2025

Cardiac First Response /Basic Life Support (CFR/BLS)

Curriculum

Professional Skill Development Centre
University of Health Sciences Lahore

CARDIAC FIRST RESPONSE COURS/BASIC LIFE SUPPORT CURRICULUM 2025

UNIVERSITY OF HEALTH SCIENCES LAHORE

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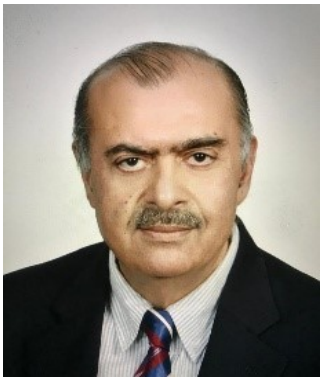
List of Contributors

CURRICULUM STEERING COMMITTEE		
1	**Prof. Dr. Ahsan Waheed Rathore** Vice Chancellor, University of Health Sciences, Lahore	**(Patron)**
2	**Prof. Dr. Nadia Naseem** Pro-Vice Chancellor, UHS	**(Patron)**
3	**Prof. Shane Knox** Director Paramedics, National Ambulance Service College, Ireland	**(Advisor)**
4	**Prof. Dr. Naila Asad** Professor of Anesthesia Services Institute of Medical Sciences, Lahore	**(Convener)**
5	**Prof. Dr.Shahid Hameed** Professor of Cardiology Punjab Institute of Cardiology	**(Member)**
6	**Prof.Dr Tahir Bashir** Professor of Medecine Allama Iqbal Medical College Lahore.	**(Member)**
7	**Prof. Dr. Farooq Butt** Professor of Surgery Sialkot Medical College ,Sialkot	**(Member)**
8	**Prof. Dr. Nauman Siddiqui** Director Medical Education Abbotabad International Medical Institute	**(Member)**
9	**Dr. Mir Abdul Waheed** Director Emergency Medicine Maroof Hosspital, Islamabad	**(Member)**
10	**Prof. Dr. Sarah Ghafoor** Professor of Oral Biology, UHS	**(Member)**
11	**Prof. Dr. Asif Naveed** Professor of Hematology /Director Post Graduate studies Univeristy of Health Sciences Lahore.	**(Member)**
12	**Prof. Sumera Ehsan** Professor of Medical Education, Department of Medical Education- UHS	**(Member)**
13	**Dr.Wajiha Rizwan** Associate Professor of Peadritics Univeristy of Child Health Sciences Lahore.	**(Member)**
14	**Dr. Farah Rehman** Assistant Professor, Department of Medical Education- UHS	**(Member)**
15	**Mr.Asif Mahmood** Master Trainer -National Ambulance Service College Ireland	**(Member)**
16	**Ms. Tayyaba Zahid**	**(Secretary)**

Welcome Messages



Prof. Ahsan Waheed Rathore
Vice Chancellor

It gives me great satisfaction to announce that the University Syndicate, in its 82nd meeting held on November 28, 2024, has approved the induction of mandatory training in six essential life support courses for all MBBS, BDS, Nursing, Pharmacy, and Allied Health Sciences students of the University of Health Sciences (UHS), Lahore. This strategic decision reflects our unwavering commitment to producing healthcare professionals who are not only academically competent but also proficient in delivery timely, lifesaving interventions.

The inclusion of these courses ranging from Cardiac First Response to Emergency Obstetrics and Neonatal Care underscores our recognition of the vital role that rapid and effective emergency response plays in healthcare delivery. These trainings will not only enhance the clinical competence of our graduates but also ensure they are better prepared to meet international standards of emergency care.

I commend the team at the Professional Skills Development Centre for meticulously preparing comprehensive training manuals for both students and instructors. I am confident that this initiative will prove to be a milestone in the transformation of healthcare education in Pakistan.

Prof. Nadia Naseem
Pro-Vice Chancellor

Healthcare professionals must be prepared to act swiftly and competently in emergency situations, where seconds can mean the difference between life and death. With this in mind, the University of Health Sciences has taken a significant step by mandating certified training in key life support skills for all students across our health sciences disciplines.

These manuals have been developed with careful attention to international standards and local needs, providing both students and trainers with structured, evidence-based guidance. They represent an important shift in our educational philosophy—one that prioritizes not only knowledge but also the ability to translate that knowledge into immediate, practical action.

I extend my appreciation to all those involved in the development of this initiative, and I urge our students and faculty to approach these courses with the seriousness and dedication they demand. Together, we can ensure that every UHS graduate is a confident and capable responder in any medical emergency.

Prof. Shane Knox

Director of Paramedics, National Ambulance Service College, Ireland

The National Ambulance Service College of Ireland has enjoyed a long-standing and productive partnership with the University of Health Sciences (UHS), spanning nearly two decades. Together, we have collaborated on numerous initiatives aimed at strengthening first response, emergency care, and pre-hospital services.

We are now proud to introduce our *Cardiac First Response* programme, along with a suite of other life-saving short courses, for integration across the health sciences disciplines at UHS. These evidence-based programmes provide a vital foundation for all healthcare professionals, equipping them with essential skills to deliver effective and timely care.

This new initiative—guided by the leadership of UHS and coordinated through the Professional Development Centre—benefits from the expertise of its distinguished faculty and a robust quality assurance framework, both internal and external. As a result, it offers a world-class educational experience designed to meet the highest standards in healthcare training.

We are confident that these programmes will empower students to deliver exceptional care to the communities they serve. The Irish National Ambulance Service, together with our faculty members from both Pakistan and Ireland, is honored to continue this collaboration with UHS, and we extend our best wishes for the successful delivery and uptake of these programmes.

Prof. Sarah Ghafoor
Director Special Initiative/ PSDC

The Professional Skills Development Centre (PSDC) at UHS is proud to lead the implementation of this landmark initiative—mandatory life support training for all students of MBBS, BDS, Nursing, Pharmacy, and Allied Health Sciences programs. These courses have been carefully curated to address critical areas of emergency care, ranging from cardiac and trauma response to neonatal and obstetric emergencies.

Each manual developed under this program is a product of extensive research, peer consultation, and alignment with global best practices. They are designed not only to build core competencies but also to instill confidence and readiness among our future healthcare providers.

