SUMMER INTERNSHIP REPORT

AT

Sitaram Bhartia Institute of Science and Research, New Delhi

(May 1st to June 30th, 2025)

A Report

By

PIYUSH DUTT

(PG/24/075)

Mentor: Dr. Shikha Bassi

PGDM (Hospital and Healthcare management)

2024-2026

International Institute of Health Management Research, New Delhi

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SB/HR/INTERN/2025/5717

July 01, 2025

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Piyush Dutt has done his voluntary internship with this Institute in the department of Quality and Training from May 01, 2025 to June 30, 2025.

During the tenure of his internship with the Institute, he is found to have a good moral character/conduct and work ethics.

We wish him all success in his future endeavors.

For **Sitaram Bhartia Institute of Science & Research**

Beer Singh
Manager-Human Resources

SITARAM BHARTIA INSTITUTE OF SCIENCE & RESEARCH
HR Deptt.
NEW DELHI

(Completion of Summer Internship from respective organization)
The certificate is awarded to

Name: Piyush Dutt

In recognition of having successfully completed his
Internship in the department of
Quality

and has successfully completed his Project on

Title of the Project

Implementation of Quick Sequential Organ Failure Assessment (qSOFA) in the Emergency Department at Sitaram Bhartia Institute of Science and Research, New Delhi

Date: 1st May – 30th June 2025

Organisation: Sitaram Bhartia Institute of Science and Research, New Delhi

He comes across as a committed, sincere & diligent person who has
strong drive & zeal for learning

We wish him all the best for future endeavors

Organization Supervisor

Head-HR/Department Head

SITARAM BHARTIA INSTITUTE OF SCIENCE & RESEARCH
HR Deptt.
NEW DELHI

Certificate of Approval

The Summer Internship Project of titled **"Implementation of Quick Sequential Organ Failure Assessment (qSOFA) in the Emergency Department at Sitaram Bhartia Institute of Science and Research, New Delhi"** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of Post Graduate Diploma in Health and Hospital Management for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the report only for the purpose it is submitted.

Dr. Shikha Bassi
Assistant Professor
IIHMR, DELHI

FEEDBACK FORM

(Organization Supervisor)

Name of the Student: Piyush Dutt

Summer Internship Institution: Sitaram Bhartia Institute of Science and Research, New Delhi

Area of Summer Internship: Quality Department

Attendance: 97%

Objectives met: Demonstrated good understanding of departmental workflows
Successfully supported data collection, basic analysis, and documentation tasks.

Deliverables: Contributed and help in implementation of new process in Emergency department,

Completed assigned tasks on time

Strengths: Eager to learn and take initiatives, demonstrated good analytical skills, maintained professionalism.

Suggestions for Improvement: Could focus more on detail orientation while handling clinical data

Pallavi Sandhyan

Signature of the Officer-in-Charge (Internship)

Date: 28/06/2025

Place: SBISR, New Delhi

FEEDBACK FORM

(IIHMR Mentor)

Name of the Student: Piyush Dutt

Summer Internship Institution: Sitaram Bhartia Institute of Science and Research, New Delhi

Area of Summer Internship: Quality Department

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Signature of the Officer-in-Charge

(IIHMR-Mentor)

Date: 05/07/2025

Place: Delhi

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ACKNOWLEDGEMENTS

I express my sincere regards to **Mrs. Saru Bhartia, Deputy Director of Sitaram Bhartia Institute of Science and Research, New Delhi,** for encouraging me to reach the highest peak and for providing me with the opportunity to prepare the project.

I would like to express my sincere gratitude and deep sense of indebtedness to my organizational mentor**, Dr. Avinash Kumar** as well as **Dr. Rakhi Wadhwani, Ms. Sandhya Sachdev, Ms. Himanshi,** and **Dr. Nitya Kapoor** from the Quality Department at Sitaram Bhartia Institute of Science and Research for their valuable guidance and kind supervision given to me throughout the course of my internship as well as providing the necessary information regarding the project which shaped the present work as it shows.

I am deeply grateful to my institute **IIHMR- DELHI**, for giving me the chance to do my internship with such a renowned organization, I truly would want to thank **Dr. Sutapa Neogi**, Director of IIHMR-DELHI, for her sheer motivation and guidance for all our work. I would like to extend my gratitude to **Dr. Divya Aggarwal**, Associate Dean. I am thankful for the type of patronage, loving inspiration and timely advice which I have received from my faculty mentor, **Dr. Shikha Bassi**, Assistant Professor.

I would also appreciate all those who have supported me directly or indirectly in achieving my objectives.

I would thank all my organizational senior members for having faith in me and entrusting me with reliable tasks.

Piyush Dutt

(PG/024/075)

IIHMR, Delhi

ACRONYMS/ABBREVIATIONS

S.NO	ABBREVIATION	FULL FORM
1	SBISR	Sitaram Bhartia Institute of Science and Research
2	ICU	Intensive Care Unit
3	NICU	Neonatal Intensive Care Unit
4	PICU	Pediatric Intensive Care Unit
5	MRD	Medical Record Department
6	OPD	Outpatient Department
7	F&B	Food and Beverages
8	PAC	Pre-Anesthesia Check-up
9	EWS	Economically Weaker Section
10	IVF	In-Vitro Fertilization
11	RCA	Root Cause Analysis
12	PDSA	Plan–Do–Study–Act
13	NABH	National Accreditation Board for Hospitals and Healthcare Providers
14	NABL	National Accreditation Board for Testing and Calibration Laboratories
15	QI	Quality Improvement
16	WHO	World Health Organization
17	ED	Emergency Department
18	qSOFA	quick Sequential Organ Failure Assessment
19	GCS	Glasgow Coma Scale
20	ABG	Arterial Blood Gas
21	CMO	Chief Medical Officer
22	RMO	Resident Medical Officer

OBSERVATIONAL LEARNING

INTRODUCTION ABOUT THE ORGANISATION

Sitaram Bhartia Institute of Science and Research

Sitaram Bhartia Institute of Science and Research (SBISR) is a distinguished not-for-profit hospital and research institution, strategically located in the Qutab Institutional Area of South Delhi. Established with a mission to serve society through medical innovation, research, and patient-centered care, the institute has evolved into a recognized multi-specialty healthcare facility that seamlessly blends compassionate clinical care with evidence-based medical practices. [7]



The institute was envisioned to make a difference in the healthcare landscape by focusing on ethical and high-quality care. True to this vision, Sitaram Bhartia has become a model for integrating medical research with healthcare delivery, with a strong emphasis on continual learning and institutional development.[7]





Vision and Core Ideology

The **core purpose** of Sitaram Bhartia is:

To serve society as a well-spring of excellence in healthcare delivery, research, and education.

