Terms of reference for a request for proposals

Key Performance Indicators dashboard for Lebanese Red Cross Emergency Medical Services Quality Improvement

Lebanese Red Cross
Emergency Medical Services

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Introduction

The Lebanese Red Cross (LRC), established in 1946, provides a multitude of free humanitarian, social and health services to the population in Lebanon. Its flagship service, the Emergency Medical Services (EMS) is in the process of implementing a strategy to improve access to the population in Lebanon to effective pre-hospital emergency care.

Statement of purpose

After digitization of patient care report, and in line with the planned strategy, this project intends to bring value from the data generated by the mission information management system. This data contains information about the missions carried out by EMS teams in different stations in all Lebanon, and includes arrival and departure times, patient assessment and management and demographic info. The project has two components. The first component will be a general dashboard presenting aggregated statistics and metrics. The second component will be a dashboard presenting pre-defined quality improvement (QI) Key Performance Indicators (KPIs) values. QI officers will also be presented with an "investigator" view allowing them to dig down at a mission level to get more information about non-compliant cases and label them as compliant.

Scope

- Suppliers are asked to propose an approach with a solution and pricing based on all information, requirements and use cases provided in this document.
- Suppliers are asked to integrate the dashboard solution into the existing Lebanese Red Cross solutions and infrastructure that were developed for the digitization of Patient Care Reports (ePCRs), mainly the database systems that hold the data.
- Suppliers are expected to deliver the source code for frontend, backend servers and all developed APIs, if any, as part of the project deliverables.
- Suppliers are to propose a 1-year (subject to renewal every year) service level agreement for the application support. Details of this SLA are provided in Section 3 (Service Level Agreement).
- Suppliers are to deliver documentation for the developed application, mainly documenting the technical components (backend/frontend/database) and exchanges between them (low level) and the application platform functionalities (high level).
- Suppliers are expected to deliver a short training for the Quality Improvement team to demonstrate the application platform and all its functionalities.

Note: A developed fully working proof of concept (POC) will be available for and accessible by the chosen supplier as an illustration of the objective, the requirements and use cases of the dashboard.

Requirements

Application platform

- Application should be a password-protected Internet facing web application.
- Components should be loosely coupled in order to allow addition, modification and removal of components in an easy way.
- Data exchange must integrate with current Lebanese Red Cross solution, in line with the system diagram presented in Annex 1 and must be done with security and modularity in mind.
- The required infrastructure for the application will be supplied by the LRC after receiving all its needed specifications from the supplier.

User interface and experience

- The expectation is that anyone with basic computer knowledge could use the application both as a general public user or a QI Officer. The interface must be in English.
- User interface should be wire-framed using any wire-framing tool and approved before executing the final designs.
- Website design should be fully responsive.
- Real time validation on all fields where applicable.

User access levels

- The platform should offer four different password-protected user access levels: general public, station users, QI officers, QI admin. Responsibilities and permissions are outlined in section 3.
- User access can be implemented, or a reputable Identity and Access Management service (IAM) can be used.
- User management must be done by the QI Admin who can activate and deactivate user accounts and assign them to a specific role (general public user, stations user or QI Officer) using the administration panel.
- Password creation, change and reset must be offered to the user (General public user, station user, QI Officer) without needing intervention from the QI Admin.
- User access must satisfy all applicable security requirement laid out in this document and the OWASP Application Security Verification Standard version 4.0.

Data exchange and integration

- Data exchange should integrate with the current system architecture laid out for the ePCR system, as presented in Annex 1, mainly with the MySQL database server holding all data coming from the system.
- Data pulled from the database via the API (or any method chosen) should be pulled respecting the "least data principle", meaning that the data exchanged should be exactly and only the data required for the respective operation carried out.
- System must present a live, or near-live result of the statistics and indicators calculation that reflect the current state of the data.
- The database data should not be changed at all (read-only mode) as a result of the quality improvement system operations.
- Additional load on the current system infrastructure resultant from the integration of the quality improvement system should be planned for and studied and if need be either optimized or the infrastructure upgraded as not to put any significant load on the current system infrastructure that would render it non-performant as it is the backbone of daily operations of the LRC EMS which are very critical operations.
- The database content is a result of the digitization of the paper-based Patient Care Report (PCR). A sample of this report is available in Annex 2 to give suppliers an idea of the content and context of the data that will be analysed. Full digital form and sample data will be available to the selected supplier.

