range, with higher scores indicating more severe derangement. The maximum score for the acute physiology component is 67.
2. **Age Score:** Age is a significant factor in determining the risk of mortality, as older patients tend to have higher mortality rates compared to younger patients. The age score assigns points based on the patient's age, with higher scores for older age groups. The maximum age score is 6.
3. **Chronic Health Score:** This component accounts for the presence of certain chronic health conditions that may influence the patient's prognosis. These conditions include various comorbidities such as liver disease, cancer, and immunocompromised states. Each chronic health condition is assigned a specific score, with higher scores indicating a greater burden of chronic illness. The maximum chronic health score is 5.

Once the acute physiology, age, and chronic health scores are calculated, they are combined to obtain the total APACHE II score. This score can then be used to estimate the patient's risk of mortality.

The APACHE II score has been shown to have value in prognosis early during ICU admission owing to its comprehensive nature which takes into consideration various hemodynamic as well as biochemical parameters simultaneously ^[12] .

A score of $\geq 15-17$ in particular is significantly and consistently associated with higher rates of mortality in patients admitted to ICU due to sepsis ^{[13][14]}.

The APACHE II score has been proven to effectively risk stratify patients of sepsis, and this risk stratification correlated with the observed mortality outcomes ¹⁵
¹⁶ It has also been demonstrated as a sensitive (if not entirely specific) independent predictor of mortality outcome. ^[17]

In a comparative study of APACHE II score, SAPS II score and SOFA score, it was observed that APACHE II had the highest sensitivity at the end of 24 and 48 hours as compared to the other 2 scores. However, it should also be noted that the combination of scores had a slightly better sensitivity than the use of individual score. ^[18]

The APACHE III score has been developed after APACHE II, however, it has been demonstrated there is statistically no major difference in the prediction of mortality for patients of sepsis ^[19].

APACHE II is comparable to the SAPS II score in predicting mortality of critically ill patients. ^[20]

Studies have shown that combining APACHE II with other biomarkers (such as suPAR and serum soluble urokinase plasminogen activator receptor) is more accurate in predicting mortality than using the APACHE II score alone. ^[21]

Overall, the available evidence supports APACHE II score as an accurate and independent predictor of mortality risk in patients of sepsis. It provides effective risk stratification and prognostic information early during the course of sepsis. APACHE II score has utility for assessing severity and predicting outcomes in sepsis, although

combining it with other clinical scores or biomarkers may further improve prognostic ability. Limitations of single centre studies prevent strong generalizations.

Mean Platelet Volume (MPV)

Platelets, also known as thrombocytes, are small, disc-shaped cell fragments derived from megakaryocytes in the bone marrow. They play a pivotal role in haemostasis and thrombosis, preventing excessive bleeding upon vessel injury. Platelets adhere to exposed collagen at the site of injury, become activated, and aggregate to form a haemostatic plug. Additionally, they release various mediators that facilitate vasoconstriction and coagulation cascade activation.

The platelets become activated on getting entrapped within the fibrin network or on exposure to the inflammatory mediators such as IL-1 , IL-6 and TNF-alpha: they exhibit an increase in size and form pseudopodia ^[10] . This increase in size which is associated with inflammation can be measured by the Mean Platelet Volume (MPV).

Mean Platelet Volume (MPV) measures the average size of platelets in a blood sample. It is determined using automated haematology analysers and is expressed in femtoliters (fL). Platelet size is indicative of platelet activity and functionality. Larger platelets are typically younger and more reactive, exhibiting enhanced thrombotic potential, whereas smaller platelets are often associated with decreased activity and diminished functionality ^{[22] [23]} .

The normal range of Mean Platelet Volume is 7 to 11.5 femtolitres ^{[24][25]} in adults who are not pregnant. The sample for testing is to be taken in a Lavender-topped EDTA tube.

A study conducted by Kim CH, Kim SJ, Lee MJ, Kwon YE, Kim YL, Park KS, et al (2015, South Korea) found that an increase in MPV from the baseline is associated with mortality in patients with severe sepsis or septic shock. The change in MPV between admission day and day 3 was found to have a role in predicting the 28-day mortality in sepsis, suggesting the continuous monitoring of MPV may be useful to stratify mortality risk in patients with severe sepsis. ^[26]

According to research undertaken by E.Guclu, Y.Durmaz, O Karabay in 2013 a significant difference in the Mean Platelet Volume between patients of established sepsis and a control group of patients who were not in sepsis was established, suggesting the correlation between Mean Platelet Volume and sepsis. However, this correlation was merely noted and not quantified vis a vis any scoring system for sepsis such as APACHE II. ^[27]

Mangalesh, S., Dudani, S. & Malik, A. in 2021 analysed the change in platelet indices between day of admission and day 3 (Δ MPV72h) in patients of sepsis. The retrospective cohort study found that non-surviving sepsis patients had significantly higher admission MPV and PDW levels compared to survivors. MPV and PDW increased over time in non-survivors but decreased in survivors. MPV and PDW on admission, and changes in MPV and platelet count at 72 hours, were independent predictors of mortality. Cutoff values of 10.25 fL for MPV and 12.6% for PDW had good sensitivity and specificity for mortality prediction. This suggests admission MPV and PDW, and their trends, could help predict outcomes in sepsis patients ^[28].

Kitazawa T, Yoshino Y, Tatsuno K, Ota Y, and Yotsuyanagi H. in 2013 conducted a 4 year retrospective study to assess the changes in platelet indices and correlation with the severity of blood stream infections. It was observed that there was a significant increase in the Mean Platelet Volume in the non survivors as compared

to the survivors of blood stream infection. Mean Platelet Volume increase was hence established as a negative prognostic indicator in patients of blood stream infection. [29]

A retrospective study on patients in sepsis during the period of January 2012 to December 2012 was conducted by Gao, Y., Li, Y., Yu, X., Guo, S., Ji, X., Sun, T et al and published in 2014 which analysed the platelet indices during the first 5 days of admission and the last day of admission. It was observed that Mean Platelet Volume was significantly higher in non survivors and that amongst all the platelet indices measured, MPV had the highest area under the receiver operating characteristic curve. [30]

Similarly, several other studies have been undertaken which show a correlation between the dynamic change in MPV (along with other platelet indices) and mortality outcome. However, the exact severity of sepsis as per a score was not undertaken in these studies and mortality was taken as the overall determinant of sepsis severity. [31] [32]

The study undertaken by Aydemir H, Piskin N et al evaluated platelet count and mean platelet volume (MPV) kinetics in adults with microbiologically proven nosocomial sepsis. MPV significantly increased for the first 3 days in Gram-positive sepsis and all 5 days in Gram-negative and fungal sepsis ($p < 0.001$). This suggests sepsis, especially fungal sepsis, is associated with increased MPV and provides evidence that sepsis leads to measurable changes in platelets and MPV. [33]

The retrospective case-control study conducted by Ates S, Oksuz H, Dogu B et al found significantly higher MPV and MPV/platelet count ratio in sepsis and SIRS groups compared to healthy controls. However, MPV and MPV/platelet count ratio did not significantly differ between sepsis and SIRS groups. MPV had low sensitivity

and specificity for diagnosing sepsis or SIRS. This suggests MPV elevations occur in inflammatory conditions but have limited utility differentiating sepsis from non-infectious SIRS. ^[34]

A retrospective study conducted by Al Saleh K, AlQahtani RM in a tertiary care centre in Saudi Arabia enrolled around 200 patients admitted to the ICU who were in sepsis and analysis was made regarding the platelet count and its correlation with the APACHE II score. It was observed that the lowest platelet count on admission as well as the decline of platelet count over the course of ICU admission correlated positively with the APACHE II score calculated at admission ^[35].

This study suggests the possibility of a direct connection between platelet proliferation index dynamics and the APACHE II score, warranting further evaluation of the interplay between platelet indices such as MPV and the complex clinical phenomenon of sepsis, as has been done in our study.

MATERIALS AND METHODS

Source of Data: Patients above the age of 18 years admitted to the Intensive Care Unit of KLEs Dr.Prabhakar Kore Hospital and Medical Research Centre, Belagavi, with diagnosis of sepsis during the 1 year period from February 2023 to January 2023.

Study Design: Cross Sectional Study

Study Period: February 2023 to January 2024

Sample Size: The sample size is 126.

The minimum sample size formula based on prevalence rate is

$$n = \frac{z_{\alpha}^2 P(1-P)}{d^2}$$

where P is the prevalence rate of sepsis and d is the percentage likely difference in the prevalence.

z_{α} is linked with the level of significance. For 5% level of the significance $z_{\alpha} = 1.96$.

Ref:

The parameter considered in the calculation is the rate of prevalence of sepsis in India according to sepsis 3 criteria. ^[43]

With P = 33.2% and d = 25% of P = 19.5%

Sampling technique: Cross sectional study, all patients fulfilling the inclusion criteria will be included in the study, statistical analysis will be done by SPSS using descriptive analysis and Chi-Square test.

Inclusion Criteria: Age 18 years or older

Diagnosis of sepsis according to The Third International Consensus Definitions for Sepsis and Septic Shock 2016

Patients who consent to participate in the study

Exclusion Criteria: Pregnant women

Patients with active hemorrhage

Patients with hematological diseases (including hypersplenism, lymphoma or leukemia)

Rheumatism

Bone marrow diseases

Patients who have been transfused with blood or platelets prior to their admission

Patients less than 18 years of age

Patients in whom day 1 of ICU was missed

Study protocol:

- Patients fulfilling the inclusion criteria will be enrolled in the study after taking their informed consent.
- The study subjects will be categorised based on the severity of sepsis determined using the APACHE II score within 24 hours of admission to the Intensive Care Unit by measuring the relevant blood parameters and eliciting the appropriate clinical signs via thorough clinical examination.
- A blood sample will be sent for CBC in lavender coloured EDTA vial. Mean Platelet Volume (MPV) will be assessed in this sample along with the WBC

total count which is required for the APACHE – II scoring, thereby eliminating the need to draw an additional sample.

- The APACHE – II score and the Mean Platelet Volume measured on day 1 of admission for each patient will be tabulated in Excel sheets
- Statistical Analysis will be done via descriptive analysis using SPSS and Chi Square test.

Data collection procedure:

- The study subjects will be categorised based on the severity of sepsis determined using the APACHE II score within 24 hours of admission to the Intensive Care Unit by measuring the relevant blood parameters and eliciting the appropriate clinical signs via thorough clinical examination.
- A blood sample will be sent for CBC in lavender coloured EDTA vial. Mean Platelet Volume (MPV) will be assessed in this sample.
- The APACHE – II score and the Mean Platelet Volume measured on day 1 of admission for each patient will be tabulated in Excel sheets

Data processing and analysis/statistical analysis:

- Statistical Analysis will be done via descriptive analysis using SPSS and Chi Square test

RESULTS

Age and Gender

A total of 126 study participants were included in the analysis. Majority of the study participants were above 60 years of age (n=83, 65.9%) (Table 1 and Figure 1). Mean age of the study participants was 64 ± 17 years. Majority of the study participants were male (n=71, 56.3%; Female: n=55, 43.7%) (Table 2 and Figure 2).

Table 1: Distribution of age

Age	Number (%)
25 and below	7 (5.5%)
26-45	13 (10.3%)
46-60	23 (18.3%)
Above 60	83 (65.9%)

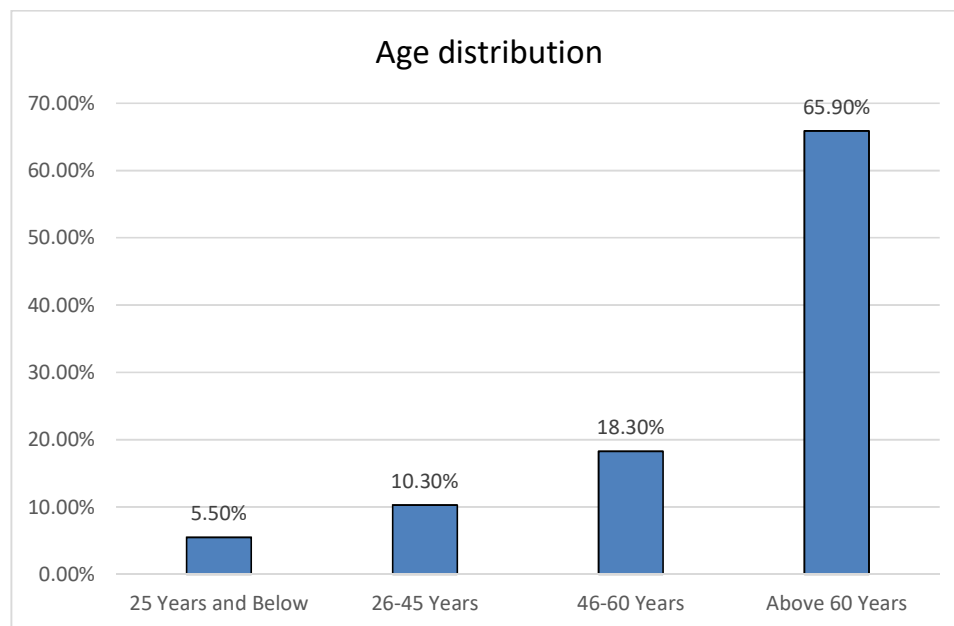


Figure 4: Age distribution among study participants

Table 2: Gender of study participants

Gender	Number (%)
Male	71 (56.3%)
Female	55 (43.7%)