This initiative marks a paradigm shift in our clinical training model. It ensures that life-saving skills are not just taught but practiced and mastered. I encourage all trainers and students to engage with these resources with diligence and purpose. The skills you acquire here will empower you to save lives perhaps even on your very first day in the field.

A. Course Rationale and Overview

In modern emergency medicine, timely and accurate prioritization of patient care is essential for optimizing outcomes and resource utilization. The increasing demand for emergency departments and the complexity of presenting conditions necessitates a structured and evidence-based approach to Cardiac First Response/ Basic Life Support Trainings.

This module, "Cardiac First Response" has been developed to equip undergraduate medical students in their clinical years with foundational knowledge and applied skills in emergencies. CFR is an internationally recognized skill-based training that enables healthcare professionals to assess and categorize patients based on the urgency of their clinical condition.

Based on principles of patient safety, clinical reasoning, and effective communication, this course aims to empower the students with hands-on skills in emergency cardiopulmonary resuscitation (CPR). They will not only grasp the significance and mechanics of CPR but also learn to perform the CPR effectively. This will prepare them to engage confidently in real emergency cardiac situations during clinical rotations and throughout their professional life.

Curriculum for the First Cardiac Response/ Basic Life Support training is especially tailored for undergraduate medical and health sciences students. This program aligns with international guidelines as provided by various resuscitation councils such as Pre-Hospital emergency Care Council (PHEEC)/ America Heart Association (AHA) and European Resuscitation Council (ERC) and balances theory, simulation, and assessment for effective acquisition of life-saving skills

1. Curriculum Outline:

i. Duration of the Course: 2 days (4 hours/ day), Total 8 hours

ii. Target Audience: Undergraduate Medical Students

2. Course Outcomes

By the end of the course, students will be able to:

1. Recognize signs of cardiac arrest and initiate immediate CPR
2. Perform Airway management in cardiac arrest
3. Perform high-quality CPR in various ages (adult, child and infant)
4. Use an Automated External Defibrillator (AED) effectively.
5. Integrate CFR skills into early cardiac arrest management.
6. Communicate effectively during resuscitation scenarios.
7. Manage Foreign Body Air Away Obstruction (FBAO) in various age groups
8. Provide post-resuscitation support and handover

3. Course Structure.

The CFR/BLS hands-on training is divided into 9 modules as described below

Module One; Introduction to Cardiac First Response/ Basic Life Support- Safety- Self, Casualty and Bystanders

In this module, concise introduction to the CFR will be provided. A pre-test will be shared with the course participant. The instructors will evaluate the learning needs of the course participants by reviewing the pre-test results and identifying knowledge gaps. This module will focus on the following learning objectives:

A. Learning Objectives:

Define Safety, self-causality & By Standers and explore its purpose in cardiac first response

B. Teaching Methods:

i. Didactic lecture
ii. Interactive Discussion
iii. Roleplay

Module Two: Airway Management

This module will focus on various methods of airway management

A. Learning Objectives

i. To identify normal and abnormal airway anatomy
ii. To identify signs of airway obstruction and intervene Promptly.
iii. To perform basic airway management techniques like head- tilt-chin-lift, Jaw thrust, Bag -mask ventilation and mouth to mouth breathing.

B. Teaching Methods:

i. Interactive discussion based on questions and answers &A,
ii. Flowchart + Handouts,
iii. Demonstration,
iv. Group activity

Module Three: Chain of Survival (Adult& Pediatric)

A. Learning Objectives

To identify and causes of cardiac arrest in infants, children and adults.

B. Teaching Methods:

Interactive discussion based on questions and answers &A,

i. Flowchart + Handouts,
ii. Demonstration,
iii. Group activity

Module Four: Cardiopulmonary Resuscitation in Adults, Child & Infants

A. **Learning Objectives**

i. Identify cardiac arrest and call for help.

ii. Perform high quality CPR in various age groups (adults, child & infants)

B. **Teaching Methods:**

i. Demonstration, ,

ii. Role plays and hands-on-practice

iii. Guided discussion

iv. Group activity

Module Five: Use of an Automated External Defibrillator & Team Dynamics

A. Learning Objectives

Perform defibrillation using automated external defibrillator (AED) Work as a team for emergency response for CPR & AED.

B. Teaching Methods:

i. Demonstrations

ii. Role plays and hands-on-practice

iii. Guided Discussions

iv. Group Activity

Module Six- Foreign Body Airway Obstruction (AFBAO)

A. Learning Objectives

- To identify the sign and symptoms of FBAO, including choking, coughing, gagging, and inability to speak or breath.
- To determine the severity of the obstruction, including partial or complete blockage
- To demonstrate proper first aid techniques for reliving FBAO, such as back blows and abdominal thrusts

B. Teaching Methods

i. Case base discussion with example

ii. Presentation

iii. Demonstration

Module Seven: Stroke

A. Learning objectives

i. To recognize common symptoms, including sudden weakness, numbness, facial drooping, speech difficulties, and vision changes.

ii. To describe risk factors (FAST)- Aspiration

F= Facial Weakness

A= Arm Weakness

S= Speech Trouble

T= Time/ Treatment

iii. To identify risk factors such aspiration, prevention and care

iv. To recognize common symptoms, including sudden weakness, numbness, facial drooping, speech difficulties, and vision changes.

B. Teaching Methods:

i. Case base discussion with examples,

ii. Presentations

iii. Role play,

iv. Demonstrations

Module Eight: Recovery Position

A. Learning Objectives

To maintain airway patency: Keep the airway open and clear to ensure adequate ventilation.

i. To prevent aspiration: Reduce the risk of aspiration of vomiting, blood, or other fluids into the lungs.

ii. To improve breathing: Help maintain a stable and open airway, promoting easier breathing.

iii. To enhance safety: Position the person in a way that minimizes the risk of further injury or harm.

B. Teaching Methods:

i. Slides,

ii. Presentations,

iii. Interactive lectures

iv. Role play,

v. Demonstration

Module Nine: Recognition of Death- When to stop CPR

A. Learning objectives:

i. To determine futility of CPR: Identify situations where CPR is unlikely to be successful,

ii. To guide CPR decisions: Recognize when CPR should be initiated or terminated based on the patient's condition.

iii. Document events: Accurately record the events surrounding cardiac arrest and CPR efforts.

iv. Track interventions: Document all interventions performed during CPR, including medications, defibrillation, and other treatment.