Security

- Security is of outmost importance for this application as the data worked with is highly sensitive as it contains confidential logistical information about the LRC EMS operations and medical information about patients.
- All communication between components and data exchanges must be encrypted using TLS version 1.2 or above.
- User input validation must be implemented both on server and client side and protection against SQL injection must be ensured.
- All major system operations (users' creation, modification or deletion, users' logins, data exports) must be logged.
- Application must be developed in line with all requirements laid out in the OWASP Application Security Verification Standard version 4.0 (available in the request for proposals pack as a separate document). Any requirement set in this document not respected should be highlighted and its non-importance or non-relevance to the application explained.

Testing

All components and functionalities of the application must be tested before and after integration

Components

Statistics tab

- The statistics tab is accessible by every user account type.
- General public, QI Officer and QI Admin have access to all the data while station users have access to the data of the station which the account is associated to.
- It presents graphs, charts and tables to show statistics and metrics from numerical, categorical, temporal and geographical data like:
    - Patient age distribution
    - Patient case distribution
    - Patient gender distribution
    - Emergencies location heatmap
    - Average response time
- It should allow the user to filter by:
    - date period (from-to)
    - station number, with “district” buttons to select several stations of the district (only applicable if user type is not station user)
    - day or night shift (filter by hour)

KPI tab

- The KPI tab (Annex 3) is accessible by every user account type.
- General public, QI Officer and QI Admin have access to all the data while station users have access to the data of the station which the account is associated to.
- It shows indicators value grouped by categories using gauges or filled bars, with the title of the indicator, the compliance percentage and count.
- The user account type determines which indicators are visible. The general public has access only to indicators enable to be public by the QI Admin while all other users account types have access to all indicators.
- It should allow the user to filter by:
    - date period (from-to)
    - station, with “district” buttons to select several cstations of the district (only applicable if user type is not stationuser)
    - day or night shift (filter by hour)

Investigator view

- The investigator view is in fact a subcomponent of the KPI tab.
- This view is accessible only by the QI officers and admin.
- It should allow the QI officers and QI admin to:
    - After having selected one indicator, get a view of all non-compliant emergencies, showing predefined relevant fields.
    - Add or remove any field to the view in order to get more details on the non-compliant emergencies.
    - Label one or more emergencies as actually compliant and add a comment while doing so. The compliance value of the indicator should then be changed, and those emergencies removed from the non-compliant list of the indicator.
    - Export all non-compliant cases as an Excel or CSV file containing all fields currently selected.

Admin panel:

The admin panel is accessible only by the QI Admin.
It should allow the QI Admin to:

- Create and remove user accounts and in case of station user accounts bind them to a specific station
- Enable and disable specific indicators' visibility to the general public.
- Look at every QI officer activity, the emergencies labelled as compliant, which indicator they were labelled compliant to, and the comment left by the QI officer.
- Override the QI officer labelling as compliant for one or more emergencies to change their status as non-compliant.

Service level agreement

While this application is not critical to daily LRC operations, it is tightly linked to components that are (the ePCR application) and is a tool that will be used to power one of the Lebanese Red Cross development strategy pillars, improving the effectiveness of the EMS service. That is why the platform's functioning or malfunctioning should not affect the current system or the infrastructure where it runs and that all aspects of the application be developed with accuracy, especially indicators' calculations. Suppliers are therefore asked to maintain all aspects of the application for one year after delivery and submit the initial service level agreement for the application support, taking the following points into consideration:

- Suppliers are to propose a 1-year service level agreement for the application support, subject to renewal every year, along with the renewal terms.
- Suppliers are expected to add, modify or remove indicators or any other statistics or metrics following change requests.