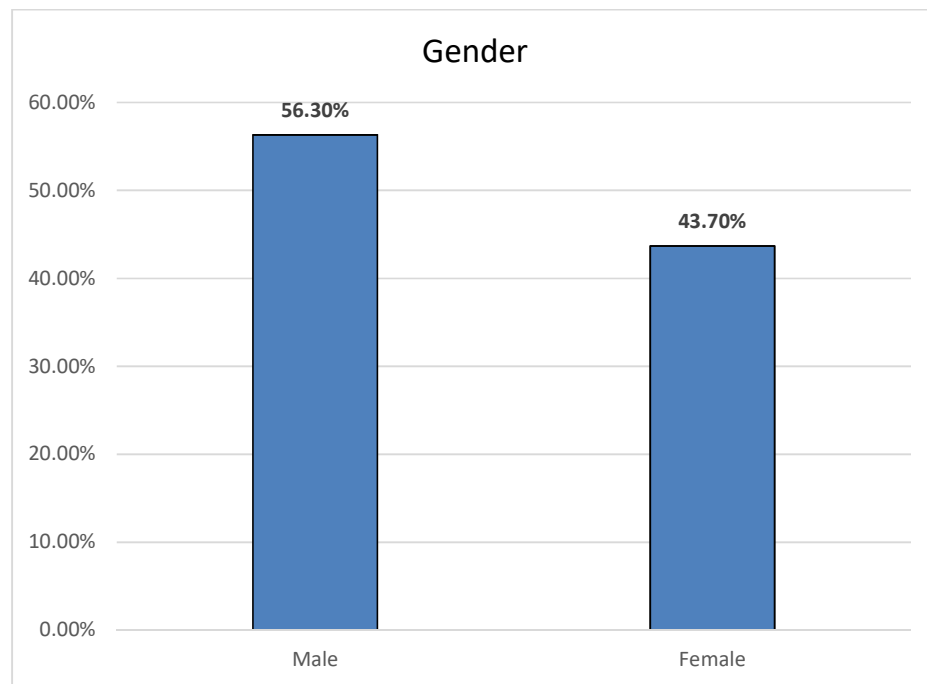


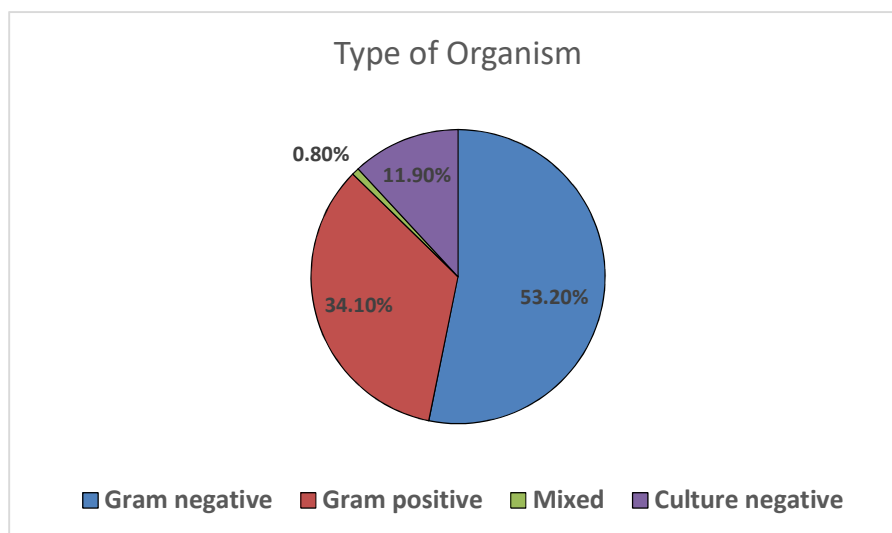
Figure 5: Gender distribution of study participants

Type of organism

Gram-negative organism was found in 53.2 % (n=67) and gram-positive organism was isolated in 34.1 % (n=43) of study participants. One study participant had both gram-negative and gram-positive organisms (0.8 %). Negative culture report was reported in 11.9% (n=15) of the study participants (Table 3 and Figure 3).

Table 3: Type of organism

Type of organism	Number (%)
Gram negative	67 (53.2%)
Gram positive	43 (34.1%)
Mixed	1 (0.8%)
Culture negative	15 (11.9%)

**Figure 6: Type of organism**

*Mean Platelet Volume and Type of Organism***Table 4: Comparison of mean platelet volume with type of organism.**

Type of organism	Mean \pm SD	Median (Min, Max)	p-value
Gram positive	9.76 \pm 1.65	9.8 (6.7, 12.7)	0.7269 ^{MW}
Gram negative	9.88 \pm 1.62	10 (6.7, 12.9)	

Abbreviation: MW – Mann Whitney U test.

The mean MPV for Gram-positive infections is 9.76 \pm 1.65, with a median of 9.8 (range 6.7 to 12.7), while for Gram-negative infections, the mean MPV is 9.88 \pm 1.62, with a median of 10 (range 6.7 to 12.9). From Mann Whitney U test, it is observed that, there is no significant difference in the distribution of MPV between the two groups (p-value = 0.7269). Therefore, MPV does not appear to be a useful marker for distinguishing between Gram-positive and Gram-negative infections.

Note: Mixed category had only one subject with an MPV value of 11, was excluded from the analysis.

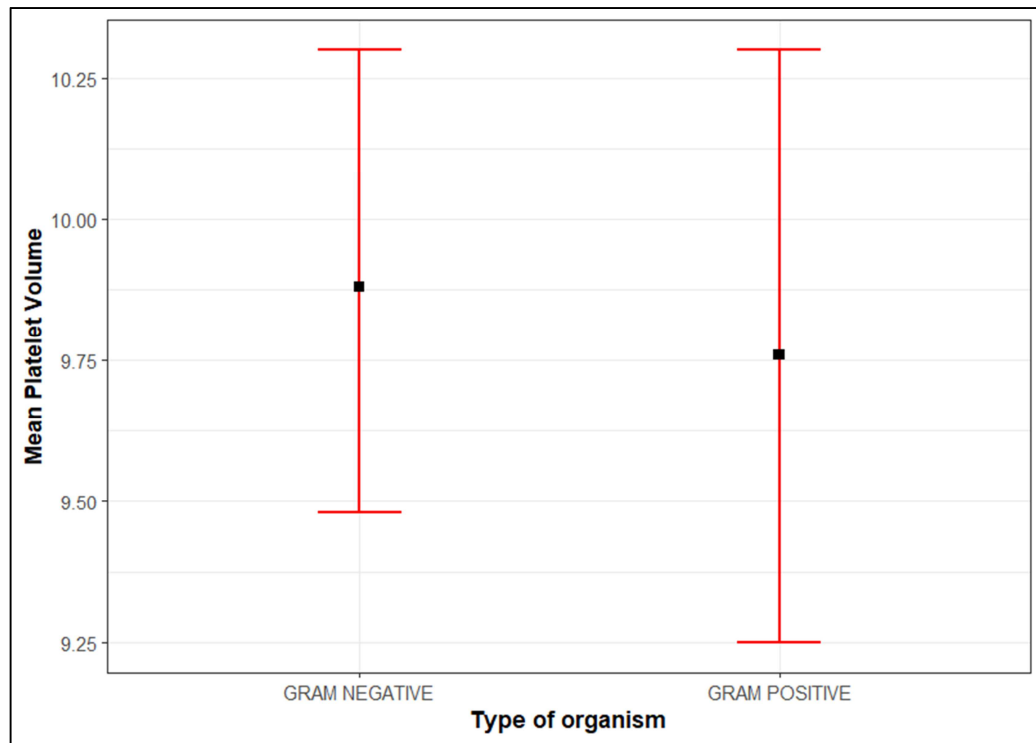


Figure 7: Mean plot of MPV over type of organism.

Table 5: Comparison of mean platelet volume with type of organism.

Type of organism	MPV		p-value
	Abnormal	Normal	
Gram negative	12 (17.91%)	55 (82.09%)	0.9999 ^{MC}
Gram positive	7 (16.28%)	36 (83.72%)	
Mixed	0 (0%)	1 (100%)	

Abbreviation: MC – Chi square test with Monte Carlo simulation.

For Gram-negative organisms, 12 patients (17.91%) had an abnormal MPV, while 55 patients (82.09%) had a normal MPV. For Gram-positive organisms, 7 patients (16.28%) had an abnormal MPV, while 36 patients (83.72%) had a normal MPV. For mixed infections, 0 patients had an abnormal MPV, and 1 patient had a normal MPV. From Chi square test, it is observed that, there is no significant association of the type of organism (Gram-negative, Gram-positive, and Mixed) with whether a patient has an abnormal or normal MPV (p-value = 0.9999).

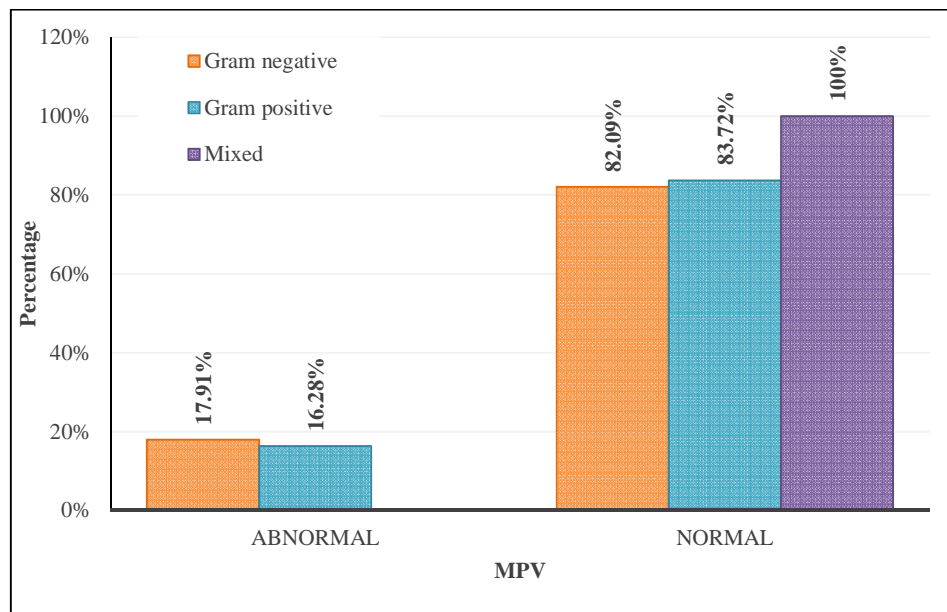


Figure 8: Distribution of MPV with type of organism.

Organism found

Culture report of majority of the study participant showed *E. coli* as common organism (n=35, 27.8 %). Followed by 11.1% (n=14) of *Staphylococcus sp.*, 9.6 % (n=12) *Klebsiella sp.*, 7.1% (n=9) of Coagulase negative *Staphylococcus sp.*, 6.3 % (n=8) of *Pseudomonas sp.*, and *Streptococcus sp.*, 4.8 % (n=6) of *Enterococcus sp.*, and *Acinetobacter sp.*, 4 % (n=5) of Methicillin-resistant *Staphylococcus aureus*, 2.4 % (n=3) *Enterobacter sp.*, and *Proteus sp.*, 1.6 % (n=2) of *Mycobacterium sp.*, and 0.9% (n=1) of *Fusobacterium sp.*, *Chryseobacterium sp.*, *Citrobacter sp.*, and *Salmonella sp.* (Table 4 and Figure 4).