B. Teaching Methods:

i. Role-play scenarios

ii. Interactive discussion

iii. Presentation

Assessment Policy

Passing marks for post-test and skill station will be 70% Students with percentage from 60% -69% will be given another chance to reappear for post-test and skill test on the same day. Less than 60% will reappear with the next batch. **Assessment Details:**

Formative Assessment: Pre-test and Direct observation with feedback during skill session

i. Peer assessment checklists for ABC performance

ii. **Summative Assessment**

a) Skill test (OSCE) for Adult CPR and Infant CPR

b) MCQs 10-20 (Post test)

Quality Assurance

Quality assurance of all training will be maintained through regular feedback, instructor workshops and on-site evaluation of the training.

Course Feedback

Objectives:

i. To examine the areas for improvement based on comments of practice.

ii. To provide the participants with time to comment and seek clarity.

iii. To share the overall performance report with the participants.

Instructor Certification

i. UHS-PSDC trained Instrcutors having completed the provided course training and may have provided training as a co-instructor for at least 3 courses under supervision of a trained master trainer/ instructor

ii. Those with Clinical experience in emergency or critical care settings. Familiarity with adult education and skills training and an ability to provide constructive feedback will be of an added advantage

Integration & Sustainability

i. Embed into existing skills lab or clinical rotation schedule

ii. Repeat 2-yearly for reinforcement

iii. Encourage observational learning during actual CFR calls in any emergency

Recommended Guidelines and References

i. Pre Hospital Emergency Care Council- Clinical Practice Guidelines-2021 Edition Updated 2023

ii. Pre Hospital Emergency Care Council- Cardiac First Respond-Student handbook-2011 Edition

iii. American Heart Association (AHA) BLS Guidelines 2020

iv. European Resuscitation Council (ERC) Guidelines 2021

v. WHO Emergency Care Toolkit

Session Plan

DURATION: Two Day (4 Hours Each) 9:00am to 1:00 pm

TOTAL DURATION: (8 HOURS in 02 days)

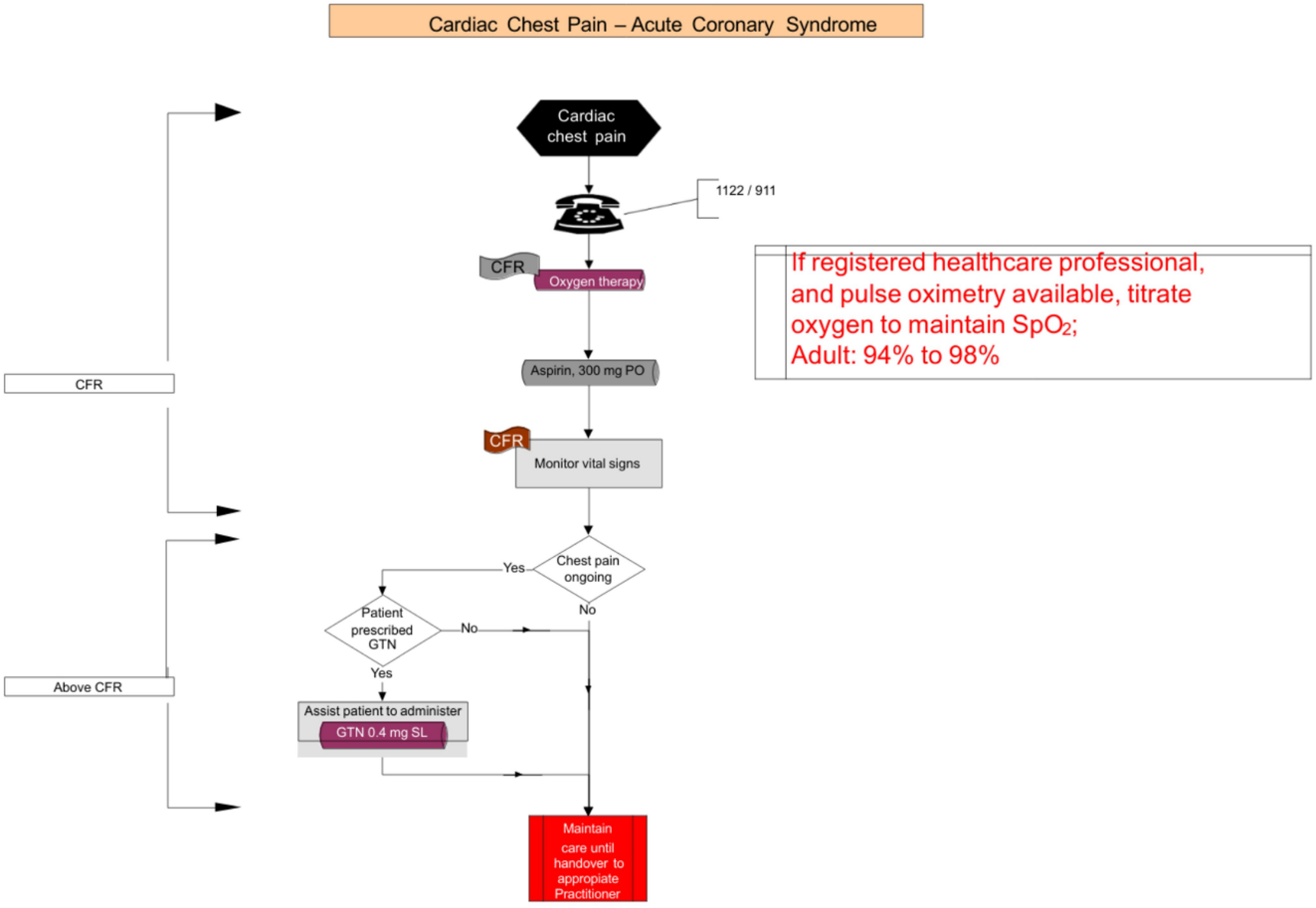
Cardiac First Response / Basic Life Support (CFR/BLS) Course