Response details

Suppliers are asked to provide the following to respond to the request for proposals:

Package 1: Technical package

a. Cover Letter

b. General Supplier Information:

   - Company profile with Customer References
   - Number of staff in the company
   - List of similar projects
   - Client list with references contact

c. Technical response:

   - Technical proposal summary
   - List of required software and hardware and their specifications
   - System diagram showing all components of the developed application detailing the chosen technical stack.
   - Preliminary Implementation Project Plan showing the ability to execute within 4 months

Package 2: Financial and legal package

a. Cover Letter
b. Proposal Summary with length, start and end date of contract
c. Terms and Conditions to provision requested services
d. 1-year maintenance agreement for the solution including a service level agreement, a description of post installation support capabilities and yearly renewal terms.
e. Proposed pricing and payment schedule and amount based on all features and requirements. The pricing must be itemized showing:
    a. Cost of development
    b. Cost of implementation and integration
    c. Cost of training
    d. Cost of maintenance and support plans

Note: Packages must be submitted in soft and hard copy formats. Hard copies must be submitted at LRC Headquarters every package in two copies, in a different sealed envelope. Soft copies must be submitted in two formats: PDF format and editable Microsoft Word format.

The supplier is responsible of and incurs any charge for the development of the response to this request for proposals.

All submitted proposals show agreement that all their content is valid for 90 days following the submission deadline and are part of the engagement contract negotiated between the LRC and the supplier.

Evaluation procedures

- The LRC reserves the right to make an award without further discussion of the proposal submitted. Therefore, the proposal should be initially submitted on the most favourable terms the supplier can offer.
- The selected supplier will be expected to enter into a contract with the LRC for the development, implementation, integration, testing and support of this Quality Improvement Dashboard using the response as the contract instrument.
- The RFP coordinators and other staff from the LRC and partners will evaluate the submitted proposals. The evaluators will consider the extent to which the supplier's proposed solution meets the needs of the LRC as described in the supplier's response to each requirement.

- The chosen supplier will be requested to complete a functional proof of concept, as a condition to continue the engagement, after being sent sample data. This proof of concept should at least include:
    - **Statistics tab:** A screen with the different graphs presenting statistics on the data
    - **KPI tab:** A screen with two indicators calculations and a preview of the investigator view functionality (table view without QI Officer labelling functionality)

  This proof of concept will be subject to feedback from users from the QI team and after approval will be binding on what the final user interface should look like especially concerning the design of the graphs and diagrams of the statistics tab, and of the investigator view and its table.
- Supplier must deliver the proof of concept wireframes within 60 days after supplier selection else contract will be awarded to another supplier.

The request for proposal process schedule:

Milestone	Date due
Request for proposal release	T0
Suppliers questions	T1
Proposal responses from suppliers	T2
Supplier selection	T3
Proof of concept delivery	T4 = T3 + 60 d (refer to above deadline)
Final agreement	T5