Table 6: Organism found in the culture report

Organism	Number (%)
<i>Acinetobacter baumannii</i>	6 (4.8%)
<i>Chryseobacterium indologenes</i>	1 (0.8%)
<i>Citrobacter koseri</i>	1 (0.8%)
<i>Enterococcus faecalis</i>	3 (2.4%)
<i>Enterococcus faecium</i>	3 (2.4%)
<i>Klebsiella pneumoniae</i>	7 (5.6%)
<i>Klebsiella oxytoca</i>	5 (4%)
<i>E coli</i>	35 (27.8%)
<i>Fusobacterium sp.</i>	1 (0.8%)
Methicillin resistant <i>Staph aureus</i>	5 (4%)
<i>Mycobacterium tuberculosis</i>	2 (1.6%)

Proteus mirabilis	3 (2.4%)
Enterobacter cloacae	3 (2.4%)
Pseudomonas aeruginosa	8 (6.3%)
Salmonella typhi	1 (0.8%)
Staphylococcus aureus	5 (4%)
Staphylococcus haemolyticus	8 (6.3%)
Staphylococcus epidermidis	1 (0.8%)
Streptococcus pneumoniae	7 (5.6%)
Streptococcus pyogenes	1 (0.8%)
Coagulase negative Staphylococcus sp.	9 (7.1%)

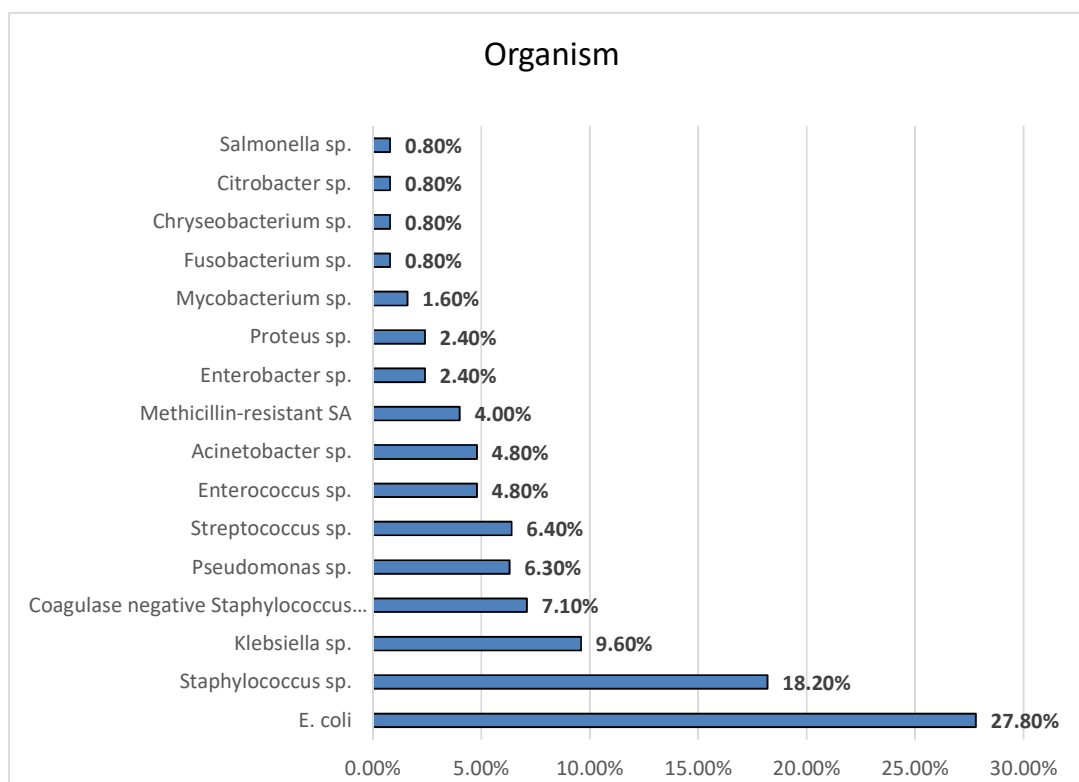


Figure 9: Organism found in the study participants

Vitals and Biochemical parameters

Mean and standard deviation of temperature was 37.79 ± 1.08 . Mean arterial pressure and arterial pH of the study participants were 56.98 ± 7.8 and 7.3 ± 0.26 respectively. Mean heart rate and respiratory rate of the study participants were 99.34 ± 14.93 and 23.92 ± 6.96 respectively. Mean value of sodium and potassium were 133.33 ± 8.84 and 4.27 ± 0.96 respectively. Mean hematocrit value was 34.57 ± 6.3 . Mean total leukocyte value of study participants was 16.04 ± 10.27 . Mean arterial oxygen pressure (PaO₂) of study participants was 83.16 ± 22.59 . Mean platelet volume of study participants was 9.86 ± 1.66 . Albumin and globulin mean values were 3.1 ± 0.67 and 3.07 ± 0.62 respectively. Mean A/G ratio was 1.05 ± 0.32 . Mean values of alanine aminotransferase (ALT) and aspartate aminotransferase (AST) were 70.12 ± 222.56 and 90.3 ± 196.98 respectively. Mean blood glucose value was 180.27 ± 130.91 . Mean urea and creatinine values were 73.83 ± 55.37 and 2.1 ± 1.6 respectively. Mean BUN value of study participants was 34.75 ± 26.33 . Mean hemoglobin and bicarb values were 10.72 ± 2.39 and 17.51 ± 5.2 respectively. Mean platelet count of the study participants was 212.24 ± 111.43 . Mean APACHE II Score of study participants was 18.44 ± 5.99 (Table 5).

Table 7: Vitals and Biochemical parameters

Variable	Value
Temperature	37.79 ± 1.08
MAP	56.98 ± 7.8
Arterial pH	7.3 ± 0.26
Heart Rate	99.34 ± 14.93
Respiratory Rate	23.92 ± 6.96
Sodium	133.33 ± 8.84
Potassium	4.27 ± 0.96
Creatinine	2.1 ± 1.6
Haematocrit	34.57 ± 6.3
TLC	16.04 ± 10.27
GCS	12.26 ± 2.23
PaO ₂	83.16 ± 22.59
APACHE II Score	18.44 ± 5.99
MPV	9.86 ± 1.66
Albumin	3.1 ± 0.67
Globulin	3.07 ± 0.62
A/G Ratio	1.05 ± 0.32
ALT	70.12 ± 222.56
AST	90.3 ± 196.98
Glucose	180.27 ± 130.91
Urea	73.83 ± 55.37
BUN	34.75 ± 26.33
Hemoglobin	10.72 ± 2.39
Bicarb	17.51 ± 5.2
Platelet count	212.24 ± 111.43

Table 8 : Distribution of subjects according to focus of sepsis.

Focus of sepsis	Number of subjects (%)
Abdominal	9 (7.14%)
Central nervous system	3 (2.38%)
Genitourinary	40 (31.75%)
Respiratory	45 (35.71%)
Soft tissue and skin	22 (17.46%)
Unknown	7 (5.56%)

Respiratory sepsis was the most prevalent, with 45 (35.71%) subjects. Following closely behind was genitourinary sepsis, with 40 (31.75%) subjects. Abdominal sepsis was noted in 9 (7.14%) subjects, while soft tissue and skin sepsis were identified in 22 (17.46%) subjects. Central nervous system involvement was relatively rare, observed in only 3 (2.38%) subjects. Additionally, there were 7 cases (5.56%) where the focus of sepsis was unknown.

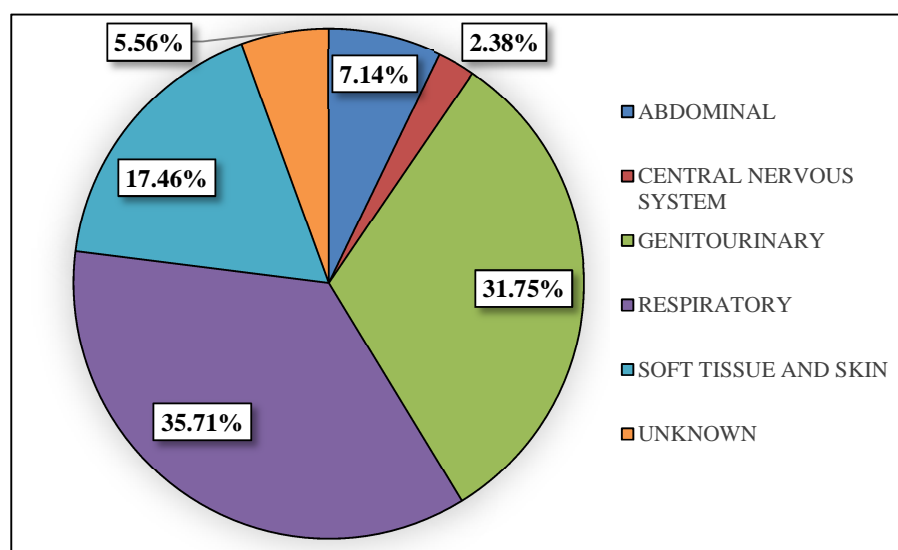
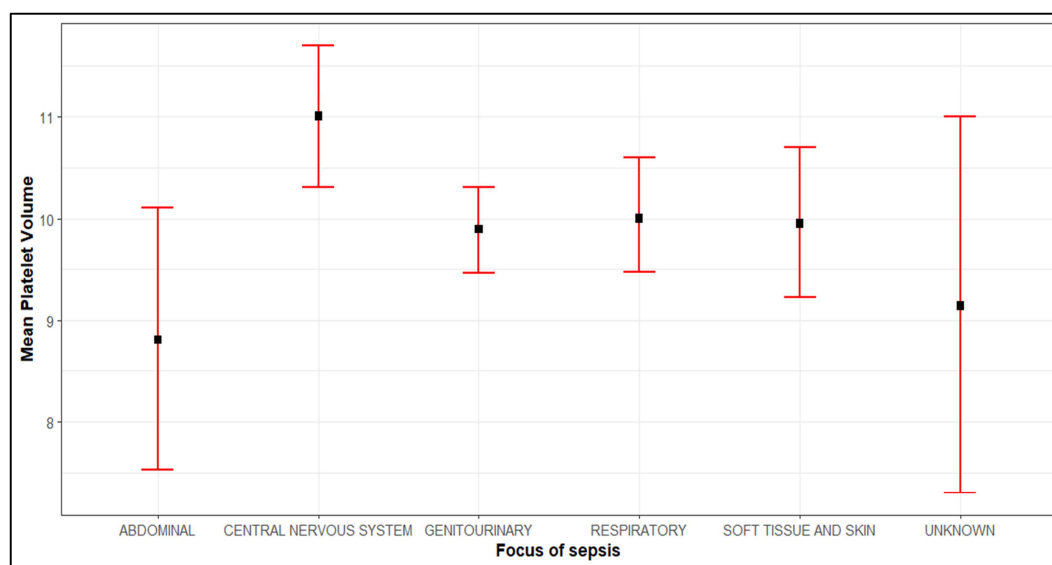
**Figure 10: Distribution of subjects according to focus of sepsis.**

Table 9: Comparison of mean platelet volume with focus of sepsis

Focus of sepsis	Mean \pm SD	Median (Min, Max)	p-value
Abdominal	8.8 \pm 1.66	8.8 (6.8, 12)	0.2303 ^K
Central nervous system	11 \pm 0.26	10.9 (10.8, 11.3)	
Genitourinary	9.9 \pm 1.38	9.95 (6.7, 12.7)	
Respiratory	10.03 \pm 1.84	10.3 (6.2, 12.9)	
Soft tissue and skin	9.95 \pm 1.65	10.35 (6.7, 12.7)	
Unknown	9.14 \pm 2	8.4 (6.9, 11.8)	

Abbreviation: K – Kruskal Wallis test.

The MPV for sepsis originating from the central nervous system is the highest, with a mean of 11 \pm 0.26 and a median of 10.9 (ranging from 10.8 to 11.3). On the other hand, abdominal sepsis has the lowest MPV mean of 8.8 \pm 1.66 and a median of 8.8 (ranging from 6.8 to 12), although the difference was not statistically significant (p-value = 0.2303). Genitourinary sepsis, respiratory sepsis, soft tissue and skin sepsis, and cases with an unknown focus exhibit intermediate MPV values.

**Figure 11: Mean plot of MPV over focus of sepsis.**

Relationship between Mean Platelet Value and other study variables

A comparison between the study variables and normal and abnormal mean platelet volume was tabulated as Table 7. Gender was the variable which was significantly associated with mean platelet volume.