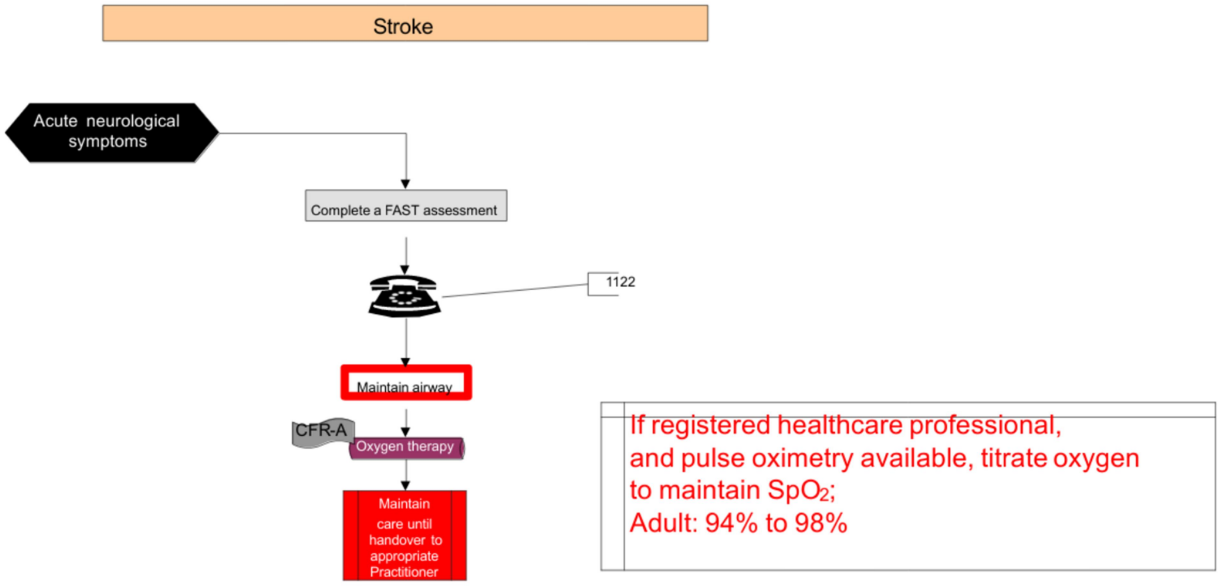
Day One				
Sr.	**Duration**	**Start Time**	**End Time**	**Activity**
1	15	10:00 AM	10:15 AM	Registration & Attendance of the Participants
2	5	10:15 AM	10:20 AM	Introduction of the Participants & Instructors
3	5	10:20 AM	10:25 AM	The setting of Ground Rules
4	5	10:25 AM	10:30 AM	Format / Objectives of the Training
5	20	10:30 AM	10:50 AM	Pre-test: MCQs Single Best
6	10	10:50 AM	11:00 AM	Safety - Standards (Face shield/Pocket Mask)
7	30	11:00 AM	11:30 AM	Airway Management (BVM, OPA, Suction)
8	15	11:30 AM	11:45 AM	Skill Practice - Airway Management
9	10	11:45 AM	11:55 AM	Heart Attack and its initial management
10	5	11:55 AM	12:00 PM	Stroke and its initial management
11	15	12:00 PM	12:15 PM	Break
12	5	12:15 PM	12:20 PM	Chain of Survival – Adults, Children & Infants
13	5	12:20 PM	12:25 PM	Making an Emergency Phone Call
14	35	12:25 PM	1:00 PM	Cardiac Arrest in Adults
15	60	1:00 PM	2:00 PM	Skill Practice - Adult CPR
Day Two				
Sr.	**Duration**	**Start Time**	**End Time**	**Activity**
1	10	10:00 AM	10:10 AM	Attendance and Recap of Day One
2	20	10:10 AM	10:30 AM	AED and special situations
3	30	10:30 AM	11:00 AM	Cardiac Arrest – Child & Infant
4	60	11:00 AM	12:00 PM	Skill Practice - CPR in Child & Infant
5	15	12:00 PM	12:15 PM	Break
6	15	12:15 PM	12:30 PM	Foreign Body Airway Obstruction
7	15	12:30 PM	12:45 PM	Skill Practice FBAO
8	5	12:45 PM	12:50 PM	Obvious Sign of Death
9	10	12:50 PM	1:00 PM	How Long CPR
10	20	1:00 PM	1:20 PM	Post Test: MCQs – Single Best
11	10	1:20 PM	1:30 PM	Group Photograph, Feedback (Written & Video)
12	10	1:30 PM	2:00 PM	Skill Assessments (Adult & Infant CPR)

List of Equipment

Course Name	*Priority*	*Section*	*Equipment*	*Quantity Per Station*	Quantity Per Batch of 20 Students
Cardiac First Response/Basic Life Support	Priority-1	Airway Management	Airway Head Manikin (Adult)	1	4
			Bag Valve Mask (BVM) Adult	1	4
			Bag Valve Mask (BVM) Child	1	4
			Bag Valve Mask (BVM) Infant	1	4
			Oropharyngeal Airway (OPA) Size 0	1	4
			Oropharyngeal Airway (OPA) Size 3	1	4
			Oropharyngeal Airway (OPA) Size 4	1	4
			Pocket Mask	1	4
		Defibrillation	Automated External Defibrillator (Trainer)	1	4
			Automated External Defibrillator (Trainer) Adult Pads	1	4
			Automated External Defibrillator (Trainer) Battery	1	4
			Automated External Defibrillator (Trainer) Child Pads	1	4
		Manikin	CPR Manikin Adult	1	4
			CPR Manikin Infant	1	4
		Personal Protection	Face Shield	1	4
			Hand Sanitizers	1	4
	Priority-2	Airway Management	CPR Mouthpiece	1	4
			Oropharyngeal Airway (OPA) Size 2	1	4
		Manikin	CPR Manikin Child	1	4
		Personal Protection	Alcohol Swab	1 Box	4
			Face Mask	10	4
			Gloves	10	4
		Suction	Hand Suction Machine	1	4
			Yankauer Catheter	1	4
	Priority-3	Airway Management	Oropharyngeal Airway (OPA) Size 00	1	4
			Oropharyngeal Airway (OPA) Size 1	1	4
		Medication	Aspirin 300mg tablets	5 Tablets	4

