POLICY & PROCEDURE IN E.D

EMERGENCY DEPARTMENT (E.D):

It is a Reception Management area working 24/7 a day in the hospital for any (patient) victim with a serious or unwaitable medical or surgical condition in need of an immediate management.

AIM:

To restore victim life by,
1. Preventing further damage to the body.
2. Classifying patient’s condition & manage accordingly.
3. Starting the line of specialized medical care.

FLOW CHART:

- Patient Entry
- Form A2 is issued and registration
- inform police in Medico Legal cases
- V.S. Nurse
- Waiting area
- Screening Room
- E.D. Doctor
- Inside Main
- E.D. Doctor
- Urgent
- Triage nurse
- With help of Nursing Aide & porter
- P.H.C
- Home
- X Ray Pharmacy
- Cast Room
- Specialize ROD Specialist or Consultant on call
- Admission through Reception
- Speciality Clinic
MODE OF OPERATION:

It receives all acute traumas and life threatening cases by implementing the Principle of the triage system 24\(^0\) a day and providing Emergency medical Service (EMS).

STAFF COVER OF WORK:

1. 8hrs. duty shift (Except in Ramadan 6hrs. shift)
2. Staff should not leave their shift, until second shift members present and endorsement of patients is done to them.
3. There is a doctor In-charge of the shift, who is responsible to all of the staff in E.D in every shift in the absence of his superior.
4. E.D. Doctors must see both Medical & Trauma cases male or female.
5. No change in schedule should be made except for valid reason and should be written in an official forms, to be requested at least a day before working hours.

FUNCTIONS:

It is divided in 2 sections - Male and Female side.

BED CAPACITY:

Male ER 11 Regular Beds
1 CPR Beds
2 Acute chest pain unit & observation Beds

Female ER 3 CPR Beds
7 Regular Beds
1 Pedia Bed
COMMUNICATION CHART STAFF:

JOB DESCRIPTION:

Chief of ED:
1. Responsible about ED in front of Medical Director & Hospital Director.
2. Coordinate work in ED, manpower distribution, staff relation to other hospital staff (like social worker, security etc.) public and administration, staff emergency & vacation leaves (ED Doctor), problem solving
3. Assess ED work, staff practice, and try to formulate & implement ways to improve the department).
4. Acts as ED controller in disaster condition
5. Helps ED staff in difficult decision making.
6. Implement to the ED staff every policy.
7. Supervise medical trainee practice in ED.
8. Admission right (to referral ROD).
9. Supervise ambulance policy its working condition and readiness.
**Deputy Chief of ED:**
1. Acts as the Chief of ED in his absence
2. Report to Chief of ED
3. Work as ED Doctor.

**Doctor In-charge of the Shift:**
1. Responsible about ED towards Administration in the absence of his superior.
2. Establishes Contact between Staff & Chief of ED and report all problem of the department to him.
3. Assuring proper work in ED by controlling ED Staff, distribution in his shift (Doctors, Nurses, Nursing Aides, Receptionists & Porter).
   - Ask for help if needed from Chief of ED
   - Help in problem solving & managing of difficult patient
4. In disaster condition
   - Help in decision making (refer to disaster police)
   - Acts as ED Controller until Chief of ED arrives
   - Acts as Pre-hospital team leader
5. Work as ED Doctor

**ED Doctor:**
- Follow ED policy & procedure in giving the best medical care management needed for patient.
- Supervises ED Nurses work
- Plan (ED) patient management
**ED Charge Nurse:**

1. Responsible for ED Nurses, Nurse Aides & Porters towards Chief of ED, & Nursing Supervisor (Nurses matter only).
2. Coordinate (Nurses, Nursing Aides & Porters) work in ED on schedule distribution, problem solving, arranging vacation leaves, report problems & try to minimize shortcomings.
3. Maintain full readiness of ED set-up & monitor ED drug (its expiry date and availability) and report maintenance need.
4. Report all problems in the department to ED Chief.
5. Maintain ED filing, reports movement and statistic.
6. Coordinate with the Nursing Office & Chief of ED in case of shortage of Nursing staff.
7. Demonstrate good nursing interpersonal relationship & leadership.
8. Arrange Ambulances set up under guidance of Chief of ED & assign a nurse for daily check up of ambulance with aid of checklist & review trip checklist (ambulance nurse in charge)
9. Asses & supervise (Nurses, Student Nurses, Nursing Aides, Porters) practice in ED & try to improve it.
10. Supervise the ambulance nurse in the maintenance & readiness of the mobile medical aid team equipment & supplies.