Table 10: Comparison of study variables with Mean Platelet Volume

Variables	Mean Platelet Volume		P value
	Normal (11.5 & below) (n=103)	Abnormal (More than 11.5) (n=23)	
GENDER	54 (52.4%)	17 (73.9%)	0.048
Male	49 (47.6%)	6 (26.1%)	
Female			
Age	62.95 ± 17.19	66.52 ± 18.27	0.429
Temperature	37.79 ± 1.08	37.77 ± 1.10	0.930
Arterial pH	7.30 ± 0.26	7.25 ± 0.27	0.138
Heart rate	98.83 ± 15.16	96.17 ± 13.95	0.668
Respiratory rate	23.51 ± 7.05	25.78 ± 6.34	0.193
Sodium	132.96 ± 8.31	135 ± 11.01	0.231
Potassium	4.15 ± 0.83	4.81 ± 1.31	0.591
Creatinine	2.02 ± 1.63	2.43 ± 1.48	0.567
Hemocrit	34.30 ± 6.28	35.77 ± 6.39	0.215
TLC	15.42 ± 9.71	18.8 ± 12.35	0.249

GCS	12.19 ± 2.26	12.56 ± 2.10	0.283
PaO2	82.81 ± 20.79	84.70 ± 29.85	0.290
Albumin	3.19 ± 0.65	2.68 ± 0.62	0.203
Globulin	3.04 ± 0.60	3.22 ± 0.71	0.303
A/G Ratio	1.09 ± 0.30	0.88 ± 0.33	0.214
ALT	69.75 ± 235.58	71.78 ± 155.32	0.192
AST	77.73 ± 163.58	146.60 ± 303.90	0.066
Glucose	169.72 ± 96.24	227.52 ± 227.11	0.346
Urea	64.26 ± 46.84	116.7 ± 70.01	0.081
BUN	29.92 ± 21.61	56.39 ± 34.28	0.104
Bicarb	17.91 ± 5.33	15.72 ± 4.81	0.113
Hemoglobin	10.78 ± 2.30	10.47 ± 2.78	0.504
Platelet count	218.86 ± 107.73	182.60 ± 124.97	0.522

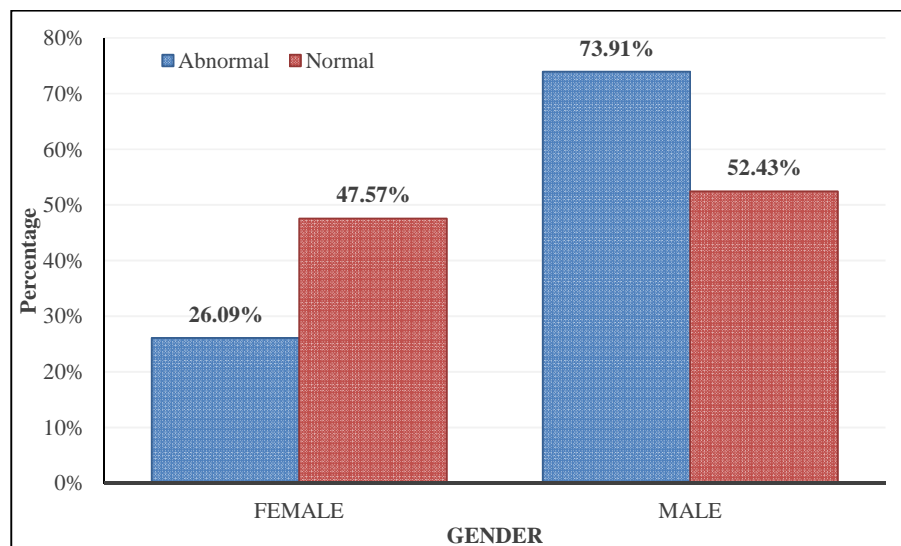


Figure 12: Distribution of gender over Mean Platelet Volume

Relationship between Mean Platelet Value and APACHE II Scores

Mean APACHE II Score of the study participant was 18.44 ± 5.99 and mean MPV was 9.86 ± 1.66 . The mean platelet volume is significantly associated with higher APACHE II Scores ($p=0.002$) (Table 8).

Table 11: Mean platelet value and APACHE II Scores

APACHE II Scores	Mean Platelet Volume		Pearson Chi-square test
	Normal 11.5 and below (n=103)	Abnormal More than 11.5 (n=23)	
0-5	0 (0%)	1 (4.3%)	0.002
6-10	8 (7.8%)	0 (0%)	
11-15	27 (26.2%)	4 (17.4%)	
16-20	31 (30.1%)	8 (34.8%)	
21-25	27 (26.2%)	4 (17.4%)	
26-30	10 (9.7%)	3 (13.05%)	
31-35	0 (0%)	3 (13.05%)	

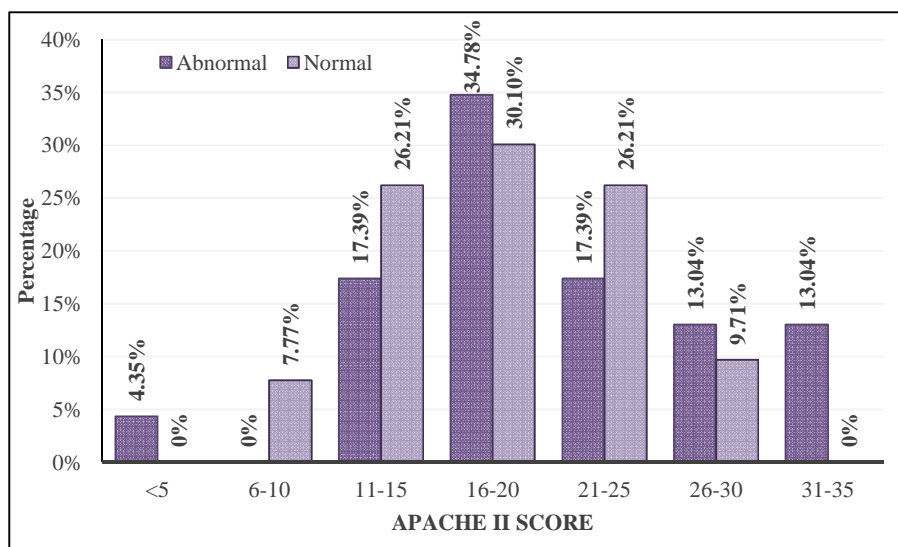


Figure 13: Distribution of APACHE II score over Mean Platelet Volume.

Mean Platelet Volume Vs Outcome of the patient

Study participants who completed the treatment and discharged from the hospital in normal MPV group and abnormal MPV group were 86.4% (n=89) and 95.7% (n=22) respectively. In the normal and abnormal MPV groups, 13.6% (n=14) and 4.3% (n=1) were expired (Table 9).

Table 12: Mean Platelet Volume and Outcome of the patient

STATUS	Mean Platelet Volume		P value
	Normal (11.5 & below) (n=103)	Abnormal (More than 11.5) (n=23)	
Discharged	89 (86.4%)	22 (95.7%)	0.193
Expired	14 (13.6%)	1 (4.3%)	

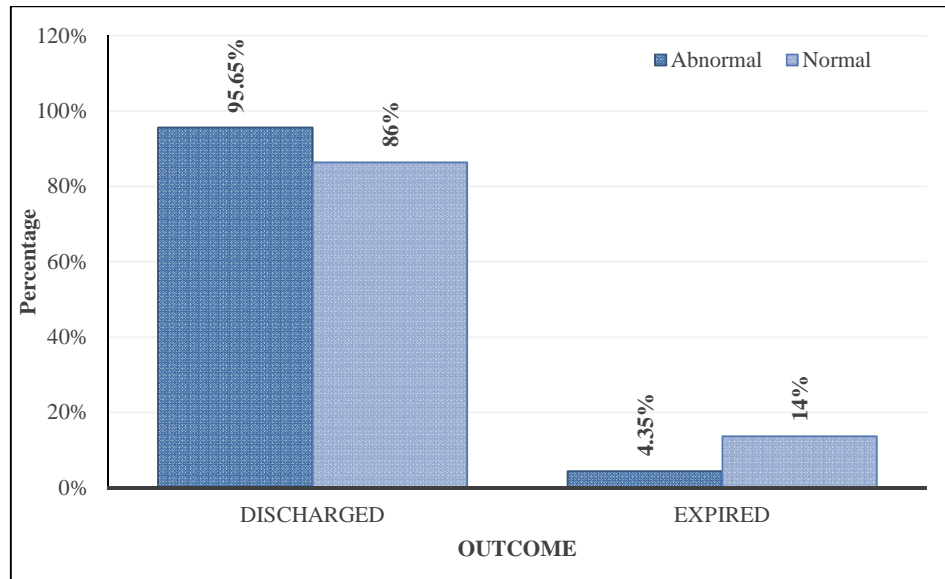


Figure 14: Distribution of outcome over Mean Platelet Volume.

Mean Platelet Volume Vs Days of hospital admission

One week of hospital admission was reported among 50.5% (n=52) and 17.4% (n=4) among the normal and abnormal MPV groups. Hospital stay of 8 to 15 days was recorded among 36.9% (n=38) and 60.9% (n=14) of normal and abnormal MPV groups. Hospital stay of 16 to 30 days were recorded in 10.7% (n=11) and 17.4% (n=4) of normal and abnormal MPV groups. More than 30 days of hospital stay was recorded in 1.9% (n=2) and 4.3% (n=1) of normal and abnormal groups. Mean platelet volume is significantly associated with days of hospital admission ($p=0.038$) (Table 10). Mean Duration of Admission was found to be 9.2 days.

Table 13: Mean Platelet Volume and Days of hospital admission

Days of Admission	Mean Platelet Volume		P value
	Normal (11.5 & below) (n=103)	Abnormal (More than 11.5) (n=23)	
1-7 Days	52 (50.5%)	4 (17.4%)	0.038
8-15 Days	38 (36.9%)	14 (60.9%)	
16-30 Days	11 (10.7%)	4 (17.4%)	
More than 30 Days	2 (1.9%)	1 (4.3%)	

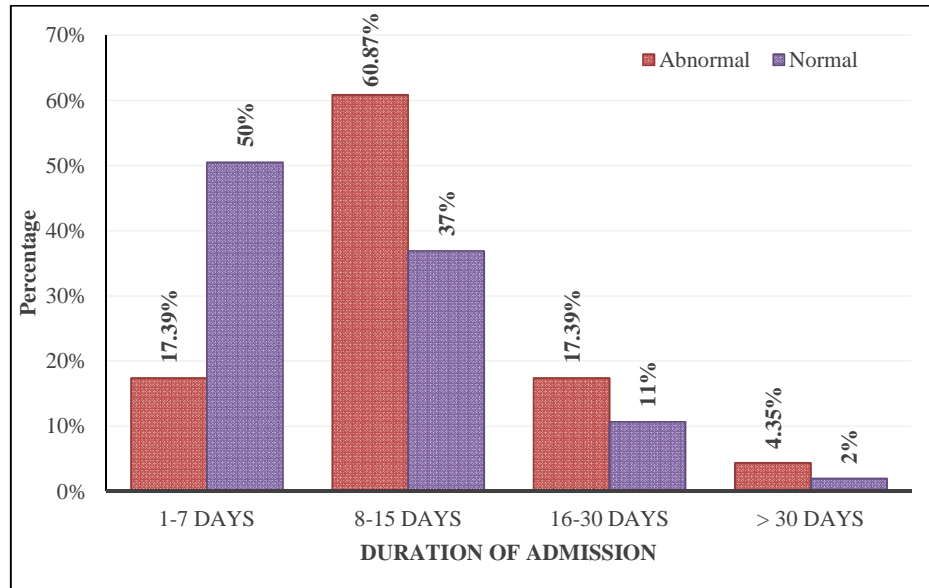


Figure 15: Distribution of duration of admission over Mean Platelet Volume.

DISCUSSION

Sepsis, by definition, is a condition in which the body executes an uncontrolled, maladaptive inflammatory response against a triggering factor, which is usually an infective pathogen, most often bacterial. This inflammatory response, in its attempt to suppress and eliminate the intruding pathogen, ends up dealing damage to all organs of the body, which get impaired to varying extents and show responses varying from gradual recovery to overt decompensation, which need to summarily be managed by the treating clinician.^[7]

The pro-inflammatory condition which the body gets thrown into by the excessive production of chemokines by the immune cells, sets the scene for hypercoagulability, resulting in the activation of coagulation factors and the formation of fibrin plugs. Platelets get ensnared within these fibrin plugs and undergo activation. The morphology of the platelets as they undergo activation gets altered, with an increase in size, formation of pseudopodia and activation of platelet granules.^[10] This change in morphology can be reflected in the Mean Platelet Volume (MPV)^{[22][23]}

Our study was a hospital based descriptive, observational, cross-sectional study conducted in a tertiary care hospital in Belgaum. 126 consenting individuals were enrolled and investigated as per a pre-defined proforma in the study period from February 2023 to January 2024. Data of the study was compiled in a master chart prepared in MS Excel version 16.84. Statistical analysis was performed using SPSS version 25 software. In this study, we analysed mean platelet volume (MPV) measured at admission to ICU and its relationship with the severity of sepsis as quantified by the APACHE II (Acute Physiology and Chronic Health Evaluation II).

Categorical variables were represented in number and percentage. Continuous variables were represented in mean and standard deviation. Chi-square test was done to determine whether there is association between Mean Platelet Volume and other variables. Pearson's chi-square test was demonstrated to determine the association between Mean platelet value and APACHE II scores. P value of less than 0.050 is considered as statistically significant.

According to the work of E.Guclu et al. , a significant difference in the Mean Platelet Volume between patients in sepsis and non- septic patients was observed, suggesting the correlation between Mean Platelet Volume and sepsis. However, this correlation was merely noted and not quantified using a scoring system for sepsis such as APACHE II.^[27]

In our study, Mean APACHE II Score of the study participant was 18.44 ± 5.99 and mean MPV was 9.86 ± 1.66 . On dividing the APACHE II scores calculated into subgroups, we noted a significant correlation between the APACHE II score subgroup of 16-20 and the Mean Platelet Volume, with a P value of 0.002. This correlation was not observed with the lower APACHE II score subgroups. It can hence be deduced that similar correlation can be observed between higher APACHE II scores and Mean Platelet Volume with a larger study cohort, warranting further future studies and analyses.

According to research by Park BJ, Shim JY et al ^[36] , Ittermann T, Feig MA et al [37] Mean Platelet Volume is, on average, normally higher in females than males. This association is thought to be because of serum Prolactin, the levels of which tend to be higher in females ^[38]. In our study, we noted there was a significant correlation between Mean Platelet Volume and Male gender, with a P value of 0.048. This potentially indicates that while, normally, females tend to have higher Mean Platelet

Volume values, in the diseased state of sepsis, the circulating inflammatory markers exert their effects on the platelet morphology, surpassing the normal physiological milieu.