Algorthims

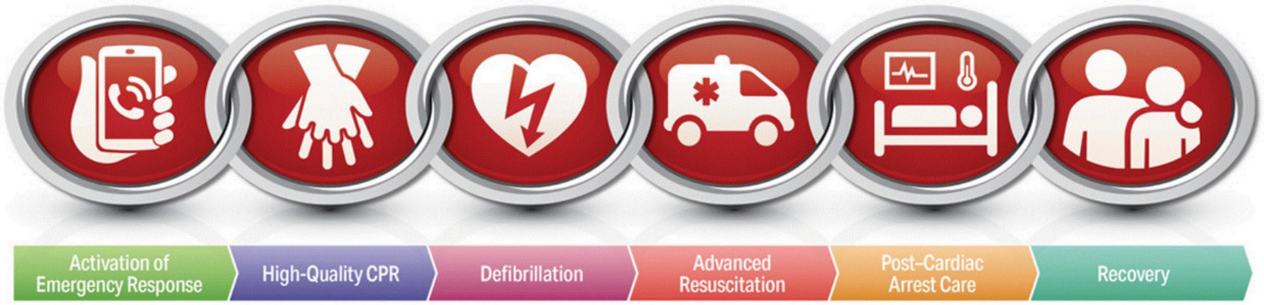

Cardiac Chest Pain – Acute Coronary Syndrome
Cardiac chest pain
1122 / 911
CFR
Oxygen therapy
If registered healthcare professional, and pulse oximetry available, titrate oxygen to maintain SpO2; Adult: 94% to 98%
Aspirin, 300 mg PO
CFR
Monitor vital signs
Chest pain ongoing
Yes
No
Patient prescribed GTN
No
Yes
Assist patient to administer GTN 0.4 mg SL
CFR
Above CFR
Maintain care until handover to appropiate Practitioner



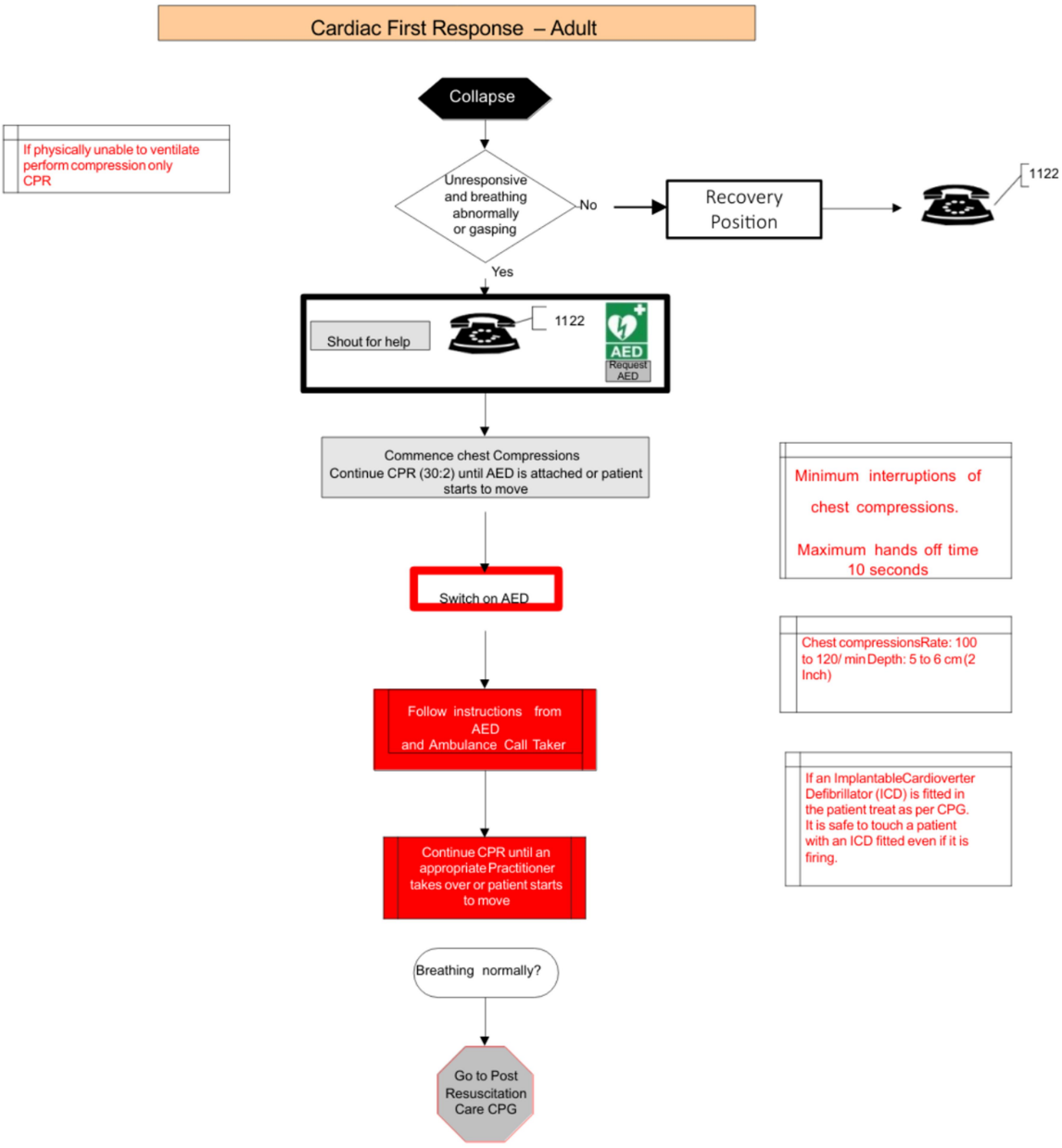
F – facial weakness
Can the patient show teeth, Has their mouth or eye drooped? Which side?
A – arm weakness
Can the patient raise both arms and maintain for 5 seconds?
S – speech problems
Can the patient speak clearly and understandwhat you say?
T – time to call 1122 now if FAST positive