The institute is guided by a robust **core ideology**, which serves as the foundation for its strategic decisions and organizational culture:[7]

- Putting the interest of the patient first.
- Treating others as you would want to be treated yourself.
- Continuous learning and improvement.
- Institution building.

Envisioned Future

We will be a prolific medical center that will be known for its commitment to practicing evidence-based medicine and providing world-class care. We will have well established research programs that will focus on gaining a better understanding of the health care needs in our communities and developing practical solutions for addressing those needs. We will be seen as pioneers who will have successfully taken up those health care challenges that may otherwise have remained poorly addressed. We will have collaborative arrangements with leading institutions from around the world and be in the forefront of providing training to health professionals. Donor agencies and individual philanthropists will recognize our work by generously supporting our initiatives. We will be widely acknowledged as an institution that serves as a symbol of excellence in our society.

Organizational Structure and Leadership

The institution's leadership has played a pivotal role in its sustained growth and recognition. Under the able guidance of its directors and department heads, SBISR has successfully implemented a wide range of clinical and operational improvements.[7]

Designation	Name
Director	Mr. Abhishek Bhartia
Medical Director	Dr. Sneh Bhargava
Deputy Director	Ms. Saru Bhartia
Deputy Medical Director	Dr. Jitender Nagpal
General Manager – Operations	Dr. Shubhra Verma
Head of Human Resources	Ms. Anitha Manoharan

The Quality Department, led by Ms. Saru Bhartia, Deputy Director, has played an instrumental role in providing clinical governance and continuous quality improvement across departments.

Human Resources and Infrastructure

Sitaram Bhartia is staffed by a highly skilled and dedicated team comprising:

- 60+ experienced doctors, specialists, and consultants.
- 110 trained nursing professionals.
- Over 250 staff members, including technicians, administrative staff, and support staff.

The hospital is equipped with 70 inpatient beds, state-of-the-art operation theatres, a modern Intensive Care Unit (ICU), Neonatal Intensive Care Unit (NICU), and Pediatric Intensive Care Unit (PICU). Diagnostic capabilities and specialty clinics further complement its inpatient and outpatient services.[7]

Services and Departments

The hospital infrastructure is thoughtfully distributed across several floors, housing a variety of clinical and support services:

1. Basement Level Services
    - Pharmacy
    - Physiotherapy Centre
    - Medical Record Department (MRD)Diabetic Centre
    - OPD consultation rooms
    - Quality Department
    - Store and Accounts
    - Information Technology (IT) Department
    - Housekeeping and Reception
    - Patient Feeding Area
2. Ground Floor Services
    - HR Department
    - Diagnostic Services (Radiology, Pathology)
    - Emergency and Trauma Services
    - Main Reception and OPD Registration
    - Food & Beverages (F&B) Department
    - Maintenance & Security Department
    - Cafeteria and Auditorium
    - Patient Service Department
    - Waiting Area
    - Research Departments 1, 2 & 3
    - Dental Department

3. First Floor Services
    - Pre-Anesthesia Check-up (PAC) Room
    - Intensive Care Unit (ICU)
    - Operation Theatres
    - Labour Room
    - Neonatal ICU (NICU)
    - Pediatric ICU (PICU)
    - Inpatient Wards
    - Gastroenterology Department
    - Nursing Station
4. Second Floor Services
    - Economy and EWS (Economically Weaker Section) Wards
    - Deluxe, Single, Twin, and Mini Suite Rooms
    - IVF Centre and IVF Counselling Rooms
    - Nursing Stations
    - Doctor's Duty Room

Key Objectives and Functions

The strategic objectives of the institute are aligned with its core mission of delivering exceptional healthcare through quality improvement and research:

1. Improve Patient Outcomes
    - Focuses on measurable improvements in patient safety, clinical results, and treatment efficacy.
2. Ensure Patient Safety
    - Implement safety protocols, error reporting systems, and conduct root cause analysis (RCA) to prevent adverse events.
3. Drive Clinical Excellence

- Partners with departments standardize care pathways based on both national and international evidence-based guidelines.

4. Support Continuous Improvement

- Trains staff in Six Sigma, and PDSA (Plan-Do-Study-Act) cycles to drive efficiency and process enhancements.

5. Engage Leadership in Quality

- Under the leadership of Ms. Saru Bhartia, over 150 quality improvement projects have been executed in departments such as:
  - Medicine
  - Surgery
  - Obstetrics and Gynecology
  - Pediatrics
  - Hospital Operations

Achievements and Quality Frameworks

Key Accreditations

- NABH (National Accreditation Board for Hospitals and Healthcare Providers) accreditation for hospital quality.
- NABL (National Accreditation Board for Testing and Calibration Laboratories) accreditation for lab services.

Staff Engagement

- Quality projects involve active participation from various departments of the hospital including medical, nursing, laboratory services, operations, pharmacy, housekeeping, IT, and administrative staff.

Research and Education

Research remains an integral part of the institute's functioning. The organization is committed to:

- Conducting research that bridges evidence-based guidelines with real-world clinical practice.
- Developing cost-effective interventions to improve outcomes.
- Collaborating with global academic and healthcare institutions for joint studies, publications, and training.

Healthcare professionals, including resident doctors and nurses, are routinely trained in best practices and updated clinical protocols, fostering a learning-oriented culture.

My internship experience at this institute provided rich exposure to the workings of a quality-driven healthcare setup. I had the opportunity to observe firsthand how quality standards are embedded into every layer of care delivery — from daily clinical operations to long-term strategic planning — reinforcing the importance of structured quality management in modern hospitals.[7]

Section 2: Mode of Data Collection

The prospective data collection method applied during the current quality improvement activity was carried out within the Emergency and Quality Departments of the Sitaram Bhartia Institute of Science and Research. Clinical data was initially captured on paper during patient triage by the nurses and doctors and then submitted to the Quality Department through a structured checklist applied during the newly transformed process of triage. All the patients suitable for inclusion were assessed with the qSOFA score at the moment of entry, and significant events with timestamps i.e., the commencement of the sepsis bundle therapy were documented with the aim of secondary analysis.

Some of the other sources of data used included observation during the simulated drills, daily clinical huddles, and the structured feedback obtained from the Emergency Department (ED), Intensive Care Unit (ICU), and the Resident Medical Officer (RMO) personnel. All the data so obtained were diligently collated into the central Excel database by the Quality Team.

During the document review, the triage form was revised to accommodate the prominently featured qSOFA scoring box, making it easier to streamline compliance monitoring. No patient-identifiable information was recorded, and all data was anonymized in keeping with institution data protection policies.

Section 3: General Findings on Learning

Department-Wise/Program-Wise Observations

During my internship, I was primarily placed in the Quality Department, where I was actively involved in multiple quality improvement efforts. My project necessitated regular coordination with the Emergency Department (ED) and occasional communication with the ICU and support service teams. This experience helped me develop an in-depth understanding of how the different departments work together to implement clinical protocol and gain improvements in patient safety.