**Deputy ED Charge Nurse:**

1. Acts as the Charge Nurse in his absence
2. Report to ED Charge Nurse
3. Work as ED nurse
NOTE:

**Ambulance Nurse in charge:** (Refer to D.C.H. ambulance: Terms of reference)

**Nurse in charge of the shift.**
1. Responsible about ED Nurses, Nursing Aides and Porter in front of Doctor In-charge of the shift And ED Charge Nurse.
2. Maintain ED Charge Nurse work and his deputy in there absent with there help (except leaves)
3. Follow order of Doctor In-charge of the shift
4. Work as ED Nurse
5. Receiving trip checklist & deliver it to ambulance nurse in charge & carry her job in her absent.

**ED Nurse:**
1. Carry out Doctor’s order on patients care
2. Follow order of the Nurse in charge of the shift.

**Nursing Aide:**
Follow Nurses order and under direct supervision of the nurse will help in-patient’s care, transporting, bed-making, sending sample to Lab. & get results, cleaning

**Porter:**
Follow Nurses and Receptionists Orders.
1. Helping in carrying and shifting patients.
2. Send lab. Samples & get results.
3. Maintain cleanliness of ED (To exclude medical instruments).
**ED Receptionist:**

**Follow Chief of ED order in:**

1. Registration of patient and issuing ED (A2) form for all emergency patient attending for care.
2. Help in completing patient personal data
3. Care of filing system and movement of reports & ED statistic making.
4. Do ED admission
5. Give guidance & information dissemination to ED patient and the public
7. Supervise porter work outside ED main hall.
8. Receiving emergency call & help directing information to proper authority thru proper channel.

**ED Filing Procedure of Medical Report:**

- Registration and filing is done by ED Receptionist
- Daily Medical Report Draft is send second morning to Medical Reporting Dept.
- Emergency Department (A2) form is filed in ED for 6 months and after that send to Medical Reporting & Filling Dept. for reserving under their custody.
PROCEDURE IN SEEKING TREATMENT IN ED:

Reception duty personnel issues a paper to all prospective patients and advice them what to do next.

**Unless Paying for the care.**

**NB. it is a policy that all non-Saudis not working in the Government are not allowed for treatment unless it is of life threatening situation and/or limb saving condition.**

- Medical cases should be > 13 years old.
- Ladies with obstetric & gynecological problem should be sent to M.C.H.
- No injectable medication (prescribed outside ED) be given in ED.
- Sorting out of patient to be done by Triage Nurse.

On arrival of patient to emergency department. Triage nurse, triages patients, emergency patients (PI) immediately taken to treatment area (CPR room), with the help of the nursing aide. Triage nurse later ensure issuance of form 2A by the receptionist. PRIORITY II patients after triage & vital signs taken & form 2A issuing done. Ask to wait if all treatment areas are full. Routine patients (P.III) triage by the triage nurse vital signs taken & his chief complain then Form 2A is issued from the Reception in Duplicate with respective no., Triage nurse instruct the patient to wait outside, patient wait for his number to be called. Then he/she proceeds to the screening triage room for evaluation by the Doctor on duty. After evaluation the doctor decides if the patient goes home or go to Dispensary for follow-up or goes inside the main ER, for further treatment.

- Emergency Dept (A2) Form should be filled by ED doctor for every patients seen in ED, documenting history, finding, management (one copy given to the patient & the original for filing).
- The nurse caring for the patient should document drugs given to the patient. Her/his name and disposal time should be written on the ED (A2) form.
EMERGENCY TRIAGE PATIENT FLOW CHART

( in routine ED standard)

PATIENT CATAGORIZATION

(By the Triage Nurse on Entry)