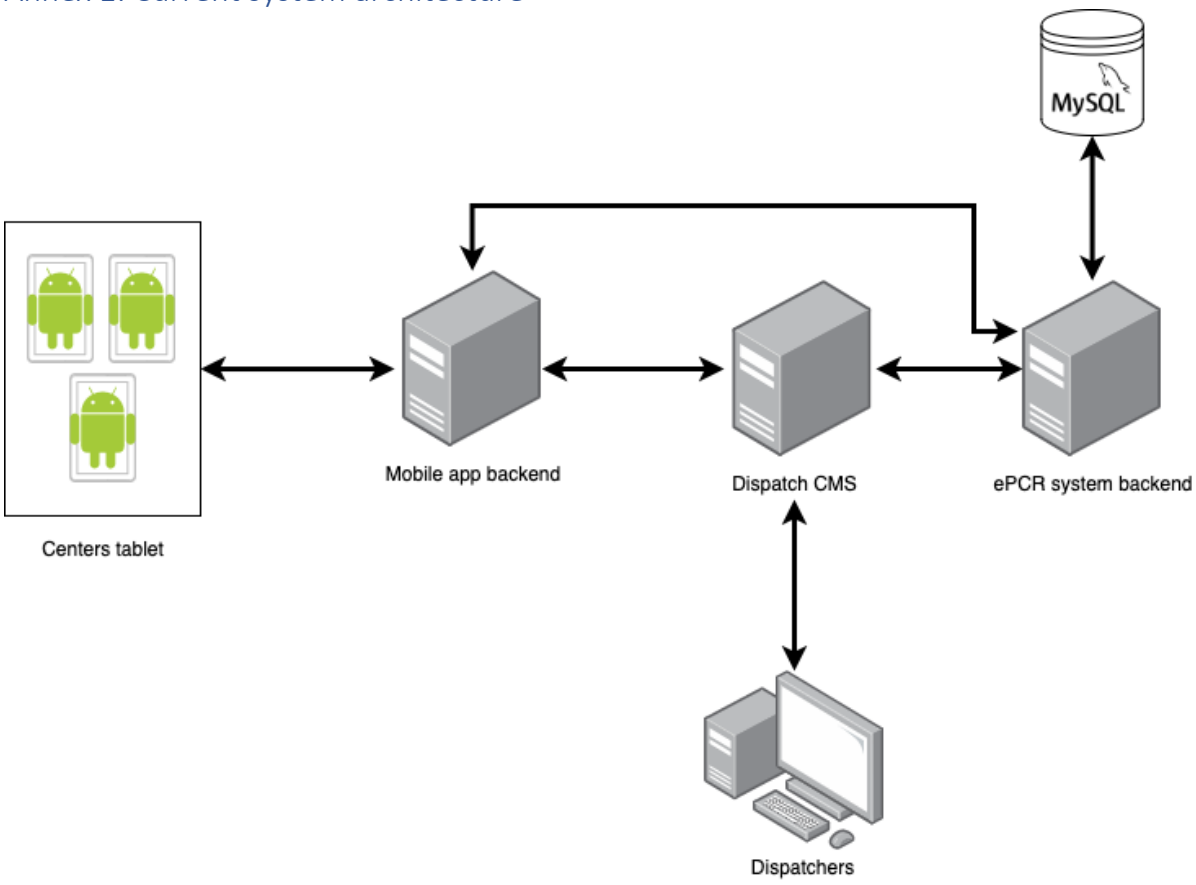
Contacts

- Any communication regarding this request for proposals should be directed to the RFP coordinators listed in this table
- Only written statements from those coordinators are binding:

RFP coordinators name	Email Address	Phone number
Yolande Skaff (QI Project Coordinator)	yolande.skaff@redcross.org.lb	03904166

Annexes

Annex 1: Current system architecture



Annex 2: Patient Care Report

Attached PDF

Annex 3: Key Performance Indicators for stations using ePCR (v1.1)

Assess the O2 Management indicators for the first assessment only:

O2 Management:

Patient management based on SpO2:
Indicator 1: O2 provision for patients with SpO2 ≥94%

Indicator 1.1: Compliance with O2 protocol

% of Patients with SpO2≥94% who didn't receive supplemental oxygen therapy as per LRC EMS Protocol

Total # of all patients who didn't receive O2 via any oxygen providing equipment with SpO2 ≥94% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with SpO2≥94% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac Arrest
G. Cardiorespiratory Arrest (traumatic)

ABCD compromise is defined as Airways as obstructed or partially obstructed, Breathing as inadequate and Circulation as pulse rate ≤60 or >100, Disability is not A

Indicator 1.2 – Non-compliance to O2 protocol

% of Patients with SpO2≥94% who did receive supplemental oxygen therapy as per LRC EMS Protocol

Total # of all patients who received O2 via any oxygen providing equipment with SpO2 ≥94% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with SpO2≥94% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac Arrest
G. Cardiorespiratory Arrest (traumatic)

ABCD compromise is defined as Airways as obstructed or partially obstructed, Breathing as inadequate and Circulation as pulse rate ≤60 or >100, Disability is not A

Indicator 2: O2 provision for patients with *85≤SpO2≤93*

Indicator 2.1: Compliance with O2 protocol

% of Patients with 85≤SpO2≤93 who received adequate supplemental Oxygen therapy as per LRC EMS Protocol

Total # of all patients who received O2 via nasal cannula or simple face mask with 85<SpO2<94 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with 85<SpO2<93 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac arrest
G. Cardio Respiratory Arrest (traumatic)

ABCD compromise is defined as Airways as obstructed or partially obstructed, Breathing as inadequate and Circulation as pulse rate ≤60 or >100, Disability is not A