Quality Department:

Being part of the Quality Department, I got an exposure to the basics of how hospital-wide improvements are conceived, planned, and monitored. The department took the central role in the successful implementation of the

qSOFA screening project. It conducted systematic drill rehearsals, framed the process flow, led the PDSA cycles, and monitored real-time adherence. I observed the manner the team engaged with clinical and administrative staff to institute seamless execution of the changes. Timely audits, document review, and drill rehearsals ensured that the process was being meaningfully followed at all times. One area that stood out as appropriate for future improvement was the over-reliance on manual entry of data. Migrating in the direction of automated, dashboard-based monitoring could further enhance efficiency and real-time tracking.

Emergency Department (ED):

ED team collaboration offered me practical exposure to clinical process and front-line challenges. The doctors exhibited positive mentality and adaptability in the process of introducing the qSOFA tool. Upon completion of the training sessions, enhanced triage assessment and expedited sepsis bundle initiation was seen. I appreciated the open-mindedness of doctors and nurses to provide feedback and fine-tune the process.

ICU and Support Services:

Coordination with the ICU team was supportive and collaborative. They quickly responded during simulation drills to alert signals and helped the escalation process if qSOFA scores were ≥2. I was also appreciative of the important role the involvement of the support departments like pharmacy and laboratory services played. Their quick response in the preparation of antibiotics and lactate level processing helped in the prompt completion of the sepsis bundle. There used to be delays at times, which were actively managed with communication and with process improvements that may seem trivial but mattered.

Overall, my experience among the various departments reinforced the importance of teamwork, communication, and continuing learning in the successful implementation of quality-oriented projects within the hospital environment.

Section 4: Conclusive Learning, Limitations, and Suggestions for Improvement

Implementation of the qSOFA screening tool during the Emergency Department triage was an extremely influential quality improvement project. It significantly enhanced the identification of sepsis at an early phase and facilitated activation of life-saving treatment bundles at the right time point. The project demonstrated that an effective, cheap, evidence-based tool, if implemented within an explicit structured process and reinforced with staff education, can

lead to considerable clinical outcomes. Multidisciplinary stakeholder involvement—ED, ICU, Quality, and support services—and iterative feedback utilizing PDSA cycles and mock drills facilitated the project achieving its goals. Staff engagement improved visibly, with enhanced clinical alertness and smoother teamwork coordination.

Besides the primary qSOFA project, the internship offered me the whole spectrum of experience with hospital quality critical operations.

1. **Prescription Analysis Audit (April & May 2025)**
   Conducted compliance audits of inpatient and outpatient medications for items such as legibility, dose/route/frequency, duplication, drug interactions, and overall quality of documentation.
2. **NPS (Net Promoter Score) Assessment**
   Conducted regular NPS surveys among patients newly discharged to obtain their feedback and service concerns from the patient's perspective.
3. **TAT (Turnaround Time) of Discharge Summaries**
   Followed and investigated delays in discharge summary completion; determined areas of workflow deficiencies and recommended time-limited escalation processes.
4. **IPD Shadowing for Visit Optimization**
   Shadowed and observed all kinds of visits to inpatient rooms, such as consultants, residents, nurses, dietitians, housekeeping, and others, in order to see the frequency and timing of the visits. The purpose was to identify overlapping or repetition of interactions and give recommendations to streamline and eliminate unnecessary interruption of patient rest and care continuum.
5. **Patient Flow Mapping of Pre-Anesthesia Checkup (PAC):**
   Followed the movement of patients and handovers between the Billing Counter, PAC Desk, and PAC Room to identify bottlenecks such as waiting periods or multiple registrations. Compared the total time taken in the PAC process and made recommendations for enhanced workflows with fewer delays and smoother transitions.
6. **Learning and Exposure to NABH Standards**
   Gained the foundational knowledge of NABH accreditation standards, especially patient safety, records, and care procedures.

Limitations:

- The sample size of the qSOFA project was restricted (only 4 eligible patients following implementation), which limited broader generalizability of findings.
- Mock drill scenarios did not simulate the high-pressure ED scenarios in real life, like peak-hour patient census.

Suggestions for Improvement

- Integrate qSOFA scoring into the EMR platform with auto-prompt capability to reduce manual error and promote compliance.
- Create a real-time dashboard to view the qSOFA documentation and bundle completion rate measurements.
- Plan regular refresher training sessions with the attendance of the entire clinical shifts, including the personnel on night duty.
- Institute pre-stocked sepsis response kits in the ED with antibiotics, IV fluids, and standard checklist cards.
- Automate the monitoring of discharge summary TAT with escalation notifications if the delay crosses acceptable limits.
- By shadowing rounds in the Inpatient Department (IPD), it has been observed that patients get interrupted many times by non-clinical groups such as housekeeping, GDA, security, food & beverage (F&B), and individual feedback teams. This might negatively impact patient rest, comfort, and overall satisfaction. It is recommended that the Net Promoter Score (NPS) team alone is designated to take patient feedback in a systematic manner, ideally at the discharge or moments before the discharge. This will eradicate redundancy, ensure privacy, and allow more targeted and significant collection of feedback.

Project Report

Implementation of Quick Sequential Organ Failure Assessment (qSOFA) in the Emergency Department at Sitaram Bhartia Institute of Science and Research, New Delhi

Abstract

Sepsis is a medical emergency caused by the body's response to infection with life-threatening organ dysfunction. Early identification and timely management help reduce mortality, but identification of sepsis is delayed in the majority of Indian EDs due to undefined screening criteria, limited staffing capacity, and high patient workload [5]. To offset this, the Quick Sequential Organ Failure Assessment (qSOFA) tool was implemented in the ED as part of a quality improvement project in order to facilitate the early identification and management of presumed cases of sepsis [1].

The project endeavored to implement qSOFA scoring in triage documents and start the sepsis treatment bundle within an hour of recognizing patients at high risk. qSOFA comprises three quick parameters—mental status changed (GCS <15), respiratory rate ≥22/min, and systolic blood pressure ≤100 mmHg [2]. If two or more of the criteria were present, then the predefined sepsis bundle was initiated, which included ABG/lactate measurement, blood culture, early broad-spectrum antibiotics administration, IV fluid resuscitation, and vasopressor initiation if needed [1]. Before the implementation, nurses struggled to identify sepsis early and experienced delay in the sepsis bundle initiation due to the absence of criteria and algorithms.

Prior to its roll out, the staff experienced challenges with the identification of sepsis at its early phases and delays in the initiation of the sepsis bundle due to lack of criteria and guidelines. The intervention led to improved sepsis identification at its early phases, enhanced interdisciplinary communication, reduced time to intervention, and enhanced clinical guideline compliance. It demonstrated that cheap tools like qSOFA, if implemented with structured processes and staff engagement, are able to effectively advance the provision of emergency care and enable country and global sepsis management guidelines [1,4,5].

Introduction

Sepsis is a life-threatening organ dysfunction resulting from a dysregulated host response to infection and continues to be a global public health concern. According to the World Health Organization (WHO), sepsis affects an estimated 49 million people worldwide each year, resulting in approximately 11 million deaths—nearly 20% of all global deaths [5]. Sepsis is highly burdensome in middle- and lower-income nations like India, the reason being delayed presentation, sparse infrastructure, and lack of consistent screening instruments in emergency rooms (EDs). Indian tertiary care hospital studies reported in-patient mortality due to sepsis ranging between 30% and 60% [4], which is often secondary to delayed recognition and initiation of treatment.



The Emergency Department at Sitaram Bhartia Institute of Science and Research, New Delhi, is one that is faced with a heterogenous patient population, often under the influence of time pressure and clinical uncertainty. There was no systematic process to screen sepsis during the process of triage, until this project, which led to delay or missed diagnosis and management. This gap rendered an important, simple, and reliable device like qSOFA (Quick Sequential Organ Failure Assessment) an ideal candidate to be introduced in the process of assessing patients during the first process, in line with the global guidelines of the Surviving Sepsis Campaign [1], Sepsis-3 definitions [2], and validated clinical tools applied to mortality prediction in sepsis [3].

Rationale of the Study

Sepsis remains among the leading reasons for avoidable mortality in the emergency department, particularly in resource-limited settings such as India. Despite the presence of international guidelines, most emergency departments do not have a formal early warning system established. This usually delays the identification of critically ill patients. At Sitaram Bhartia Institute of Science and Research, there was no standardized sepsis screening tool at triage. Consequently, identification, prioritization, and initiation of treatment for cases suspected of infection were often delayed.

Challenges Before Implementation:

1. **No Standard Screening:** With no standardized screening process, physicians and nurses had to rely solely on their own judgment. Frequently, sepsis cases were missed entirely or found later than they should have been.
2. **Treatment Delays:** Since there were no explicit guidelines, critical steps — such as administering the initial dose of antibiotics or monitoring lactate levels — were occasionally delayed by more than two hours, potentially making patient outcomes worse.
3. **Mixed Staff Awareness:** Not everyone who worked in emergency departments was properly trained or on the same page regarding how to treat sepsis cases.

To address this, the qSOFA (quick Sequential Organ Failure Assessment) score — endorsed by the Surviving Sepsis Campaign and Sepsis-3 guidelines — offers an easy bedside measure to rapidly identify patients at high risk of deterioration. This project aimed to implement qSOFA as an affordable, practical solution in the emergency department. It is to bridge the existing diagnostic gaps and enable staff to move faster when seconds count.

Anticipated Benefits:

•A clear, standardized triage screening process so that treatment is initiated without undue delay.

•A visible checklist to ensure everyone is held to account.

• Improved teamwork and communication among emergency, ICU, and nursing staff — to result in improved quality care.

By piloting whether qSOFA is effective in this context, the project aims to develop an example that others can follow in hospitals with similar issues to this across the nation to enhance patient outcomes.

Objectives of the Study

Primary Objective:

To implement and evaluate the efficacy of the qSOFA (Quick Sequential Organ Failure Assessment) tool in the Emergency Department for the early diagnosis of sepsis and early use of evidence-based treatment protocols.

Secondary Objectives:

- To integrate qSOFA scoring as a routine component of the triage assessment process for patients presenting with suspected infection.
- To assess the impact of qSOFA implementation on the timeliness of initiating the sepsis treatment bundle, particularly the administration of antibiotics, fluid resuscitation, and relevant investigations.
- To collect feedback from emergency department physicians, nurses, and ICU staff on the usability, acceptability, and operational challenges associated with qSOFA scoring during routine practice.

Methodology

Study Design

This study follows a prospective Quality Improvement (QI) approach using iterative Plan–Do–Study–Act (PDSA) cycles to introduce, monitor, and refine the implementation of the qSOFA screening tool in the Emergency Department (ED). The design focuses on identifying barriers, testing changes in real-time, and optimizing the workflow for early sepsis detection and management.

Study Period

The project was conducted over a one and a half month period, from 15 May 2025 to 30 June 2025.

Study Area

The intervention was implemented in the Emergency Department of Sitaram Bhartia Institute of Science and Research, a tertiary-care hospital located in New Delhi, India.

Sampling Technique

The sampling method used in this quality improvement project was Purposive Sampling, which is a form of non-probability sampling. The reason for using this method is that the research targeted a particular group of patients, i.e., adult patients who were presented to the Emergency Department (ED) of Sitaram Bhartia Institute of Science and Research with suspected or confirmed infections.

Patients were prospectively selected based on inclusion and exclusion criteria relevant to the objectives of the qSOFA screening initiative.

Inclusion Criteria

- Adults aged 18 and above
- Patients who come to the ED with suspected or confirmed infection
- Patients who are stable enough to be assessed with qSOFA

Exclusion Criteria

- Patients under 18 years old
- Pregnant women
- Patients with trauma, surgical, psychiatric, or poisoning emergencies that are not due to infection
- Patients who arrive in cardiac arrest or need immediate life-saving procedures

Intervention Components

1. Stakeholder Meetings

- An initial kickoff meeting was organized among key stakeholders like ED, ICU, RMOs, and nursing representatives to align goals and expectations.
- Daily huddles were organized to evaluate real-time progress, share feedback, and address implementation challenges collaboratively.

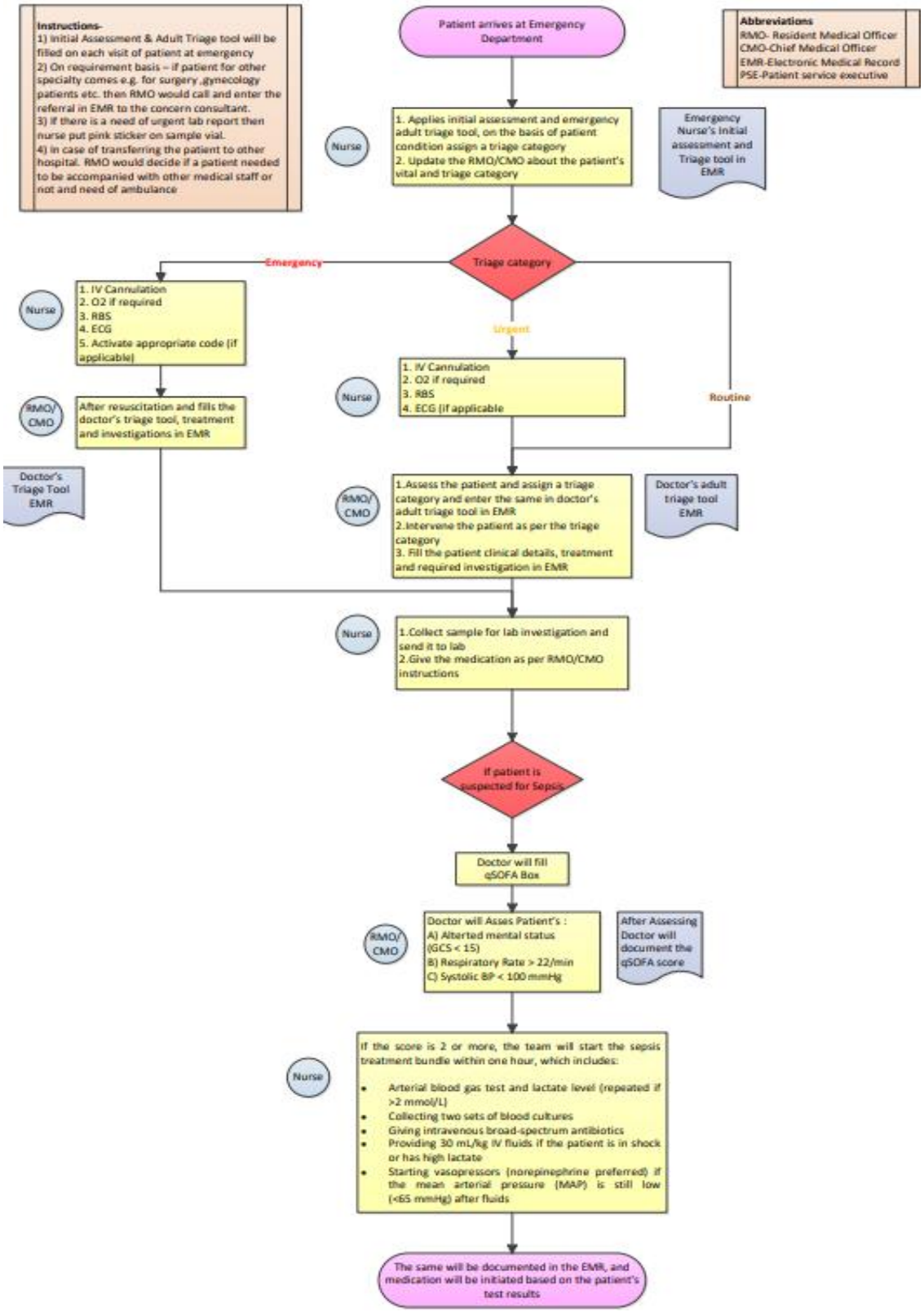
2. Training of Stakeholders

- The dedicated training session was conducted for all ED and ICU clinical staff, focusing on the pathophysiology of sepsis, application of the qSOFA tool, and components of the sepsis treatment bundle.

Process Flowchart Description:

The flowchart shown demonstrates the pathway of patients in the Sitaram Bhartia Institute of Science and Research Emergency Department (ED) after the introduction of the qSOFA screening tool. It outlines each step—from the presentation of the patient and subsequent triage examination to the administration of the qSOFA score in patients with signs of infection. A choice is made to start the sepsis treatment bundle depending on the scored result, all within the critical 1-hour window. The visual aid enables easy role delineation among ED staff, enables early transfer to the Intensive Care Unit (ICU) when required, and optimizes coordination for early sepsis management, thus preventing delays and improving outcomes for patients.

PROCESS FLOW FOR TRIAGING OF ADULT PATIENT COMING TO EMERGENCY DEPARTMENT



Mock Patient: Testing qSOFA Implementation in the Emergency Department

To test the effectiveness and real-world applicability of the newly implemented qSOFA screening tool, a Mock Test (PDSA Cycle) was conducted on **20 May 2025** in the Emergency Department at Sitaram Bhartia Institute of Science and Research, New Delhi. The objective was to simulate the arrival of a high-risk sepsis patient, test the triage process, evaluate the time taken to initiate the sepsis bundle, and identify any operational bottlenecks.

Stakeholders Involved

- **ED In-charge**: Dr. Sujeet Choudhary
- **ICU representative**: Dr. Ayush Gupta
- **Resident Medical Officer (RMO)**
- **Triage Nurses**
- **Quality Department Observer**: Dr. Avinash Kumar, Piyush Dutt (Intern)
- **Support Staff-** GDA's

Test Scenario

A simulated patient (played by a staff member) was brought in with signs of suspected infection, altered mental status, respiratory rate of 26/min, and a systolic blood pressure of 92 mmHg. The expected qSOFA score was 3, indicating a high risk of sepsis.

Execution Process

1. The CMO/RMO quickly performed the qSOFA screening at entry.
2. The CMO/RMO initiated the sepsis protocol, ordering lactate, blood cultures, IV antibiotics, and IV fluids.
3. The ICU team was informed for early involvement (if needed).

Limitations

- Simulation occurred during low patient volume; real-world applications may be more complex under high-traffic ED hours.
- Drill assumed availability of all resources (e.g., fluids, antibiotics), which may not always be the case.

- Observer effect: Staff may have performed more accurately than in real situations due to awareness of the drill.

Lessons Learned

- A visible qSOFA checklist on patient charts would support consistency.
- Antibiotic prep kits should be pre-stocked in the ED for faster administration.