Adult Chain of Survival

Adult Out-of-Hospital Chain of Survival

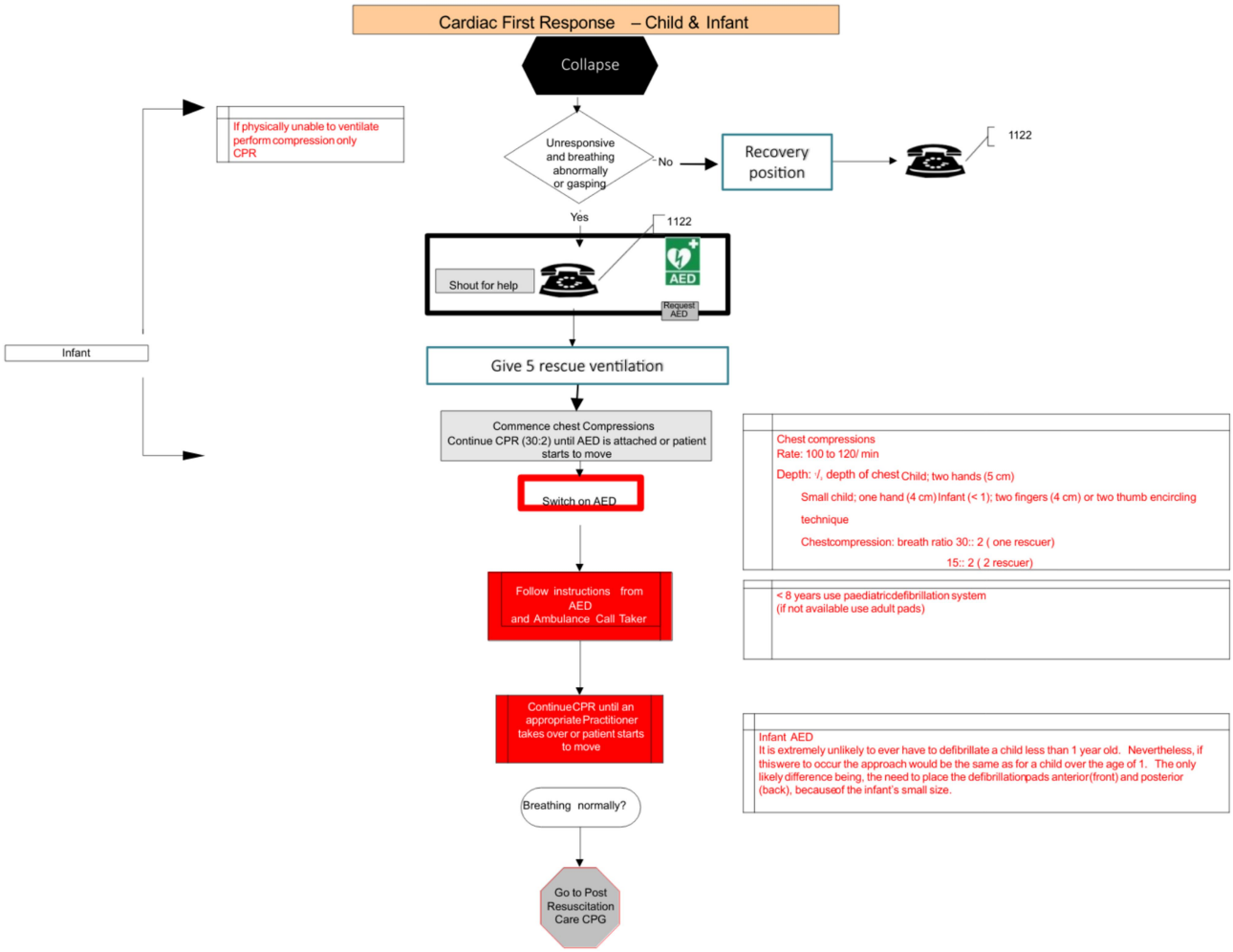


As early as possible	Within 10 Seconds	Within 4-6 Minutes	Within 10 Minutes	Within One hour	At discharge time