Indicator 2.2: Non-compliance with O2 protocol

% of Patients with 85≤SpO2≤93 who received inadequate supplemental Oxygen therapy as per LRC EMS Protocol

Total # of all patients who did not receive any oxygen with 85<SpO2<93 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with 85<SpO2<93 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac arrest
G. Cardio Respiratory Arrest (traumatic)

ABCD compromise is defined as Airways as obstructed or partially obstructed, Breathing as inadequate and Circulation as pulse rate ≤60 or >100, Disability is not A

Indicator 2.3: Non-compliance with O2 protocol

% of Patients with 85≤SpO2≤93 who received inadequate supplemental Oxygen therapy as per LRC EMS Protocol

Total # of all patients who received O2 via NRB with 85<SpO2<93 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with 85<SpO2<93 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac arrest
G. Cardio Respiratory Arrest (traumatic)

ABCD compromise is defined as Airways as obstructed or partially obstructed, Breathing as inadequate and Circulation as pulse rate ≤60 or >100, Disability is not A

Indicator 3: O2 provision for patients with *SpO2<85%*
Indicator 3.1: Compliance with O2 protocol
% of Patients with SpO2<85 who received adequate supplemental Oxygen therapy as per LRC EMS Protocol
Total # of patients with SpO2<85% who received O2 via non-rebreather mask (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with SpO2<85% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac arrest
G. Cardio Respiratory Arrest (traumatic)

Indicator 3.2: Non-compliance with O2 protocol
% of Patients with SpO2<85 who received inadequate supplemental Oxygen therapy as per LRC EMS Protocol
Total # of patients with SpO2 <85% who received O2 via nasal cannula or simple face mask (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with SpO2<85% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest

F. Cardiac arrest
G. Cardio Respiratory Arrest (traumatic)

Indicator 3.3: Non-compliance with O2 protocol
% of Patients with SpO2<85 who did not receive adequate supplemental Oxygen therapy as per LRC EMS Protocol
Total # of patients with SpO2 ≤85% who did not receive O2 (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/Total # of patients with SpO2<85% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. COPD
E. Respiratory Arrest
F. Cardiac arrest
G. Cardio Respiratory Arrest (traumatic)

Indicator 4: O2 provision for COPD patients
Indicator 4.1: C*ompliance with O2 protocol*
% of COPD patients who received adequate *supplemental Oxygen therapy as per LRC EMS Protocol*
# of COPD patients with SpO2 <88% who received O2 via nasal cannula or simple face mask (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/ Total # of COPD patients with SpO2 <88% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. Respiratory Arrest
E. Cardiac arrest
F. Cardiorespiratory Arrest (traumatic)

Indicator 4.2: Non-c*ompliance with O2 protocol*
% of COPD patients who did not received adequate *supplemental Oxygen therapy as per LRC EMS Protocol*
# of COPD patients with SpO2 <88% who received O2 via NRB OR did not receive any oxygen (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")/ Total # of COPD patients with SpO2 <88% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic

D. Respiratory Arrest
E. Cardiac arrest
F. Cardiorespiratory Arrest (traumatic)

Indicator 4.3: Compliance with O2 Protocol

% of COPD patients with SpO2≥88% who did not receive *supplemental Oxygen therapy as per LRC EMS Protocol*

# of COPD patients who did not receive O2 via nasal cannula or simple face mask or NRB with SpO2 ≥88%(EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABC compromise")/ Total # of COPD patients with SpO2 ≥88% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic
D. Respiratory Arrest
E. Cardiac arrest
F. Cardiorespiratory Arrest (traumatic)

Indicator 4.4: Non-Compliance with O2 Protocol

% of COPD patients with SpO2≥88% who received *supplemental Oxygen therapy*

# of COPD patients who received O2 via nasal cannula or simple face mask or NRB with SpO2 ≥88%(EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABC compromise")/ Total # of COPD patients with SpO2 ≥88% (EXCLUDED # of patients with one of the chief complaints listed below OR "Trauma patients with ABCD compromise")

Chief complaints:

G. Allergic Reaction with Anaphylactic Shock
H. Bleeding Traumatic
I. Bleeding Non-Traumatic
J. Respiratory Arrest
K. Cardiac arrest
L. Cardiorespiratory Arrest (traumatic)

Indicator 5: O2 provision for critically ill patients

Indicator 5.1: C*ompliance with O2 protocol*

% of critically ill patients who received adequate *supplemental Oxygen therapy as per LRC EMS Protocol*

Total # of all patients who received O2 via non-rebreather mask with one of the chief complaints listed below OR Trauma patients with ABCD compromise/Total # of patients with one of the chief complaints listed below OR Trauma patients with ABCD compromise

Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic

Indicator 5.2: Non-Compliance with O2 Protocol
% of critically ill patients who received inadequate *supplemental Oxygen therapy as per LRC EMS Protocol*
Total # of all patients with one of the chief complaints listed below OR Trauma patients with ABCD compromise who received O2 via nasal cannula or simple face mask/Total # of patients with one of the chief complaints listed below OR Trauma patients with ABCD compromise
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic

Indicator 5.3: Non-Compliance with O2 Protocol
% of critically ill patients who did not receive supplemental *Oxygen therapy*
Total # of all patients with one of the chief complaints listed below OR Trauma patients with ABCD compromise who did not receive O2 via any device/Total # of patients with one of the chief complaints listed below OR Trauma patients with ABCD compromise
Chief complaints:

A. Allergic Reaction with Anaphylactic Shock
B. Bleeding Traumatic
C. Bleeding Non-Traumatic

To have the total O2 Compliance, count the
Numerator: Total # of cases compliant with O2 protocol (Sum of all numerators of Compliance indicators 1.1, 2.1, 3.1, 4.1, 4.3, 5.1)
Denominator: Total # of cases needing O2 assessment (Sum of all denominators of Compliance indicators 1.1, 2.1, 3.1, 4.1, 4.3, 5.1)

Assess the Ventilation Management indicators from the second assessment only:

Indicator 6
Ventilation management:
% of ventilation management compliance as per LRC EMS protocol
Total # of patients who (received O2 in assessment 1) AND (still have an SpO2<90% in Assessment#2) AND (are still breathing inadequately in or after Assessment 2) OR (have a respiration rate of <10 or > 30 in or after assessment 2) and received assisted ventilation in or after assessment 2 /Total # of patients who (received O2 in assessment 1) AND (still have an SpO2<90% in Assessment#2) AND (are still breathing inadequately in or after Assessment 2) OR (have a respiration rate of <10 or > 30 in or after assessment 2)

Hypoglycemia protocol
Indicator 7
% of compliance to correct management of hypoglycemic patients
Total # of all patients who are hypoglycemic (HGT<60) AND (A or V on mental status in disability) AND (took oral glucose) + (Total # of all patients who are hypoglycemic (HGT<60) AND P and U on mental status in disability, and didn't take oral glucose)/Total # of patients who are hypoglycemic (HGT<60)

Indicator 8

% of Patients requiring glycaemia monitoring who underwent hemoglucotest

Total # of patients with one of the chief complaints listed below and had the glycaemia measured / Total # of patients with one of the chief complaints listed below

Chief complaints:

- Diabetic emergency
- Stroke
- Altered mental status
- Seizure

Consider Unrecordable as measured

Indicator 9

% of patients requiring FAST assessment who received FAST exam

Total # of patients experiencing the below chief complaint where the FAST test was recorded/ Total # of patients experiencing the below chief complaints

Chief complaints:

- Stroke with A or V in disability
- Seizure A or V in disability
- Diabetic emergency with Hemoglucotest < 60 – Patient A or V in disability
- AMS with A or V in disability

Cardiac Arrest management

Indicator 1

Total # of patients who are in cardiac arrest where resuscitation was attempted before EMS arrival by non-LRC / Total # of patients who are in cardiac arrest

Indicator 2

Total # of patients who are in cardiac arrest where resuscitation was attempted by EMS / Total # of patients who are in cardiac arrest

Indicator 3

Total # of patients who are in cardiac arrest where resuscitation was attempted by EMS with 3 AED analyses with no ROSC / Total # of patients who are in cardiac arrest where resuscitation was attempted by EMS with no ROSC

* 3 AED analyses: if one of the “Shock advised” variables was not filled, it was considered not done.