PDSA R# C#	Change Name	Date	Team Members	PLAN	DO	STUDY	ACT	
1	To implement qSOFA screening during triage in the Emergency Department for early sepsis detection	15-05-2025	Dr. Sujeet Choudhary (ED) Dr. Ayush Gupta (ICU) Dr. Avinash Kumar (Quality) Piyush Dutt (Quality Intern)	**(a) What is the objective for this cycle?** To introduce and standardize qSOFA scoring as part of the triage process for identifying high-risk sepsis patients. **(b) List of tasks required to set up this test:** • Modify triage form to include qSOFA checklist. • Train ED nurses and RMOs on how to assess and score qSOFA. • Place printed qSOFA posters in ED triage bay. • Align ED and ICU teams on response protocol for qSOFA ≥2.	**(a) What did you observe when the test was carried out?** • CMO/RMO began scoring qSOFA at triage, but some missed entering BP or respiratory rate. • RMOs notified ICU promptly for patients scoring ≥2 if needed. • Time between triage and antibiotic order was noted to reduce slightly. • Feedback from nurses indicated confusion about borderline cases.	**(a) Analyze your data and describe the results:** • qSOFA was documented in all triage forms. **(b) What did you learn from this cycle?** • Coordination improved between ED and ICU teams, but nurses need clearer guidance on borderline scores.	☐ Adapt ☑ Adjust ☐ Abort	**Plan for the next cycle:** • Refresher training to emphasize complete documentation of all qSOFA parameters. • Add a prompt in the triage sheet for qSOFA entry. • Include checklist for sepsis bundle initiation once qSOFA ≥2 is detected.
2	To implement qSOFA screening during triage in the Emergency Department for early sepsis detection	27-05-2025	Dr. Sujeet Choudhary (ED) Dr. Ayush Gupta (ICU) Dr. Avinash Kumar (Quality) Piyush Dutt (Quality Intern)	**(a) What is the objective for this cycle?** To sustain and monitor 100% compliance in qSOFA scoring at triage, ensure complete documentation, and timely initiation of sepsis management bundle for patients scoring ≥2. **b) List of tasks required to set up this test:** • Monitor compliance using triage audit sheets. • Ensure checklist for sepsis bundle is used and documented. • Collect feedback from triage staff on system usability and clarity.	**(a) What did you observe when the test was carried out?** • qSOFA was documented completely and accurately in all triage cases. • Sepsis bundle checklist was initiated promptly without delay. • No missing vital signs or confusion reported.	**(a) Analyze your data and describe the results:** • 100% of triage forms had complete qSOFA documentation, including BP, RR, and GCS. • All qSOFA ≥2 cases had full sepsis bundle documented (fluids, cultures, antibiotics). **(b) What did you learn from this cycle?** • Continuous reinforcement and simplified workflow maintained high performance. • Full compliance is achievable and sustainable with structured support.	☑ Adopt ☐ Adjust ☐ Abort	**Plan for the next cycle:** • Adopt qSOFA screening and sepsis bundle checklist into standard ED operating protocol. • Scale implementation to other departments such as medical wards and Pediatrics • Initiate monthly review dashboard with compliance and clinical outcomes (e.g., mortality, time to antibiotic).

Conclusion of Mock Test:

The Mock Test was successful in identifying both strengths and operational gaps in the new workflow. The team resolved to act on the feedback through targeted interventions in the next PDSA cycle. This simulation also highlighted the importance of integrating clinical protocols with system-level readiness to improve sepsis care outcomes.

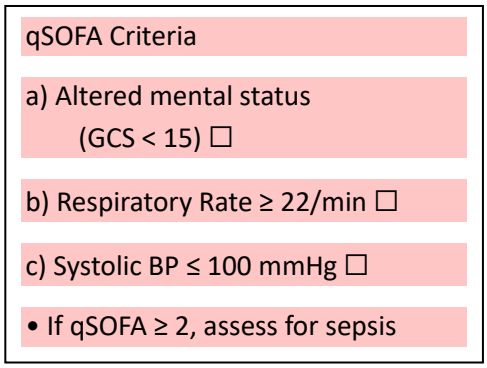
Implementation of qSOFA Box in Triage Documentation

To standardize the early identification of sepsis in the Emergency Department (ED), a dedicated qSOFA scoring box was integrated into the triage documentation form at Sitaram Bhartia Institute of Science and Research. This structural modification aimed to ensure that sepsis screening becomes a routine and visible component of initial patient assessment.

The qSOFA box included three critical parameters:

1. Altered Mental Status (GCS <15)
2. Respiratory Rate ≥22/min
3. Systolic Blood Pressure ≤100 mmHg

Each parameter was accompanied by a checkbox, allowing the triage nurse to rapidly assess and record the presence of abnormal findings. If a patient scored 2 or more, it automatically triggered the activation of the sepsis treatment bundle within one hour, as per Surviving Sepsis Campaign guidelines.



Data Collection and Management:

All data was collected prospectively from the Emergency Department at Sitaram Bhartia Institute of Science and Research during the implementation period. These data points were manually entered into a centralized Excel database by the quality department, ensuring completeness and consistency. Data from mock test and stakeholder feedback sessions were also recorded and coded for qualitative insights.

Data Analysis:

Descriptive statistics will be applied to evaluate the effectiveness of qSOFA scoring in early sepsis identification. Key metrics such as the average time to bundle initiation, frequency of qSOFA >2 cases, and percentage compliance with sepsis protocol will be analyzed. Comparative bar graphs, time charts, and tabular summaries will be used to visualize improvements across the PDSA cycles. Additionally, thematic: - analysis will be conducted on feedback from stakeholders to identify operational gaps and areas for improvement.

Interpretation:

Following the implementation of the qSOFA screening protocol in the Emergency Department (ED) at Sitaram Bhartia Institute of Science and Research, four patients presented suspected infection and were assessed using the standardized qSOFA parameters. In all four cases, the triage team successfully documented the three critical qSOFA criteria—altered mental status (GCS <15), respiratory rate ≥22/min, and systolic blood pressure ≤100 mmHg—at the point of arrival. The systematic screening ensured that early warning signs were not missed.

All four patients scored 2 or more on the qSOFA scale, which indicated a high likelihood of sepsis. In line with the protocol, the full sepsis treatment bundle was initiated within one hour for each of these cases. The average time between triage and completion of the sepsis bundle (including blood cultures, lactate test, IV antibiotics, and fluids) was 43 minutes, demonstrating timely response and improved workflow efficiency.

This outcome validates that the qSOFA protocol not only streamlined early recognition of sepsis but also accelerated clinical decision-making. Most importantly, it ensured life-saving interventions were delivered within the golden hour, reinforcing the importance of structured triage and standardized care pathways in emergency settings.

Limitations

While the qSOFA implementation project was successful in enhancing early sepsis identification and treatment, several limitations were observed during its planning and execution:

1. Small Sample Size: Only four eligible sepsis cases were identified during the post-implementation phase, limiting the ability to generalize the findings.
2. Simulation vs. Real Scenario: Mock Test was conducted under controlled conditions with known staff awareness, which may not fully replicate real-world ED challenges during peak hours.

3. Manual Documentation: Data collection and qSOFA scoring relied on manual entry, which increased the risk of omission or delay in documentation.
4. Limited EMR Integration: The triage form lacked automation prompts for qSOFA scoring, leading to dependence on staff memory and attentiveness.
5. Limited Observation Period: The implementation and monitoring were conducted over a short period, restricting long-term impact evaluation.

Recommendations

Based on the learnings and challenges observed, the following recommendations are proposed to further strengthen the sustainability and scalability of the qSOFA implementation:

1. **Automate qSOFA Prompts in EMR**: Integrate qSOFA scoring as a mandatory field in the electronic medical record to ensure consistent documentation and early alerts.
2. **Real-Time Dashboard**: Develop a real-time dashboard to track key metrics such as qSOFA documentation rates, time to antibiotics, and sepsis bundle completion.
3. **Pre-stocked Sepsis Kits**: Introduce ready-to-use sepsis kits containing broad-spectrum antibiotics, fluids, checklists, and other required supplies for immediate use.
4. **Expand Data Collection**: Continue prospective monitoring beyond the initial phase to build a more robust dataset for outcome evaluation and quality assurance.
5. **Expand qSOFA Use in Pediatrics Department:** Evaluate the feasibility of implementing qSOFA scoring specifically in the Pediatrics Department to enable early detection of clinical deterioration during triage and inpatient care.

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Annexure:

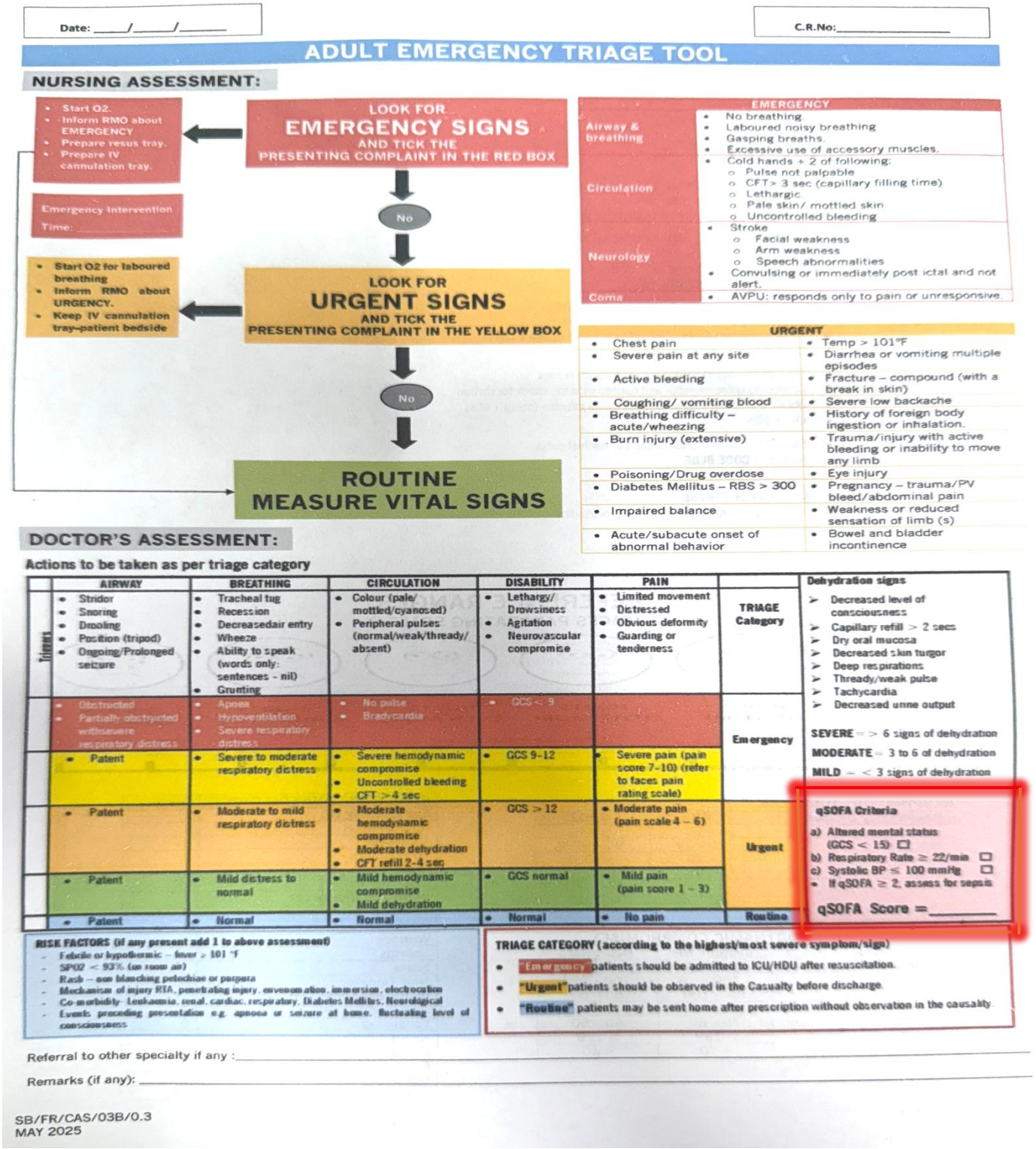
1. PDSA Cycle Documentation Sheet

PDSA R# C#	Change Name	Date	Team Members	PLAN	DO	STUDY	ACT	
1				(a) What is the objective for this cycle? (b) List of tasks required to set up this test:	(a) What did you observe when the test was carried out?	(a) Analyze your data and describe the results: (b) What did you learn from this cycle?	☐ Adapt ☐ Adjust ☐ Abort	Plan for the next cycle:
2				(a) What is the objective for this cycle? b) List of tasks required to set up this test:	(a) What did you observe when the test was carried out?	(a) Analyze your data and describe the results: (b) What did you learn from this cycle?	☐ Adapt ☐ Adjust ☐ Abort	Plan for the next cycle:

2. Sample of Centralized Excel Sheet for Data Management (qSOFA)

qSOFA (Quick Sequential Organ Failure Assessment)																	
Department: Emergency																	
Sr No.	Date	SBID.	Patient Entery time in ED	GCS Score	RR (/min)	SBP (mmHg)	qSOFA Score	qSOFA ≥2 (Y/N)	ABG Time	Blood Culture (Y/N)	Antibiotic Time	Fluid Given Time	Vasopressor Used	Time to Bundle Completion (mins)	Bundle Completed in 1 hr (Y/N)	Outcome	Remarks

3. qSOFA Triage Form Sample



Date: ____/____/____

C.R.No:_____

ADULT EMERGENCY TRIAGE TOOL

NURSING ASSESSMENT:

LOOK FOR **EMERGENCY SIGNS** AND TICK THE PRESENTING COMPLAINT IN THE RED BOX

- Start O2.
- Inform RMO about EMERGENCY
- Prepare resus tray.
- Prepare IV cannulation tray.

Emergency Intervention Time: _____

No

LOOK FOR **URGENT SIGNS** AND TICK THE PRESENTING COMPLAINT IN THE YELLOW BOX

- Start O2 for laboured breathing
- Inform RMO about URGENCY.
- Keep IV cannulation tray–patient bedside

No

ROUTINE MEASURE VITAL SIGNS

EMERGENCY	
Airway & breathing	• No breathing • Laboured noisy breathing • Gasping breaths. • Excessive use of accessory muscles.
Circulation	• Cold hands + 2 of following: o Pulse not palpable o CFT> 3 sec (capillary filling time) o Lethargic o Pale skin/ mottled skin o Uncontrolled bleeding
Neurology	• Stroke o Facial weakness o Arm weakness o Speech abnormalities • Convulsing or immediately post ictal and not alert.
Coma	• AVPU: responds only to pain or unresponsive.