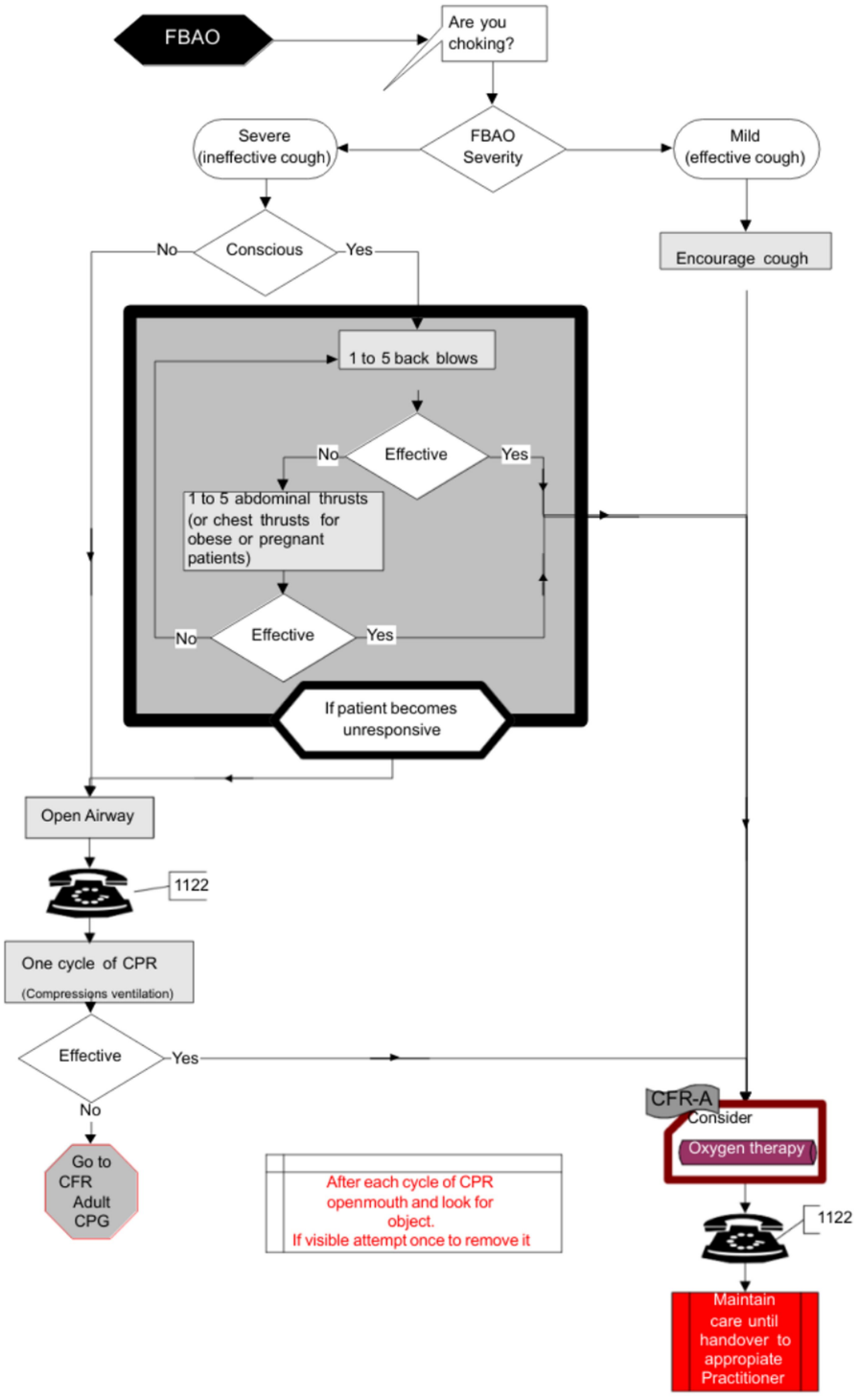

Cardiac First Response – Adult
Collapse
If physically unable to ventilate perform compression only CPR
Unresponsive and breathing abnormally or gasping
No
Recovery Position
1122
Yes
Shout for help
1122
AED
Request AED
Commence chest Compressions
Continue CPR (30:2) until AED is attached or patient starts to move
Minimum interruptions of chest compressions.
Maximum hands off time 10 seconds
Switch on AED
Chest compressionsRate: 100 to 120/ min Depth: 5 to 6 cm (2 Inch)
Follow instructions from AED and Ambulance Call Taker
If an ImplantableCardioverter Defibrillator (ICD) is fitted in the patient treat as per CPG. It is safe to touch a patient with an ICD fitted even if it is firing.
Continue CPR until an appropriate Practitioner takes over or patient starts to move
Breathing normally?
Go to Post Resuscitation Care CPG