<table>
<thead>
<tr>
<th>I – EMERGENCY (RED)</th>
<th>II - URGENT (YELLOW)</th>
<th>III - ROUTINE (GREEN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life or limb threatening</td>
<td>Those with serious conditions who need treatment quickly</td>
<td>Patient who have conditions that are in no danger if treatment is delayed</td>
</tr>
<tr>
<td>Those who may die without STAT</td>
<td>Who need treatment quickly</td>
<td></td>
</tr>
<tr>
<td>treatment</td>
<td>To prevent further problems</td>
<td></td>
</tr>
<tr>
<td>Patients who’s ABC’S are</td>
<td>Those whose condition needs investigation and treatment</td>
<td>Patients who can safely wait to be seen by Physician as time permits</td>
</tr>
<tr>
<td>Compromised</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Must be seen by nurse and</td>
<td>Should be seen by physician and Treatment began within an acceptable time as Assessed by triage Nurse. Usually 20 to 60 Minutes (Delayed)</td>
<td>To be treated after triage according to the availability of treatment areas and providers (Triage clinic) Pt. can be send from there to primary Health Care Centers to Complete treatment.</td>
</tr>
<tr>
<td>Physician STAT without Delay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>immediate care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TRIAGE CRITERIA OF SEVERITY:
1. Abnormal physiological signs
2. The chief complaint (types, severity & duration)
3. Mechanism of injury
4. Con-current disease (Age <5 or >60, pregnancy) e.g. diabetic, COPD.
POLICY OF REFERRING PT. TO THE RESIDENTS IN THE WARDS:

Only after assessment, resuscitation and doing important investigation by E.D Doctor and if urgent medical care is still needed then. Patient is referred to the resident on duty (in the specialty required) by:

- Documenting that in ED (A2) Form.
- Consulting senior shift In-charge in difficult cases.

Paging system, Bleeps and telephone are the most accessible way of contacting the resident on duty. But if the doctor concerned did not reply within 30 min., the specialist on duty should be notified. UNDER NO CIRCUMSTANCES patient should wait for more than 30 min. If no response, inform chief of the department needed. If still no response inform Director on call (or Medical Director in day time).

- Medical Director or Chief of ED or his Deputy can admit the patient, if no response from Doctor concerned and patient condition allows that & incident report should be written.

- Usually admission should be advised by R.O.D.

WOUND CARING:

1. In massive bleeding or shock, start I.V.F get blood for cross matching, elevate lower limbs, urgently (stop bleeding + treat shock before any investigation).
2. Clean the wound with antiseptic solution and remove F.B (Debridement of the wound)
3. Stop bleeding (pressure - clamp or ligaturet elevate the limb).
4. Explore the wound for deep injury.
5. Refer a deep wound to the concerned department R.O.D.
6. Suture new clean wound
7. Dressing
8. X-ray if needed
9. A.T.V 0.5mg given I.M
10. If no A.T.V vaccination history give gamma globulin (human) 30-300 unit/kg B.wt I.V in another limb.
11. Antibiotic as needed

- Dressing is not allowed in ED for old wounds.
- Stitching should be done only by the doctor.
FRACTURE CARE:
1. Take care of wounds and resuscitation as above
2. Check for circulation, sensation and movement
3. Immobilize the limb suspected with fracture, with splint
4. X-ray for the limb
5. Refer to orthopedic R.O.D for further management
6. Simple trauma, manageable by E.D Doctor and in need for follow up by Orthopedic
   E.g. contusion, sprain, un-displaced fracture, fracture clavicle.
   - E.D Doctor send the patient with management order in X-ray form to Cast Room.
   - Cast Room Nurse will carry out the doctor’s order, keep the X-ray, & ask the patient to come the
     second working morning to fracture clinic (Cast Room) for review.
7. Other complex cases send to cast room for Orthopedic R.O.D. evaluation & management
   and will be given follow-up in Ortho. OPD clinic or sick leaves.

PRIORIT Y CASES IN ED: (Refer to the Disaster Management Plan)

Mass Accident:
By the principle of triage system, identify which of the patient needs immediate attention.

Use according to situation

Normal Status
Use according to situation
E.D Major Accident Plan


\[\text{Yellow or red Alert}\]

RED CRESCENT CAN USE THE DIRECT ED PHONE NO. 843 2897 OR RADIO

SICK LEAVE:
Hospital Staff:
• Can get Sick Leave from ED only outside working hours of the screening OPD.
• The first working day of the local committee will stop the Sick Leave action until pass by them.
• Referral to Local Committee or Screening OPD should be with a form sign by the chief of his department to consider the patient sick leave & to extend if needed.
The Public:

- Maximum Sick Leave is 1 day (can be repeated once), (Orthopedic R.O.D. can give 3 days)
- All Medical Reports From ED (including those for Sick Leave) should be filed in (MR Draft) form by the treating Doctor before leaving his shift and send them next morning to the Medical Report Department.