The APACHE II score has been a well-established predictor of mortality outcomes in patients admitted to the ICU, as evidenced by the work undertaken by VijayGanapathy S et al ^[12] , Giamarellos-Bourboulis EJ et al ^[13] , Bohnen JM et al ^[14] amongst many others. As a corollary, the APACHE II score has shown to have some correlation with the length of hospital stay, as suggested by the work undertaken by Milić M et al ^[39] , Siddiqui S et al ^[40] .

We noted a positive correlation between the Mean Platelet Volume on admission and the length of hospital stay in our study, with a P value of 0.038. The mean duration of admission was noted to be approximately 9 days. The correlation was noted in patients who were admitted for 16-30 days and had abnormally high Mean Platelet Volume. This correlation can aid caregivers / family members of the admitted patients to take logistical and financial decisions regarding the further care of the patient. Having a likely predictor of admission duration can also aid the clinicians in the allocation and optimisation of hospital resources.

CONCLUSION

In our study cohort, we analysed the relationship between the Mean Platelet Volume measured on the day of admission in patients who were in sepsis, and the severity of sepsis as determined by the APACHE II (Acute Physiology and Chronic Health Evaluation II) score.

We noted a significant positive correlation between Mean Platelet Volume and the APACHE – II score, with a p value of 0.002. This indicates that we can utilise the Mean Platelet Volume to prognosticate cases of sepsis and guide clinical decision making.

We also noted a positive correlation between the Mean Platelet Volume and the gender of the study participants (Male gender), p value of 0.048.

A correlation between the Mean Platelet Volume and the length of hospital stay was noted, an abnormally high MPV being associated with a longer duration of hospital stay, irrespective of outcome (P = 0.038).

SUMMARY

In our study we aimed to establish the correlation between the Mean Platelet Volume and severity of sepsis based on the APACHE II score in patients of sepsis admitted to the Intensive Care Unit of a tertiary care hospital in Karnataka, India.

Patients were included into the study cohort if they were aged 18 years or older, fit into the diagnosis of sepsis according to The Third International Consensus Definitions for Sepsis and Septic Shock 2016 and if they consented to participate in the study.

We excluded pregnant women, patients with active haemorrhage, patients with haematological diseases (including hypersplenism, lymphoma or leukaemia), patients with rheumatism or bone marrow diseases, patients who have been transfused with blood or platelets prior to their admission and patients in whom day 1 of ICU was missed.

APACHE II score was calculated on the day of admission using the relevant clinical and laboratory parameters. Mean Platelet Volume was analysed from the sample sent for routine CBC.

A total of 126 study participants were included in the analysis. Majority of the study participants were above 60 years of age (n=83, 65.9%). Mean age of the study participants was 64 ± 17 years. Majority of the study participants were male (n=71, 56.3%; Female: n=55, 43.7%)

Gram-negative organism was found in 53.2 % (n=67) and gram-positive organism was isolated in 34.1 % (n=43) of study participants. One study participant

had both gram-negative and gram-positive organisms (0.8 %). Negative culture report was reported in 11.9% (n=15) of the study participants.

On performing Chi-Square test between the Mean Platelet Volume and the type of organism, it was observed that there was no significant correlation between the Mean Platelet Volume and whether the organism isolated was Gram Positive, Gram Negative or Mixed (p value of 0.9999 on applying Chi-Square with Monte-Carlo simulation).

Mean APACHE II Score of the study participant was 18.44 ± 5.99 and mean MPV was 9.86 ± 1.66 . The mean platelet volume is significantly associated with higher APACHE II Scores (p=0.002).

A comparison between the study variables and normal and abnormal mean platelet volume was done. Male Gender (p = 0.048) was significantly associated with Mean Platelet Volume.

We also observed that Mean platelet volume is significantly associated with days of hospital admission (p=0.038).

LIMITATIONS OF THE STUDY

- 1) Single Centre study
- 2) Cross-sectional nature of the study
- 3) Sample size
- 4) True outcome of the patients clinically – some of the patients took discharge in view of financial constraints and other reasons, hence, the true clinical outcome of these patients post discharge is unknown.

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ANNEXURE I - INFORMED CONSENT FORM

KAHERs JNMC, BELAGAVI

“CORRELATION BETWEEN MEAN PLATELET VOLUME AND SEVERITY OF SEPSIS IN PATIENTS ADMITTED IN THE INTENSIVE CARE UNIT AT KLE DR.PRABHAKAR KORE HOSPITAL AND MEDICAL RESEARCH CENTRE, BELAGAVI – A ONE YEAR CROSS-SECTIONAL STUDY”

Name of Principal Investigator: DR. _____

Name of Guide: DR. _____

Objective: To establish the correlation between the Mean Platelet Volume and severity of sepsis based on APACHE II score in patients of sepsis admitted to the Intensive Care Unit of KLE’s Dr.Prabhkar Kore Hospital and MRC.

Introduction: Sepsis is defined as a life threatening organ dysfunction caused by a dysregulated host response to infection. APACHE – II is a scoring system which is used to classify the severity of sepsis. It is done using patient parameters measured within the first 24 hours after admission to the Intensive Care Unit. A score ranging from 0 to 71 is assigned. A higher score is associated with a more adverse outcome. Platelets are the first to accumulate at any site of damage, where they exhibit a change in shape by forming pseudopodia and then release the contents of their cytoplasmic granules. These morphological changes can be assessed using the Platelet Indices which are routinely measured by the 7 part CBC analyzer, one of which is the Mean Platelet Volume.

Explanation of procedure: If you agree to enroll yourself in this study, you will be subjected to clinical examination which will involve assessment of your vitals, general physical examination and focused systemic examination. You will then be subjected to certain blood investigations which include Complete blood count (CBC), Arterial Blood Gas analysis, Serum Sodium, Serum Potassium, Serum Creatinine levels and Mean Platelet Volume. All of these investigations form part of the routine medical management which is required for the treatment of sepsis.

Withdrawal from participation in the study: Participation in this study is voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will/will not have nor get any benefits by participating in this study. The data gathered will help the population at large.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person from identifying you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purposes and or presented to scientific groups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact: DR. _____, DEPARTMENT OF GENERAL MEDICINE, JNMC, BELAGAVI; _____@gmail.com If you have any question or complaints with regard to your right as study participant you may contact Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waving any of your legal rights.

CONSENT STATEMENT

I am making a voluntary decision to participate in the study “**CORRELATION BETWEEN MEAN PLATELET VOLUME AND SEVERITY OF SEPSIS IN PATIENTS ADMITTED IN THE INTENSIVE CARE UNIT AT KLE DR.PRABHAKAR KORE HOSPITAL AND MEDICAL RESEARCH CENTRE, BELAGAVI – A ONE YEAR CROSS-SECTIONAL STUDY**”. My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

ANNEXURE II - PROFORMA

CASE NO	
NAME	
IP NO	
AGE	YEARS
SEX	MALE FEMALE
ADDRESS	
OCCUPATION	

Complaints and History	
Past history	
Family history	
Personal history	
Treatment history	

Vitals :

Temperature	
Pulse	
Respiratory rate	
Blood pressure	
Mean Arterial Pressure	

PHYSICAL EXAMINATION:

	Yes	No
Pallor		
Icterus		
Lymphadenopathy		
Cyanosis		
Clubbing		
Edema		

GCS -**SYSTEMIC EXAMINATION:**

C.V.S	
R.S.	
C.N.S	
PER ABDOMEN	

INVESTIGATIONS:

<u>Hemoglobin</u>		<u>ALP</u>		<u>Na⁺</u>	
Total WBC Count		Total Bilirubin		K ⁺	
Neutrophils		Direct Bilirubin		Mg ²⁺	
Lymphocytes		Total Protein		Sr. Creatinine	
Hematocrit		Albumin		Blood culture	
Blood pH		A/G ratio		Urine RM.	
PaO ₂		SGOT		HbA1c	
ESR		SGPT		Urine C/S	
RBS		Sr. Procalcitonin		MPV – Mean Platelet Volume	

FOCI OF SEPSIS

Respiratory	
Genitourinary	
Abdominal	
C.N.S	
Skin	
Others	
Non identified	

APACHE II SCORE =

ANNEXURE III - MASTERCHART

S.no	GENDER	AGE	DIAGNOSIS	FOCUS OF SEPSIS	CULTURE SAMPLE	PATHOGEN SPECIES	TYPE OF ORGANISM	TEMP	MAP	ARTERIAL PH	HEART RATE	RR	SODIUM	POTASSIUM	CREAT	HEMATOCRIT	TLC	GCS	PaO2	A-a	APACHE II SCORE	MPV MEAN PLATELET	ALBUMIN	GLOBULIN	A/G RATIO	ALT	AST	GLUCOSE	UREA	BUN	BICARB	HEMOGLOBIN	PLATELET COUNT	DURATION OF ADMISSION (DAYS)	OUTCOME
1	M	95	ACUTE GE, HTN	ABDOMINAL	STOOL	SALMONELLA TYPHII	GRAM NEGATIVE	37.8	70	7.3	106	20	132	5.8	3.6	23	18.2	15	95.7	N/A	1600%	12	3.6	3.2	1.1	774	1484	105	67	31.29	11	5.3	189	26	DISCHARGED
2	F	69	UROSEPSIS, T2DM	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	38.2	60	7.42	89	16	137	4.51	0.86	25	8.1	14	98	N/A	10	8	3.7	3.2	1.2	12	13	129	19	8.87	21	6.7	411	5	DISCHARGED
3	M	61	CHOLECYSTITIS IN SEPSIS, T2DM	ABDOMINAL	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	40.1	66	7.35	97	18	127	6.34	2.93	31.6	21.4	15	49	300	20	7.7	2.7	3.3	0.8	28	33	171	97	45.3	12.6	9.9	142	9	DISCHARGED
4	M	75	UROSEPSIS	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	38.5	74	7.23	83	16	129	4.53	1.3	29.6	15.2	14	87	N/A	15	9.7	3.5	3.2	1.1	20	45	236	38	17.75	16	9.5	269	8	DISCHARGED
5	F	25	ACUTE GE	ABDOMINAL	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	38.5	60	7.36	111	22	136	3.42	0.81	27.9	5	15	76	N/A	7	6.8	4	2.6	1.6	10	19	90	19	8.87	20	8.2	259	3	DISCHARGED
6	F	85	ACUTE GE, HTN	ABDOMINAL	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	40.3	63	7.52	76	19	140	4.49	0.76	37.6	9	14	96.5	N/A	10	8.8	4.2	3.4	1.2	12	19	134	22	10.27	20	12	207	2	DISCHARGED
7	M	65	VIRAL PNEUMONIA, IHD	RESPIRATORY	BLOOD	N/A	N/A	36.9	68	7.49	83	23	128	3.77	1.32	34.2	8.2	12	80.72	N/A	12	6.2	2.6	3	0.9	25	26	98	31	14.48	21	11.4	342	15	DISCHARGED
8	M	57	LRTI, T2DM	RESPIRATORY	SPUTUM	ACINETOBACTER BAUMANII	GRAM NEGATIVE	39.2	72	7.13	70	30	128	5.53	2.06	36.1	19.2	12	65	246	23	8.5	3.7	3.3	1.1	18	27	395	97	45.3	20	11.5	323	5	DISCHARGED
9	F	70	PNEUMONIA, T2DM	RESPIRATORY	SPUTUM	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	40.01	77	7.02	74	36	138	4.33	1.12	38.3	12.7	15	78	N/A	12	10.3	3.4	2.9	1.1	64	55	148	65	30.36	17	11.9	275	6	DISCHARGED
10	M	85	SEPTIC ENCEPHALOPATHY, T2DM	SOFT TISSUE AND SKIN	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	39.9	50	7.41	113	12	128	3.19	0.88	26.7	7.8	9	86	N/A	21	6.7	2.8	3.2	0.9	40	72	222	54	40	22	8.7	383	3	DISCHARGED
11	M	86	UROSEPSIS, HTN	GENITOURINARY	URINE	ENTEROBACTER CLOACAE	GRAM NEGATIVE	36.7	67	7.3	117	18	135	5.04	0.89	37.8	8.4	13	75.69	N/A	14	10.2	4	3.5	1.1	16	34	102	27	12.61	17	12	182	6	DISCHARGED
12	M	69	LRTI, IHD	RESPIRATORY	SPUTUM	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	39.3	64	7.4	86	26	154	4.27	1.97	47.2	20.7	12	89	N/A	17	9.1	4.2	4.1	1	99	220	118	69	32.22	18	15.2	283	9	DISCHARGED
13	M	58	PULMONARY TB	RESPIRATORY	SPUTUM	MYCOBACTERIUM TUBERCULOSIS	GRAM POSITIVE	37.3	69	6.94	119	30	135	2.07	3.06	15.2	4.6	14	62.88	N/A	28	11.4	2.4	2.3	1	43	69	105	54	25.22	11	5.2	148	20	DISCHARGED
14	M	48	VIRAL ENCEPHALOPATHY, T2DM, HTN	CENTRAL NERVOUS SYSTEM	CSF	N/A	N/A	36.8	55	7.56	98	30	141	3.64	1.18	40	14.2	7	95	180	14	10.9	3.2	2.4	1.4	63	66	104	83	38.76	28	10.4	290	21	DISCHARGED
15	M	82	UROSEPSIS, IHD	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	37.7	60	7.38	85	21	134	3.94	0.98	46	16.8	13	91.37	N/A	12	9.6	3.5	2.6	1.4	12	35	117	32	14.94	22	13.8	272	2	DISCHARGED
16	M	68	PNEUMONIA RIGHT, T2DM	RESPIRATORY	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	36.2	52	7.33	107	28	140	4.85	3.41	43	5.7	12	90	272	19	10.8	3.4	3.1	1.1	19	39	173	142	66.31	20	14.3	119	15	DISCHARGED
17	F	56	T2DM, DKA, UTI	GENITOURINARY	URINE	CITROBACTER KOSERI	GRAM NEGATIVE	37.1	69	7.44	105	40	135	3.6	1.25	38.2	19.7	15	91.3	N/A	9	10.9	4.1	3.2	1.3	16	20	432	39	18.21	17	12.1	196	4	DISCHARGED
18	F	64	PNEUMONIA, IHD	RESPIRATORY	BLOOD, SPUTUM	ENTEROCOCCUS FAECIUM	GRAM POSITIVE	38.5	67	7.11	88	31	112	4.08	1.5	28	9.9	12	87.3	250	22	11.3	3.1	2.5	1.2	79	130	168	58	27.09	14	8.1	349	19	DISCHARGED
19	M	58	SEPTIC SHOCK SECONDARY TO PERFORATED APPENDIX, IHD	ABDOMINAL	BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	37.1	49	7.45	113	26	127	3.09	1.7	27.9	18.5	13	165.7	N/A	26	7.8	2.6	3.1	0.9	9	14	162	22	10.27	19	8.8	397	4	DISCHARGED
20	M	34	SEPTIC SHOCK SECONDARY TO INFECTED TRAUMATIC WOUND	SOFT TISSUE AND SKIN	WOUND, BLOOD	ENTEROBACTER CLOACAE	GRAM NEGATIVE	39.1	51	7.4	93	18	123	3.39	1.41	25.6	0.9	12	94.3	N/A	14	8.8	3.3	3.2	1	202	643	91	60	28.02	20	8.5	22	8	DISCHARGED
21	M	78	UTI, T2DM	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	36.5	52	7.51	100	21	124	5.18	1.19	34.4	11.4	10	84.4	N/A	16	10	3.5	2.9	1.2	20	21	389	41	19.15	22	11.4	144	6	DISCHARGED
22	F	60	SEPTIC SHOCK SECONDARY TO INFECTED DIABETIC FOOT, T2DM	SOFT TISSUE AND SKIN	WOUND, BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	36.8	40	6.8	121	28	128	4.52	2.5	24.8	23	13	135.7	N/A	28	7.2	3	2.8	1.1	20	23	242	55	25.69	10	8.4	150	66	DISCHARGED
23	M	54	PNEUMONIA, IHD	RESPIRATORY	BLOOD, URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.7	70	7.1	83	36	119	5.55	3.56	26.9	12.1	14	75.76	N/A	24	8.4	2.6	3.1	0.8	27	67	81	52	24.28	14	8.6	184	15	DISCHARGED
24	F	77	PNEUMONIA, T2DM	RESPIRATORY	SPUTUM	KLEBSIELLA PNEUMONIAE	GRAM NEGATIVE	36.2	68	7.47	81	24	127	4.45	0.62	33.3	12.6	12	69.99	N/A	13	9.1	3.7	3.4	1.1	663	1341	158	19	8.87	20	10.5	359	13	DISCHARGED
25	F	82	UTI, SEPTIC SHOCK	GENITOURINARY	BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	36.8	50	7.23	102	18	134	5.1	2.89	34	50.7	10	100	N/A	26	10.7	3.8	3.4	1.1	12	58	138	53	24.75	10	9.5	183	5	DISCHARGED
26	F	85	PNEUMONIA, COPD	RESPIRATORY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	39.1	62	7.43	77	34	144	4.05	0.86	37.1	15.3	7	140	350	14	10.3	3.6	3.6	1	12	24	177	30	14.01	29	10.8	168	3	DISCHARGED
27	M	65	UROSEPSIS, T2DM, DKA	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	37.3	58	7.28	73	42	133	4.68	1.32	44.2	7.2	13	72.8	N/A	15	8.7	2.8	3.2	0.9	20	20	501	76	35.49	20	14.4	215	2	EXPIRED
28	F	70	SEPTIC ENCEPHALOPATHY SECONDARY TO INFECTED BED SORE, T2DM, OLD CVA	SOFT TISSUE AND SKIN	WOUND	METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	37.5	48	7.14	109	16	139	4.29	1.49	31.9	12.4	9	94.3	N/A	19	9.8	3.2	3.2	1	36	57	167	62	28.95	22	9.9	166	4	DISCHARGED
29	M	68	UROSEPSIS, HTN	GENITOURINARY	URINE, BLOOD	CHRYSEOBACTERIUM INDOGENES, ESCHERICHIA COLI	GRAM NEGATIVE	37.1	60	6.99	105	18	141	4.73	1.08	40	4.2	12	78.3	N/A	15	8	4.3	3.2	1.3	278	498	147	44	20.5	16	12.8	127	21	DISCHARGED

30	F	74	PNEUMONIA, UROSEPSIS	RESPIRATORY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	38.7	64	7.45	118	23	131	4.01	1.16	34.6	14.8	11	69.4	194	13	7.2	3.5	2.7	1.3	17	19	161	34	15.88	21	11.4	304	5	DISCHARGED
31	F	84	PNEUMONIA, IHD	RESPIRATORY	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	37.7	51	7.33	87	28	125	4.09	0.62	28	39	14	76.2	226	18	8.9	1.9	3.3	0.6	12	21	91	34	15.88	21	9.1	59	7	DISCHARGED
32	M	25	ACUTE GE IN SEPTIC SHOCK	ABDOMINAL	BLOOD	ENTEROBACTER CLOACAE	GRAM NEGATIVE	37.1	46	7.01	110	18	136	3.42	0.35	30	1.5	10	84.9	120	20	9.4	2	2.5	0.8	11	41	106	14	6.54	15	9.6	235	1	EXPIRED
33	M	87	SEPTIC SHOCK SECONDARY TO CELLULITIS OF RIGHT LOWER LIMB, T2DM	SOFT TISSUE AND SKIN	BLOOD, URINE	ENTEROCOCCUS FAECIUM, KLEBSIELLA PNEUMONIA	MIXED	37.3	51	7.45	124	21	138	3.1	2.16	30.7	29	13	121.1	160	21	11	2.6	3.5	0.7	57	102	83	36	16.81	15	9.5	160	18	DISCHARGED
34	M	45	SEPTIC SHOCK SECONDARY TO PERFORATED GALL BLADDER	ABDOMINAL	BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	37	47	7.3	108	26	134	4.8	2.95	25.8	0.4	15	63.2	142	26	8.9	3.3	2	1.6	12	16	112	99	46.24	11	8.4	8	1	EXPIRED
35	M	69	UROSEPSIS	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	36.9	50	7.2	110	28	137	4	1.64	39.2	13.3	11	86.99	N/A	21	10.9	3.9	2.8	1.4	10	17	52	36	16.81	18	12.3	249	4	DISCHARGED
36	F	51	LRTI, HTN, HYPOTHYROIDISM	RESPIRATORY	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	37.6	52	7.46	100	21	139	3.28	0.66	32.2	17.8	15	71.1	N/A	6	7.1	3.4	4.2	0.8	9	11	263	34	15.88	23	10.7	350	2	DISCHARGED
37	F	45	UTI, SEPTIC SHOCK, HTN	GENITOURINARY	URINE	PROTEUS MIRABILIS	GRAM NEGATIVE	37.7	50	7.29	99	29	136	3.11	1.05	31.6	36	14	60.23	N/A	12	10.8	3.8	3.4	1.1	12	17	137	33	15.41	23	9.4	294	6	DISCHARGED
38	F	67	PNEUMONIA OF RIGHT LUNG MIDDLE LOBE, UROSEPSIS	RESPIRATORY	URINE, SPUTUM	ESCHERICHIA COLI	GRAM NEGATIVE	36.8	55	7.38	110	22	125	5.43	4.28	30.5	15.1	13	46.2	186	22	10.2	2.7	3.1	0.9	11	29	355	149	69.58	18	10	115	13	DISCHARGED
39	M	72	PNEUMONIA, IHD	RESPIRATORY	SPUTUM	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	38.4	56	7.44	94	28	133	3.53	2.66	32.7	19.5	11	80.1	N/A	19	8.6	2.8	2.5	1.1	22	28	101	75	35.03	23	10.9	232	2	DISCHARGED
40	F	68	SEPTICEMIA, HYPOGLYCEMIC ENCEPHALOPATHY	UNKNOWN	BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	36.5	52	7.11	84	20	129	3.68	1.35	30.2	11.3	6	83.8	N/A	22	6.9	3.1	3	1	15	60	163	28	13.08	18	10.2	211	5	DISCHARGED
41	M	78	SEPTIC ENCEPHALOPATHY, T2DM, UROSEPSIS	GENITOURINARY	URINE	ENTEROCOCCUS FAECIUM	GRAM POSITIVE	36.2	47	6.7	104	14	151	4.92	3.09	37.8	24	8	58.5	N/A	33	11.8	2.1	4.4	0.5	32	62	132	176	82.19	15	12	395	2	DISCHARGED
42	M	29	MENINGOENCEPHALITIS	CENTRAL NERVOUS SYSTEM	CSF	N/A	N/A	40.5	55	7.08	80	28	136	3.54	0.91	44	7.6	4	96	96	18	11.3	3.4	3.4	1	10	19	95	31	14.48	19	13.7	208	3	DISCHARGED
43	F	70	PNEUMONIA, T2DM	RESPIRATORY	SPUTUM	ACINETOBACTER BAUMANII	GRAM NEGATIVE	39.6	50	7.1	109	32	113	4.21	0.99	30.7	12.3	15	74.2	N/A	15	8.3	3.9	3	1.3	17	36	210	16	7.47	16	10.8	258	4	DISCHARGED
44	M	93	UROSEPSIS, IHD	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	39.7	55	7.4	115	16	133	4.3	0.83	38.7	7.9	14	84.7	N/A	11	6.7	3.4	4.4	0.8	19	18	113	40	18.68	19	12.4	385	1	DISCHARGED
45	F	73	AKI, ACUTE GE, HTN	ABDOMINAL	BLOOD, URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.4	62	7.24	72	24	135	4.83	8.36	22.4	30	13	93	N/A	24	7.3	2.8	4.2	0.7	12	11	97	170	79.39	11	7.1	291	7	DISCHARGED
46	M	73	UROSEPSIS	GENITOURINARY	URINE	PROTEUS MIRABILIS	GRAM NEGATIVE	38.4	56	7.2	99	16	128	4.38	1.18	34	13.3	11	72.8	N/A	16	8.5	3.75	2.95	1.3	22	29	160	43	20.08	18.1	11.6	193	14	DISCHARGED
47	F	72	SEPTIC SHOCK, SEPTIC ARTHRITIS, T2DM	SOFT TISSUE AND SKIN	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	37.2	50	7	117	25	133	3.8	0.91	42.6	17.7	14	40.2	211	18	10.5	3.4	3.4	1	23	31	233	33	15.41	16	13.1	213	7	DISCHARGED
48	F	65	PNEUMONIA	RESPIRATORY	SPUTUM	KLEBSIELLA PNEUMONIAE	GRAM NEGATIVE	38	58	7.3	107	28	134	4.8	2.95	36	15.1	13	93.33	N/A	19	12	3.3	2	1.6	12	16	112	99	46.24	11	8.3	334	9	DISCHARGED
49	F	73	RIGHT PYELONEPHRITIS, T2DM	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.2	51	7.4	116	18	127	5.32	2.11	27.8	22.5	14	81.6	N/A	22	9.8	3.56	2.84	1.2	16	28	235	72	33.62	25	8.6	238	18	DISCHARGED
50	F	31	PUERPERAL SEPSIS, HYPOTHYROIDISM	SOFT TISSUE AND SKIN	URINE, BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	37.4	56	7.46	95	26	136	3.75	1.06	31.5	17.3	12	71.4	N/A	8	10.2	3.12	2.38	1.3	85	46	119	22	10.27	24	10.1	238	10	DISCHARGED
51	M	22	PNEUMONIA	RESPIRATORY	BLOOD	ENTEROCOCCUS FAECALIS	GRAM POSITIVE	37.5	69	7.44	77	22	141	3.54	0.82	45.2	10.1	14	66.5	N/A	4	12.3	3.54	2.76	1.3	46	72	91	25	11.68	21	14.5	195	2	DISCHARGED
52	F	70	UROSEPSIS, HTN, IHD	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	36.9	68	7.46	89	18	130	2.84	0.88	38.7	7.7	13	74.2	N/A	11	9.9	3.21	2.09	1.5	37	36	176	26	12.14	17.1	12.5	194	7	DISCHARGED
53	F	22	PUERPERAL SEPSIS	SOFT TISSUE AND SKIN	URINE	KLEBSIELLA OXYTOCA	GRAM NEGATIVE	37.1	58	6.5	115	21	134	5.54	5.71	38.9	29.4	12	81.2	N/A	22	10.7	3	1.8	1.7	2,267	12	93	42.9	20.05	3.8	11.3	354	14	DISCHARGED
54	F	50	PNEUMONIA	RESPIRATORY	SPUTUM	N/A	N/A	37.8	62	7.43	73	28	140	3.28	0.52	28.7	30	14	90.2	N/A	13	7.3	2.3	3.6	0.6	17	26	221	35.4	16.54	27.6	9.1	256	6	DISCHARGED
55	F	39	PYELONEPHRITIS BILATERAL KIDNEYS, T2DM	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	40	50	7.64	96	16	137	3.88	0.92	43.7	5.9	10	94.7	N/A	13	10.6	4.3	2.6	1.7	46	60	137	20.8	9.72	21.4	14.5	145	9	DISCHARGED
56	F	61	PNEUMONIA, UROSEPSIS	RESPIRATORY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.1	58	7.44	117	32	137	3.98	0.54	40	2.7	15	114.6	N/A	12	7.3	4.2	3.8	1.1	19	49	141	23.4	10.93	21	13.2	169	11	DISCHARGED
57	F	38	UROSEPSIS	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37	65	7.15	86	24	116	7.81	4.52	45	45.5	10	93.8	N/A	29	12.2	2.4	4.1	0.6	14	5	549	193	90.19	10	4.8	450	12	DISCHARGED
58	F	60	SEPSIS, AKI, BED SORE	SOFT TISSUE AND SKIN	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	37.6	59	7.51	82	18	134	4.05	3.16	31.2	35.8	15	83.2	N/A	14	10.7	2.5	3.7	0.7	22	34	188	178	83.18	22.1	10.3	227	14	DISCHARGED
59	M	76	UROSEPSIS, IHD	GENITOURINARY	URINE	ACINETOBACTER BAUMANII	GRAM NEGATIVE	37.8	58	7.3	88	14	132	4.02	0.85	36.6	7.6	13	60.12	N/A	12	10.6	3.9	2.7	1.4	24	38	156	42.5	19.86	19.9	11.7	140	8	DISCHARGED
60	F	72	SEPSIS, AKI	UNKNOWN	BLOOD	STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	36.8	50	7.48	112	16	104	3.08	0.56	34.3	8.5	14	22.7	260	19	8.4	4.3	2.7	1.6	16	23	133	15.9	7.43	23	12	314	10	DISCHARGED
61	F	22	UROSEPSIS	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.4	55	6.9	89	16	119	5.76	1.27	41	3.44	12	68.8	N/A	14	7.5	3	3	1	408	469	91	61	28.5	10	9.9	40	8	DISCHARGED
62	M	48	CHOLECYSTITIS IN SEPSIS, T2DM, AKI	ABDOMINAL	BLOOD	ENTEROCOCCUS FAECALIS	GRAM POSITIVE	36.8	66	7.18	120	18	134	5.28	5.5	42.6	17.4	15	117.7	N/A	18	10.5	4.3	2.8	1.5	33	38	91	187	87.38	4.4	13.4	333	8	DISCHARGED
63	M	85	SEPTIC ENCEPHALOPATHY, HTN, IHD	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.4	55	7.38	94	26	141	4.96	1.89	34.4	18	10	49.4	284	21	11.7	2.8	3.3	0.8	48	37	433	117	54.67	16.6	7.8	190	12	DISCHARGED
64	F	65	UROSEPSIS, T2DM, DKA	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	37.6	44	7.3	113	36	135	5.01	1.21	36	11.6	11	92.1	116	20	11.1	3.6	2	1.8	371	568	462	60	28.04	10.8	11.1	170	10	EXPIRED

65	F	66	SEPTIC SHOCK SECONDARY TO LEFT PYELONEPHRITIS, T2DM	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	37.7	51	7.5	118	30	106	3.66	0.69	39.1	14.1	10	85.34	N/A	20	10.6	3.8	2.6	1.5	10	19	118	14.2	6.64	21.6	11.5	292	7	DISCHARGED
66	M	67	ASPIRATION PNEUMONIA, OLD CVA LEFT HEMIPARESIS, IHD	RESPIRATORY	BLOOD, ETT	FUSOBACTERIUM SP	GRAM NEGATIVE	36.8	51	7.49	104	33	139	3.4	0.82	46.3	21.5	13	72.89	238	16	11.4	3.4	3.5	1	136	118	160	59	27.55	21	15.8	343	1	DISCHARGED
67	F	62	UROSEPSIS, CKD, CHF, HTN	GENITOURINARY	URINE	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	36.7	62	7.52	75	28	142	3.71	2.36	29.6	7.1	15	66.66	N/A	21	8.8	2.8	2.4	1.2	13	13	152	137	63.98	26	9	60	19	DISCHARGED
68	M	66	SEPTIC SHOCK, CKD, HTN	GENITOURINARY	URINE	STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	37.2	55	7.1	126	40	134	5.37	4.75	32.2	12.5	14	59.3	60	30	9.4	3.4	2.6	1.3	33	49	158	111	51.84	13	10.3	51	2	DISCHARGED
69	M	67	SEPTIC SHOCK, T2DM, DKA	GENITOURINARY	BLOOD, URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.5	45	6.91	118	38	145	4.19	2.06	28.1	6	15	77.34	N/A	26	12.7	2.1	3.5	0.6	36	15	837	203	94.8	12	9	36	24	DISCHARGED
70	F	20	UROSEPSIS, AKI	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.3	47	7.27	114	36	153	3.29	6.35	29.9	44.1	13	67.12	N/A	29	9.4	2.3	2.6	0.9	36	37	91	204	95.27	17	9.4	19	2	DISCHARGED
71	M	92	B/L LOWER LIMB CELLULITIS, IHD	SOFT TISSUE AND SKIN	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	38.9	54	7.93	89	19	132	4.74	1.42	37.5	6.6	12	92.5	N/A	16	7.7	3.9	2.6	1.5	20	27	118	47	21.95	21	12	197	10	EXPIRED
72	M	72	UROSEPSIS, HTN, T2DM, AF	GENITOURINARY	URINE	KLEBSIELLA OXYTOCA	GRAM NEGATIVE	37.9	62	7.02	101	20	119	5.09	5.96	35	29.1	11	81.77	N/A	28	9	2.4	3.3	0.7	23	40	232	148	69.12	12	11.1	213	16	DISCHARGED
73	M	52	SEPTIC SHOCK, ARDS	SOFT TISSUE AND SKIN	PUS	METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	38.3	56	7.39	96	36	134	4.6	2.72	32.9	8.3	10	73.62	400	21	9.3	2.8	2.4	1.2	14	22	83	66	30.82	16	10.3	130	17	DISCHARGED
74	F	48	SEPTIC SHOCK, T2DM, DKA	UNKNOWN	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	37.2	44	7.43	110	42	133	3.84	0.54	39.4	18.2	11	85.7	N/A	21	10.3	4	2.4	1.7	15	14	390	30	14.01	21	13.7	173	3	DISCHARGED
75	F	76	LRTI, IHD	RESPIRATORY	SPUTUM	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	38.2	68	7.24	93	26	137	6.34	2.87	32.4	14.1	14	101.7	N/A	22	7.9	3.8	3.4	1.1	11	10	284	42	19.61	23	8.7	470	7	DISCHARGED
76	M	78	PYELONEPHRITIS, T2DM	GENITOURINARY	URINE	ENTEROCOCCUS FAECALIS	GRAM POSITIVE	40.1	65	7.42	79	18	125	3.32	2.19	28.9	5.6	10	71.2	N/A	27	9	2.8	3.3	0.8	64	119	115	113	52.77	21	2.9	59	1	EXPIRED
77	F	60	BRONCHOPNEUMONIA	RESPIRATORY	SPUTUM	KLEBSIELLA PNEUMONIAE	GRAM NEGATIVE	37.3	60	7.37	87	26	152	3.7	2	36.5	14.9	15	77.47	N/A	10	9.6	2.2	3.6	1.3	88	140	188	145	43.6	16	11.8	150	2	EXPIRED
78	M	79	ASPIRATION PNEUMONIA, IHD	RESPIRATORY	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	36.9	65	7.41	112	30	136	4.38	1.78	40.5	18.1	12	81.1	263	21	7	3.5	2.4	1.5	12	13	266	33	15.41	18	13.1	247	2	DISCHARGED
79	M	79	PNEUMONIA LEFT	RESPIRATORY	BLOOD	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	37.8	59	7.7	116	29	131	3.48	0.89	39.6	19.6	15	69.56	N/A	18	11.2	3.9	3.5	1.1	16	53	162	31	14.48	31	13.1	400	9	DISCHARGED
80	F	22	UROSEPSIS IN SEPTIC SHOCK	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.5	52	7	120	24	130	5.6	1.14	42.3	7.4	14	152.23	N/A	15	10.5	2.1	3.4	0.6	50	40	400	30	14.01	14	13.4	171	24	DISCHARGED
81	F	70	SEPTIC SHOCK, CELLULITIS OF RIGHT HAND, AKI	SOFT TISSUE AND SKIN	WOUND	PSEUDOMONAS AERUGINOSA	GRAM NEGATIVE	37.2	49	6.86	106	26	139	3.8	1.56	24.5	3.7	10	82.86	N/A	25	7.8	2.9	1.8	1.6	23	22	97	54	25.22	11	8.2	120	2	EXPIRED
82	F	64	PNEUMONIA, SEPTIC SHOCK	RESPIRATORY	BLOOD, SPUTUM	N/A	N/A	37	70	7.5	96	34	112	4.08	1.5	26.7	9.9	14	169.3	N/A	13	12.1	3.1	2.5	1.2	79	130	168	58	27.09	14	8.1	349	20	EXPIRED
83	F	65	RIGHT PYELONEPHRITIS, T2DM	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.2	50	7.12	110	15	143	3.74	4	35.1	9.1	13	81.8	67	23	7.6	2.9	3	1	27	46	121	116	54.17	16	11.2	60	10	DISCHARGED
84	M	65	PNEUMONIA, IHD	RESPIRATORY	SPUTUM	N/A	N/A	37.6	64	7.46	77	21	134	3.75	1.34	38	10.5	11	96.82	N/A	11	12	2.6	3.6	0.7	28	48	183	124	57.91	24	11.6	52	13	DISCHARGED
85	M	38	CELLULITIS, SEPTIC SHOCK	SOFT TISSUE AND SKIN	WOUND	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	37.4	59	7.51	100	20	139	4.15	2.3	37	18	14	120.1	N/A	11	12.4	2.2	3.5	0.6	38	100	77	83	38.76	17	8.2	35	3	DISCHARGED
86	F	65	SEPTICEMIA, AKI	UNKNOWN	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	37.3	48	6.96	99	18	131	3.06	2.1	31	15.1	15	76.33	N/A	21	11.8	2.1	2.8	0.8	22	104	86	94	43.9	13	7.4	59	34	DISCHARGED
87	M	58	SEPTIC SHOCK SECONDARY TO ATYPICAL PNEUMONIA	RESPIRATORY	BLOOD, SPUTUM	N/A	N/A	37.6	52	7.34	94	26	132	4.53	4.43	40.7	6.4	14	108.9	N/A	15	9.5	2.24	2.26	1	20	33	151	151	70.52	15	13.2	50	1	EXPIRED
88	F	35	SEPTIC SHOCK, PNEUMONIA	RESPIRATORY	SPUTUM	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	36.9	53	7.54	105	24	136	3.5	0.71	30.2	21.9	11	87.7	N/A	9	10.4	2.8	3	0.9	63	58	173	22	10.27	26	10.1	137	4	DISCHARGED
89	M	68	UROSEPSIS, SEPTIC ENCEPHALOPATHY, AKI	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	38.2	55	7.23	82	30	137	4.52	2.2	35	32.7	14	62.26	N/A	21	9.4	1.9	4.2	0.5	26	42	126	163	76.12	19	10.4	223	40	DISCHARGED
90	M	92	UROSEPSIS, AKI	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.3	69	6.81	76	26	139	6.99	6.14	35.5	44.1	11	71.13	N/A	32	11.8	1.9	4.3	0.4	29	79	188	227	106.01	11	11.4	142	13	DISCHARGED
91	F	60	SEPTIC SHOCK, AKI	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	36.6	62	7.44	110	19	133	3.53	2.66	32.7	19.5	13	80.1	N/A	16	8.6	2.8	2.5	1.1	22	28	101	75	35.03	23	10.9	232	8	DISCHARGED
92	M	70	SEPSIS SECONDARY TO INFECTED DIABETIC FOOT, MODS, T2DM	SOFT TISSUE AND SKIN	WOUND	METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	39.4	64	7.44	72	23	137	3.9	2.28	40.2	23.2	14	101	N/A	19	8.5	2.8	3.9	0.7	75	233	70	90	42.03	17	13.9	240	9	DISCHARGED
93	M	90	UROSEPSIS, SEPTIC ENCEPHALOPATHY	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	38.4	40	7.57	82	16	142	2.82	1.17	41.6	10.7	9	99	N/A	19	11.1	3.2	3.8	0.8	29	48	150	32	14.94	26	13.1	251	3	DISCHARGED
94	M	90	PNEUMONIA, SEPTIC SHOCK	RESPIRATORY	BLOOD, SPUTUM	ACINETOBACTER BAUMANII	GRAM NEGATIVE	36.7	57	7.34	106	28	129	4.6	1.78	28.4	13.2	11	88.22	N/A	19	12.9	2.2	2.7	0.8	16	35	88	110	51.37	18	9.6	84	14	DISCHARGED
95	M	44	PNEUMONIA, COPD	RESPIRATORY	SPUTUM	KLEBSIELLA PNEUMONIAE	GRAM NEGATIVE	38.7	65	7.58	74	36	138	5.89	1.3	35.4	12	13	141	312	17	11.8	2.1	4.5	0.5	22	35	68	130	104	17	12.1	202	14	DISCHARGED
96	M	78	PNEUMONIA, RIGHT LOWER LOBE, HTN, IHD	RESPIRATORY	SPUTUM	ACINETOBACTER BAUMANII	GRAM NEGATIVE	37.1	54	7.32	111	31	146	6.86	6.24	44.4	16.7	14	81.3	N/A	26	12.7	3.2	2.6	1.2	104	262	165	185	86.45	15.4	14	127	8	DISCHARGED

97	M	65	SEPTIC SHOCK, CELLULITIS OF RIGHT LOWER LIMB	SOFT TISSUE AND SKIN	BLOOD	ESCHERICHIA COLI	GRAM NEGATIVE	36.3	61	7.41	98	18	119	3.54	1.2	26.3	12.1	15	87.72	N/A	12	9.5	2.2	4.6	0.5	13	38	215	41.5	19.39	13.6	8	200	12	DISCHARGED
98	M	80	SEPTIC SHOCK, CELLULITIS OF LEFT LOWER LIMB	SOFT TISSUE AND SKIN	WOUND	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	38.2	55	7.63	96	16	136	2.94	0.86	46.3	11	13	94.4	N/A	16	10.7	3.48	2.82	1.2	42	29	264	21	9.81	19	14.2	213	6	DISCHARGED
99	M	50	SEPTIC SHOCK, SURGICAL SITE INFECTION,AKI	SOFT TISSUE AND SKIN	PUS	ESCHERICHIA COLI	GRAM NEGATIVE	37.6	46	7.68	110	21	135	5.91	1.89	32	14.2	10	76.66	N/A	19	11.3	3.3	2.7	1.2	34	36	99	37	17.29	15.1	10.4	403	9	DISCHARGED
100	F	73	ASPIRATION PNEUMONIA	RESPIRATORY	BLOOD	N/A	N/A	36.1	65	7.91	75	24	137	3.59	1.53	25	1.2	11	77	220	23	8.2	2.8	3.3	0.8	33	45	182	106	49.53	13.5	4.6	62	8	DISCHARGED
101	M	50	UROSEPSIS, IHD	GENITOURINARY	BLOOD	STAPHYLOCOCCUS EPIDERMIDIS	GRAM POSITIVE	37.3	51	7.12	80	14	133	4.3	4.66	32.4	6.9	12	69.36	N/A	19	9.1	3.9	3	1.3	14	30	122	68.2	31.87	11.7	10.1	244	12	DISCHARGED
102	M	71	ASPIRATION PNEUMONIA	RESPIRATORY	BLOOD	N/A	N/A	39.8	56	7.62	84	28	125	4.39	1.13	34	13.2	14	114.2	193	17	11.6	3.8	3.3	1.2	12	12	338	41.6	19.44	22.5	11.7	310	2	DISCHARGED
103	M	74	ASPIRATION PNEUMONIA, OLD CVA	RESPIRATORY	URINE, ETT, PUS	KLEBSIELLA OXYTOCA, KLEBSIELLA PNEUMONIAE, ACINETOBACTER BAUMANII	GRAM NEGATIVE	40.4	61	7.28	95	32	155	3.11	0.97	34.6	14.5	11	89.54	N/A	20	12	2.6	2.8	0.9	14	29	106	18.2	8.5	20.8	11.1	303	10	DISCHARGED
104	F	72	SEPTIC SHOCK, AKI	UNKNOWN	BLOOD	N/A	N/A	38.3	51	6.37	114	16	140	2.63	3.4	30.5	17.4	14	121	N/A	23	7.4	3.1	3.3	0.9	31	64	109	127	59.35	10	10.2	114	1	EXPIRED
105	M	80	SEPTIC SHOCK, B/L LOWER LIMB CELLULITIS	SOFT TISSUE AND SKIN	WOUND	METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	37.5	50	7.01	118	18	134	4.32	2.01	29	29.1	15	71.12	N/A	21	10.8	1.2	3	0.4	24	57	104	68.5	32.01	12.1	9.3	108	8	DISCHARGED
106	M	58	PNEUMONIA, SEPTIC SHOCK	RESPIRATORY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37.7	67	6.93	110	22	114	6.73	2.58	36.8	10	13	81.3	N/A	25	11.6	2.4	2.4	1	57	305	21	47.9	22.38	9	12.4	22	16	DISCHARGED
107	M	85	SEPTIC ENCEPHALOPATHY, HTN, T2DM	UNKNOWN	BLOOD	STAPHYLOCOCCUS HAEMOLYTICUS	GRAM POSITIVE	38.3	46	7.73	102	24	134	3.69	1.2	32.5	13.5	7	76.94	N/A	22	7.8	3.4	2.6	1.3	54	78	121	55.7	26.03	17.1	10.6	258	8	DISCHARGED
108	F	56	UROSEPSIS, IHD	GENITOURINARY	URINE	KLEBSIELLA OXYTOCA	GRAM NEGATIVE	37.1	52	7.24	78	16	135	4.9	3.79	28	28.1	12	84.09	N/A	23	10.4	2.6	4	0.6	23	37	199	90.9	42.48	16	8.2	441	12	DISCHARGED
109	M	72	PNEUMONIA, SEPTIC SHOCK	RESPIRATORY	BLOOD	N/A	N/A	37.2	60	7.32	90	28	139	3.3	1.8	38	18	10	52.71	287	23	12.7	3.2	2.6	1.2	104	262	165	185	86.45	15.4	14	127	10	DISCHARGED
110	F	64	PNEUMONIA, HTN, SVT	RESPIRATORY	SPUTUM	N/A	N/A	39.6	54	7.68	108	25	133	4.06	1.24	43.6	19.7	11	78.04	N/A	17	9.2	4.2	3.3	1.3	33	35	112	46.4	21.68	25.3	14.3	235	14	DISCHARGED
111	F	60	SEPSIS SECONDARY TO INFECTED BED SORE, OLD CVA, T2DM	SOFT TISSUE AND SKIN	WOUND	ESCHERICHIA COLI	GRAM NEGATIVE	37.3	55	7.61	120	32	131	4.73	1.36	48	9.8	13	51.72	150	14	11.8	2.8	2.6	1.1	62	161	104	37.8	17.66	26.7	13.7	184	9	DISCHARGED
112	F	66	UROSEPSIS, T2DM, DKA	GENITOURINARY	URINE, BLOOD	METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	40.4	50	6.4	100	36	132	4.57	1.15	37.9	37.5	9	52.28	179	25	10.6	3.2	2.4	1.3	13	14	551	60.2	28.13	4	12.5	372	11	DISCHARGED
113	M	67	SEPTIC SHOCK SECONDARY TO DEEP SPACE INFECTION OF RIGHT HAND, T2DM	SOFT TISSUE AND SKIN	BLOOD, URINE	STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	39.2	57	7.36	116	20	119	3.54	1.2	26.3	12.1	10	61.17	N/A	23	9.5	2.2	4.6	0.5	13	38	215	41.5	19.39	13.6	8	200	4	EXPIRED
114	M	78	ASPIRATION PNEUMONIA	RESPIRATORY	BLOOD	N/A	N/A	39	63	7.48	78	16	139	3.2	0.87	23.3	10.9	13	76.62	N/A	16	9.5	3.6	2.8	1.3	34	75	138	24.8	11.59	21.7	6.8	253	12	DISCHARGED
115	M	32	SEPTICEMIA, AKI, HTN	UNKNOWN	BLOOD	N/A	N/A	36.7	65	7.39	117	18	135	4.31	9.28	35.8	18.2	12	74.03	N/A	16	11.4	3.3	1.7	1.9	149	84	121	220	102.8	17.8	12.4	70	11	DISCHARGED
116	M	67	PNEUMONIA, HTN	RESPIRATORY	SPUTUM	STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	38.3	62	7.46	105	24	129	3.7	1.5	42	40.4	15	57.77	316	17	12	3.7	2.9	1.3	37	25	192	32.6	15.23	18.3	13.6	237	13	DISCHARGED
117	F	62	UROSEPSIS SECONDARY TO CHRONIC URINARY CATHETERISATION, T2DM	GENITOURINARY	URINE	KLEBSIELLA OXYTOCA	GRAM NEGATIVE	38.7	60	7.23	98	14	150	4.99	4.05	32.4	24.7	11	59.98	97	24	8.8	2.1	2.4	0.9	17	44	75	67.1	31.36	14.6	8.6	525	7	DISCHARGED
118	M	36	TUBERCULOSIS PNEUMONIA, SEPTIC SHOCK	RESPIRATORY	SPUTUM	MYCOBACTERIUM TUBERCULOSIS	GRAM POSITIVE	37.2	48	7.43	111	18	141	4.01	1.29	42	19	9	64.43	N/A	14	8.8	4	4.2	1	17	48	141	50.3	23.5	18.4	13.4	66	2	EXPIRED
119	F	50	PNEUMONIA	RESPIRATORY	BLOOD, SPUTUM	N/A	N/A	36.6	58	7.33	89	21	140	4.85	3.41	43	5.7	9	90	N/A	16	10.8	3.4	3.1	1.1	19	39	173	142	66.31	20	14.3	119	6	EXPIRED
120	M	36	OLD PTB, ?MENINGITIS, ENCEPHALOPATHY	CENTRAL NERVOUS SYSTEM	BLOOD	COAGULASE NEGATIVE STAPH SP	GRAM POSITIVE	38	52	7.51	98	16	122	4.39	0.59	38.3	8.4	11	68.21	120	11	10.8	3	3.2	0.9	37	52	184	7.4	3.46	26.5	12.7	363	14	DISCHARGED
121	M	75	PNEUMONIA B/L, HTN, IHD	RESPIRATORY	SPUTUM	KLEBSIELLA PNEUMONIAE	GRAM NEGATIVE	37.4	68	7.45	116	18	127	3.1	0.97	36	9.9	10	94.1	N/A	18	11.3	2.6	3.2	0.8	47	113	180	30.7	14.35	9	11.7	109	18	DISCHARGED
122	F	84	SEPTIC SHOCK, CELLULITIS B/L LOWER LIMBS	SOFT TISSUE AND SKIN	BLOOD	STAPHYLOCOCCUS AUREUS	GRAM POSITIVE	37.1	50	6.92	101	15	145	4.19	2.06	28.1	6	15	69.93	N/A	18	12.7	2.1	3.5	0.6	36	15	837	203	94.8	12	9	36	8	DISCHARGED

123	M	58	NECROTISING PNEUMONIA OF RIGHT LOWER LOBE, HTN	RESPIRATORY	SPUTUM	STREPTOCOCCUS PYOGENES	GRAM POSITIVE	40.5	58	7.1	76	26	139	5.2	3	35.5	44.1	10	52.27	364	31	11.8	1.9	4.3	0.4	29	79	188	227	106.01	11	11.4	142	15	DISCHARGED
124	M	69	SEPTIC SHOCK SECONDARY TO PNEUMONIA OF RIGHT LUNG LOWER LOBE, DKA, T2DM	RESPIRATORY	SPUTUM	STREPTOCOCCUS PNEUMONIAE	GRAM POSITIVE	36.2	40	7.44	84	24	133	3.53	2.66	32.7	19.5	13	80.1	N/A	18	8.6	2.8	2.5	1.1	22	28	101	75	35.03	23	10.9	232	6	EXPIRED
125	M	68	UROSEPSIS, T2DM, IHD	GENITOURINARY	URINE	ESCHERICHIA COLI	GRAM NEGATIVE	37	50	7.44	116	16	130	3.51	2.19	26	23.8	15	99.7	N/A	19	11.5	2.5	2.3	1.1	45	41	78	53.7	25.09	14.6	8.3	311	10	DISCHARGED
126	M	75	SEPSIS - INFECTED DIABETIC FOOT, T2DM	SOFT TISSUE AND SKIN	WOUND	PROTEUS MIRABILIS	GRAM NEGATIVE	38.9	60	6.71	78	18	133	4.9	2.74	41.1	16.3	10	64.6	N/A	26	11.4	3.7	3	1.2	118	138	122	119	55.61	10	11.4	209	7	DISCHARGED