URGENT	
• Chest pain	• Temp > 101°F
• Severe pain at any site	• Diarrhea or vomiting multiple episodes
• Active bleeding	• Fracture – compound (with a break in skin)
• Coughing/ vomiting blood	• Severe low backache
• Breathing difficulty – acute/wheezing	• History of foreign body ingestion or inhalation.
• Burn injury (extensive)	• Trauma/injury with active bleeding or inability to move any limb
• Poisoning/Drug overdose	• Eye injury
• Diabetes Mellitus – RBS > 300	• Pregnancy – trauma/PV bleed/abdominal pain
• Impaired balance	• Weakness or reduced sensation of limb (s)
• Acute/subacute onset of abnormal behavior	• Bowel and bladder incontinence

DOCTOR'S ASSESSMENT:

Actions to be taken as per triage category

	AIRWAY	BREATHING	CIRCULATION	DISABILITY	PAIN	TRIAGE Category
Triggers	• Stridor • Snoring • Drooling • Position (tripod) • Ongoing/Prolonged seizure	• Tracheal tug • Recession • Decreasedair entry • Wheeze • Ability to speak (words only: sentences - nil) • Grunting	• Colour (pale/ mottled/cyanosed) • Peripheral pulses (normal/weak/thready/ absent)	• Lethargy/ Drowsiness • Agitation • Neurovascular compromise	• Limited movement • Distressed • Obvious deformity • Guarding or tenderness	
	• Obstructed • Partially obstructed withsevere respiratory distress	• Apnea • Hypoventilation • Severe respiratory distress	• No pulse • Bradycardia	• GCS < 9		Emergency
	• Patent	• Severe to moderate respiratory distress	• Severe hemodynamic compromise • Uncontrolled bleeding • CFT >4 sec	• GCS 9-12	• Severe pain (pain score 7-10) (refer to faces pain rating scale)	
	• Patent	• Moderate to mild respiratory distress	• Moderate hemodynamic compromise • Moderate dehydration • CFT refill 2-4 sec	• GCS > 12	• Moderate pain (pain scale 4 – 6)	Urgent
	• Patent	• Mild distress to normal	• Mild hemodynamic compromise • Mild dehydration	• GCS normal	• Mild pain (pain score 1 – 3)	
	• Patent	• Normal	• Normal	• Normal	• No pain	Routine

Dehydration signs

- Decreased level of consciousness
- Capillary refill > 2 secs
- Dry oral mucosa
- Decreased skin turgor
- Deep respirations
- Thready/weak pulse
- Tachycardia
- Decreased urine output

SEVERE = > 6 signs of dehydration

MODERATE – 3 to 6 of dehydration

MILD – < 3 signs of dehydration

qSOFA Criteria

a) Altered mental status (GCS < 15) ☐

b) Respiratory Rate ≥ 22/min ☐

c) Systolic BP ≤ 100 mmHg ☐

- If qSOFA ≥ 2, assess for sepsis

qSOFA Score =_____

RISK FACTORS (if any present add 1 to above assessment)

- Febrile or hypothermic – fever > 101 °F
- SPO2 < 93% (on room air)
- Rash – non blanching petechiae or purpura
- Mechanism of injury RTA, penetrating injury, envenomation, immersion, electrocution
- Co-morbidity- Leukaemia, renal, cardiac, respiratory, Diabetes Mellitus, Neurological
- Events preceding presentation e.g. apnoea or seizure at home. fluctuating level of consciousness

TRIAGE CATEGORY (according to the highest/most severe symptom/sign)

- "Emergency" patients should be admitted to ICU/HDU after resuscitation.
- "Urgent" patients should be observed in the Casualty before discharge.
- "Routine" patients may be sent home after prescription without observation in the causality.

Referral to other specialty if any :_____

Remarks (if any): _____

SB/FR/CAS/03B/0.3
MAY 2025

ADULT EMERGENCY CARE (AEC) BUNDLE (QI INDICATORS)

Condition	Must do		Remarks
Coma or convulsing	• Recovery position • Start 100% Oxygen • IV access-check RBS • Inj. Midazolam	☐ ☐ ☐ ☐	
Moderate to severe distress or SpO2 ≤ 93%	• Start 100% oxygen using face mark/nasal prongs to maintain Spo2 ≥ 95% • Continuous pulse oximeter monitoring • If airway unstable insert oropharyngeal airway	☐ ☐ ☐	
Respiratory failure	• If airway unstable, insert oropharynxial airway • Start 100% oxygen, • Connect to pulse oximeter and cardiac monitor • Perform endotracheal intubation	☐ ☐ ☐ ☐	
Compensated shock	• Start 100% oxygen using face mark/nasal prongs • Connect to pulse oximeter and cardiac monitor • Obtain vascular access, start saline infusion (about 1 liter) • Check RBS	☐ ☐ ☐ ☐	
Decompensated shock	• Start 100% oxygen using face mark/nasal prongs • Connect to pulse oximeter and cardiac monitor, check for rhythm • Obtain a vascular access IV, start saline infusion (about 1 liter) • Check RBS	☐ ☐ ☐ ☐	
Cardiopulmonary failure/arrest	• Start CPR if absent femoral/carotid/brachial pulse. • Announce **CODE BLUE**	☐ ☐	
Stroke	• Activate **CODE STROKE** • Follow stroke patient management process flow	☐ ☐	
Not applicable	• Not applicable	☐	

REFERENCE RANGES

FACES PAIN RATING SCALE



RESPIRATORY DISTRESS

Respiratory Distress	RR	SPO2
Mild	15 – 20	> 93%
Moderate	21 – 29	90 – 92 %
Severe	> 29 < 09	<90 %

CIRCULATION (HEMODYNAMIC COMPROMISE)

Hemodynamic Compromise	Systolic BP (mmHg)	Heart Rate (per minute)
Mild	160 – 180	100 - 110
	80 - 100	50 – 60
Moderate	> 180 – 199	111 – 129
	70 – 80	40 – 50
Severe	> 199	> 129
	< 70	< 40

GLASSGOW COMA SCALE (GCS)	Score
Eye Opening (E)	
Spontaneous	4
To Sound	3
To pressure	2
None	1
Non Testable	NT
Verbal Response (V)	
Oriented	5
Confused	4
Words	3
Sounds	2
None	1
Non Testable	NT
Motor Response (M)	
Obeys commands	6
Localizing	5
Normal flexion	4
Abnormal flexion	3
Extension	2
None	1
Non Testable	NT

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Piyush Dutt ST report

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