Medication:

- ED Doctor can prescribe ED Pharmacy Medicine.
- Patient Data, Diagnosis, Medicine, Doctor’s Signature & Stamp or clear Name should be in every prescription.
- Chronic illness medication can be written in ED, during OPD off days only and not to Be extended after for any reason (OPD Pharmacy Medication only, **For Legible Patient only**).
- Specialist & Consultant can write in ED Medication from out side ED Medication list.
- Control Drugs should be prescribed with legal ID Card No. registration (Injectable only) and on official form.
MEDICO LEGAL CASES:

FOR INCIDENT HAPPEN WITHIN 24 HOURS FROM PRESENTATION:

1. **Doctors Legal Responsibility for Road Traffic & Industrial Victim**:
   - Inform Police
   - Management
   - The doctor writes his medical report (in MR draft) as follows
     a. Nature of accident (Mechanism, time, physical finding)
     b. Intervention
     c. Cure time & sick leave - indicated if the patient is discharged

2. **Assault** (Child & Wife Battery):
   a. Inform Police
   b. Management
   c. Doctors examine the patient and write his findings and cure time & sick leave (Cure Time and sick leave for discharged patients in MR Draft).
   d. Collect the dress of the patient worn during the incident for admitted patient.
   e. Examination of assault cases happened after 24 hours (for reporting) should be done in OPD.
   f. Inform social worker (as indicated)
3. **Alcoholic & Narcotic**: 
There are only 3 agencies who have the authority in apprehending suspected cases of alcohol and narcotic.

   a. Police, Railway Police, Passport Police, and Traffic Police
   b. Intelligence Group
   c. Anti Narcotic - Administration
      - If police is not interested with the suspected patient. You can take samples for toxicology without police paper (If patient medical condition require).
      - Police request to take sample from patient in private hospital
         - Daytime to be done by Local Committee Doctor
         - Out of regular duty hours to be done by a Nurse from ED.

**Suspected Alcohol**: 
Usually come with Police paper. If not, inform the E.D Police.

   a. Complete the form (available in ED)
   b. Take samples - Blood and Urine
      5 ml. blood is withdrawn and preserved in 5 ml. Picric Acid in sealed bottle with red wax. Urine is also tested by the use of test tapes. If sugar and acetone are both positive, refer the patient to MROD for evaluation.
   c. Indicate the time of sampling
   d. Suspect’s thumb mark is printed on the form
   e. Secure the signature of the accompanying Policeman and the ED Doctor.
   f. Accomplish data of the suspect and Drs. Signature in specimen container with corresponding No. from the log book.
   g. Further management needed (Toxication, withdrawal, associated injury).
      - In chronic alcoholism give **100mg Thiamine** I.V with Dextrose.
**Suspected Narcotic**:

Cases usually come from Police. If not, inform the ED Police.

a. Complete the forms

b. Take samples - Blood & Urine (Blood 5 CC & Urine 30 CC) place in sealed bottle with red wax.

c. Indicate the time of sampling

d. suspect’s thumb mark is printed on the form

e. secure the signature of the accompanying Policeman and the ED Doctor.

f. Accomplish the data of the suspect in specimen container along with the Drs. signature and corresponding No. for the log book.

g. Management of: Toxication Ress.-ABC (Narcan 0.4 – 2.0mg I.V repeated Q 3min until respiratory function is stable, to exclude opioid in toxication on base of lack of response a minimum of 2mg in children and 10mg in adult should be given).

Withdrawal Severe symptoms can be controlled with Diasepam.

Associated Injury

Please note that all suspected narcotics blood should be examined for HIV and the specimen 5cc blood is forwarded to Virology Clinic where it will be screened. If positive it is reported at once by the Virology Department to proper authorities.
4. **Sodomy**:

Victims should be examined with utmost care and privacy.

Specimens to be collected,

1. Rectal Swab - 1 dry
2. Rectal Swab in Slide - 1 dry
3. Victims Underwear when the incident occurred
4. & swab from any extra rectal secretion found

- The Doctor on duty should write in detail all his physical findings which is significant to the case include Body & genitalia injury, anal tone, fissure & foreign body.
- Secure the thumb mark of the victim, if he is a minor secure also the thumb mark of his elder (Companion) relative.
- Only cases happened within 24 hours (> 24 forensic Medicine)
- Inform police, if not send by them to get a paper for sample taken or advice referral to forensic if not given after making General Examination only & report.

All specimens should be placed in an official envelope properly closed and sealed bearing the stamp of ED Hospital. This is submitted to Medical Report Department for completion.

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**N.B. RAPE CASES ARE REFERRED TO M.C.H**
5. **Cases Of Hit And Run Of Unidentified Body** :

A. For unknown body the doctors write in his report all the detail regarding his identification such as:

1. Gender
2. Color of the skin
3. Height and weight
4. