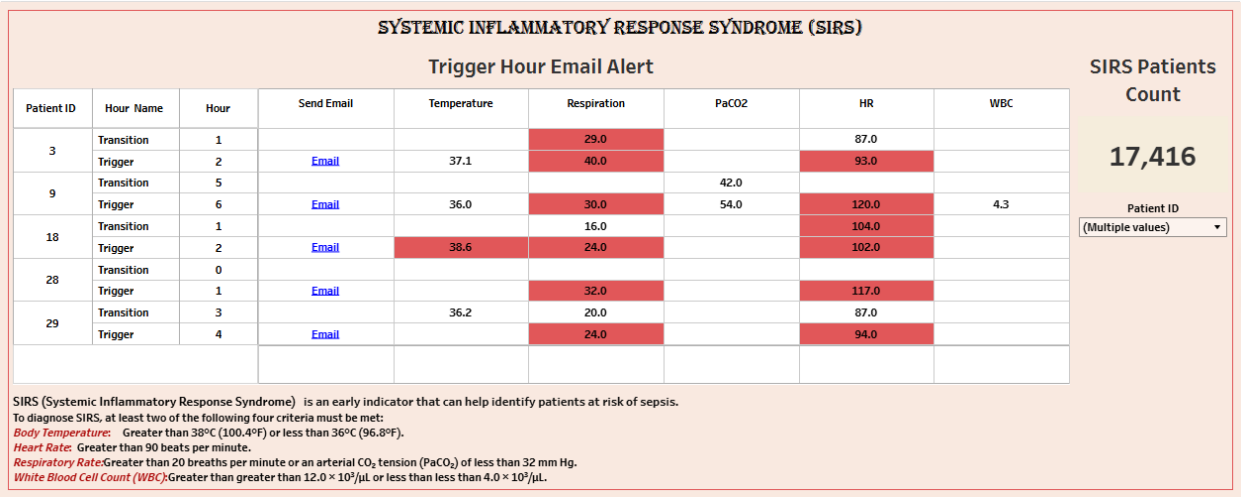
Systemic Inflammatory Response Syndrome (SIRS) Email Alert



SYSTEMIC INFLAMMATORY RESPONSE SYNDROME (SIRS)

Trigger Hour Email Alert

Patient ID	Hour Name	Hour	Send Email	Temperature	Respiration	PaCO2	HR	WBC
3	Transition	1			29.0		87.0	
	Trigger	2	Email	37.1	40.0		93.0	
9	Transition	5				42.0		
	Trigger	6	Email	36.0	30.0	54.0	120.0	4.3
18	Transition	1			16.0		104.0	
	Trigger	2	Email	38.6	24.0		102.0	
28	Transition	0						
	Trigger	1	Email		32.0		117.0	
29	Transition	3		36.2	20.0		87.0	
	Trigger	4	Email		24.0		94.0	

SIRS Patients Count

17,416

Patient ID

(Multiple values)

SIRS (Systemic Inflammatory Response Syndrome) is an early indicator that can help identify patients at risk of sepsis.
To diagnose SIRS, at least two of the following four criteria must be met:
Body Temperature: Greater than 38°C (100.4°F) or less than 36°C (96.8°F).
Heart Rate: Greater than 90 beats per minute.
Respiratory Rate: Greater than 20 breaths per minute or an arterial CO_2 tension ($PaCO_2$) of less than 32 mm Hg.
White Blood Cell Count (WBC): Greater than greater than $12.0 \times 10^3/\mu L$ or less than less than $4.0 \times 10^3/\mu L$.

Sepsis is a life-threatening condition caused by the body's response to infection, leading to widespread inflammation, organ failure, and death. Data analysis helps identify early indicators, predict outcomes, and optimize resource allocation, improving patient care and reducing ICU overcrowding**.**

An alert system using URL actions in the dashboard supports timely clinical response alerting the relevant stakeholders directly from the dashboard.

Tool Used: Tableau

🔗 **Click the link to view full dashboard:**

https://public.tableau.com/app/profile/shanmuga.priya7085/viz/systemicInflammatoryResponseSyndromeSIRSEmailAlert/SIRS?publish=yes

Analysis Question:

Create a tool to identify individuals at risk of sepsis, enabling early intervention and improving patient outcomes.

1. SIRS (Systemic Inflammatory Response Syndrome) is an early indicator that can help identify patients at risk of sepsis. To diagnose SIRS, at least two of the following four criteria must be met:
    - Body Temperature: Greater than 38°C (100.4°F) or less than 36°C (96.8°F).
    - Heart Rate: Greater than 90 beats per minute.

- Respiratory Rate: Greater than 20 breaths per minute or an arterial CO_2 tension ($PaCO_2$) of less than 32 mm Hg.
- White Blood Cell Count (WBC): Greater than greater than $12.0 \times 10^3/\mu L$ or less than less than $4.0 \times 10^3/\mu L$.

2. SIRS Count metric represents the number of patients currently meeting two or more SIRS criteria. There are 17,416 SIRS patients in the dataset. Monitoring this count helps in assessing the prevalence and potential risk within the patient population.

3 Automated alerts are sent to healthcare providers when a patient meets two or more SIRS criteria for which we create Conditional Formatted Table with columns - Patient ID , Hour Name (Transition Hour, Trigger Hour), Temperature, Respiration Rate , $PaCO_2$ Levels, Heart Rate , White Blood Cell Count , with abnormal biomarkers flagged red. Transition Hour is the hour preceding the Trigger Hour, during which one or more abnormal values may begin to appear. Trigger Hour refers to the specific hour when a patient first exhibits two or more abnormal SIRS values. Calculated fields determine 'Trigger Hour' for the flagged abnormal biomarkers for each patient and trigger the Email Alert .

for example,

- Patient ID 9 has two abnormal biomarkers Respiration Rate: 30 breaths/min, Heart Rate: 120 bpm has trigger hour 6 at which email will be triggered to the doctor.
- Patient ID 18 has three abnormal biomarkers: Temperature: 38.6°C, Respiration Rate: 24 breaths/min, Heart Rate: 102 bpm has trigger Hour 2 at which email will be triggered to the doctor.