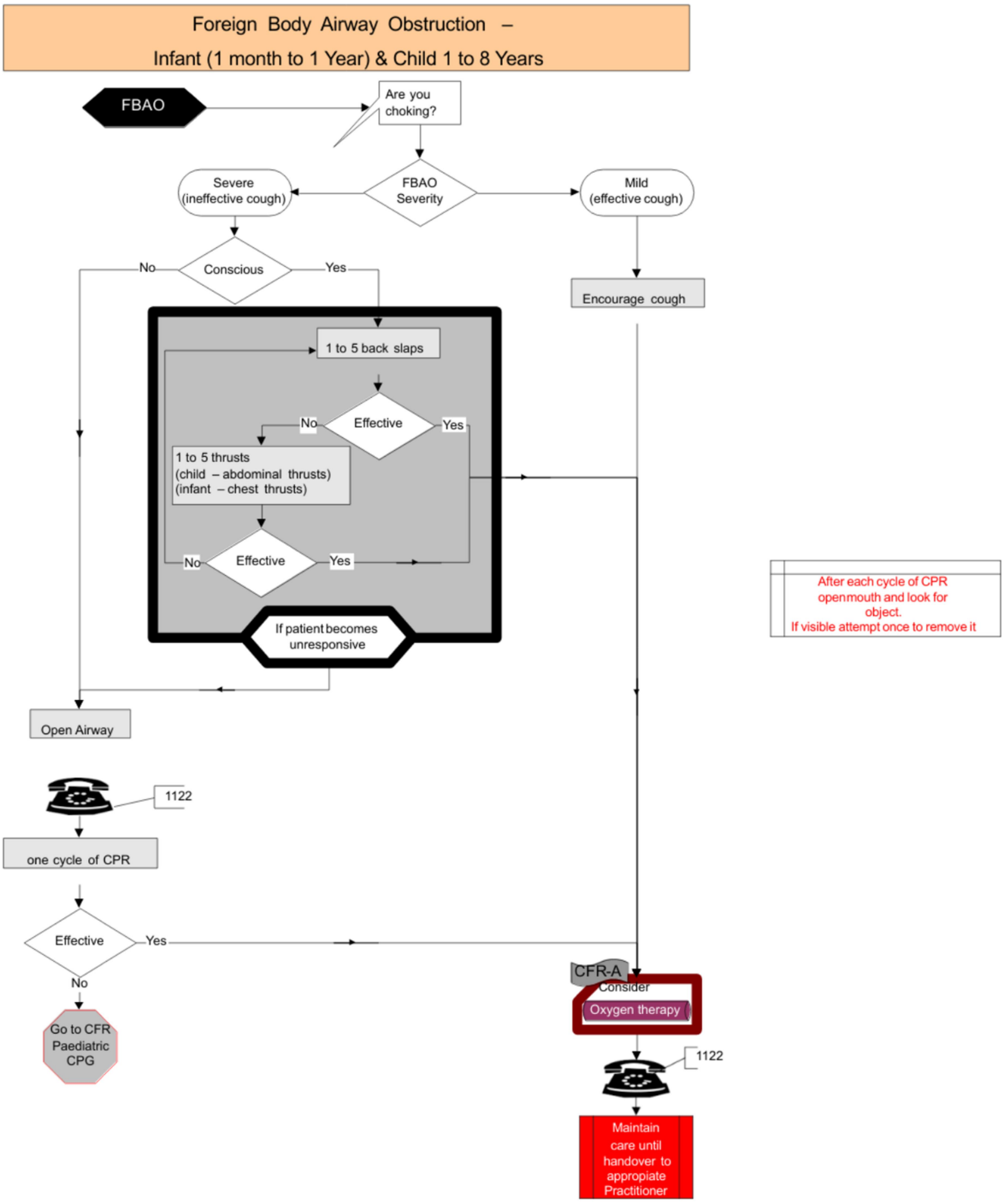
Pediatric Chain of Survival

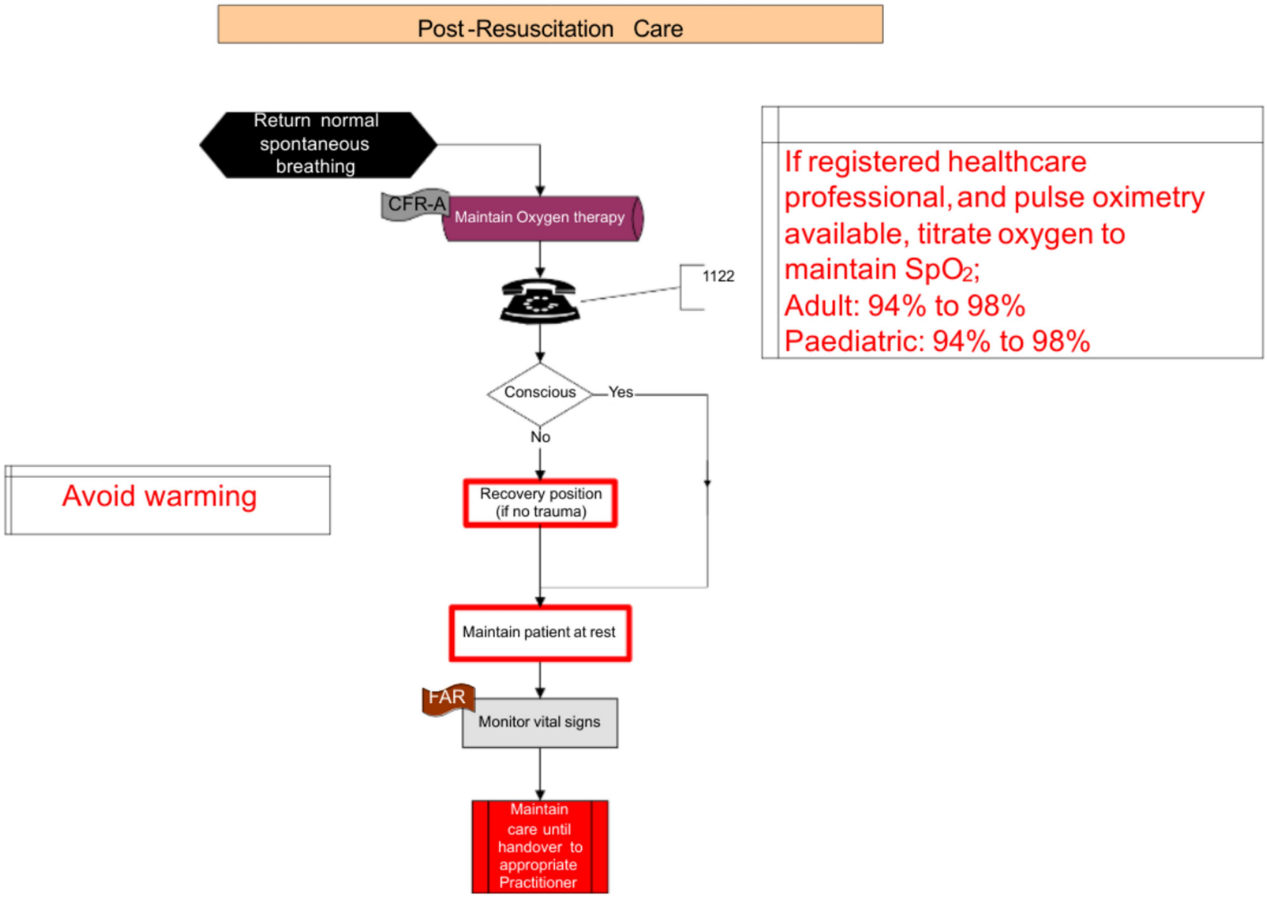
Pediatric Out-of-Hospital Chain of Survival


Cardiac First Response – Child & Infant
Collapse
Unresponsive and breathing abnormally or gasping
No
Recovery position
1122
Yes
1122
Shout for help
AED
Request AED
If physically unable to ventilate perform compression only CPR
Infant
Give 5 rescue ventilation
Commence chest Compressions
Continue CPR (30:2) until AED is attached or patient starts to move
Switch on AED
Follow instructions from AED
and Ambulance Call Taker
Continue CPR until an appropriate Practitioner takes over or patient starts to move
Breathing normally?
Go to Post Resuscitation Care CPG
Chest compressions
Rate: 100 to 120/ min
Depth: ⅓ depth of chest Child; two hands (5 cm)
Small child; one hand (4 cm) Infant (< 1); two fingers (4 cm) or two thumb encircling technique
Chestcompression: breath ratio 30:: 2 (one rescuer)
15:: 2 (2 rescuer)
< 8 years use paediatricdefibrillation system
(if not available use adult pads)
Infant AED
It is extremely unlikely to ever have to defibrillate a child less than 1 year old. Nevertheless, if thiswere to occur the approach would be the same as for a child over the age of 1. The only likely difference being, the need to place the defibrillationpads anterior(front) and posterior (back), becauseof the infant's small size.

Foreign Body Airway Obstruction – Adult




Foreign Body Airway Obstruction –
Infant (1 month to 1 Year) & Child 1 to 8 Years
FBAO
Are you choking?
FBAO Severity
Severe (ineffective cough)
Mild (effective cough)
Conscious
No
Yes
Encourage cough
1 to 5 back slaps
Effective
No
Yes
1 to 5 thrusts
(child – abdominal thrusts)
(infant – chest thrusts)
Effective
No
Yes
If patient becomes unresponsive
After each cycle of CPR openmouth and look for object.
If visible attempt once to remove it
Open Airway
1122
one cycle of CPR
Effective
Yes
No
Go to CFR Paediatric CPG
CFR-A
Consider
Oxygen therapy
1122
Maintain care until handover to appropiate Practitioner


Post-Resuscitation Care
Return normal spontaneous breathing
CFR-A
Maintain Oxygen therapy
1122
Conscious
Yes
No
Recovery position (if no trauma)
Maintain patient at rest
FAR
Monitor vital signs
Maintain care until handover to appropriate Practitioner
If registered healthcare professional, and pulse oximetry available, titrate oxygen to maintain SpO2;
Adult: 94% to 98%
Paediatric: 94% to 98%
Avoid warming

Recognition of Death – Resuscitation not Indicated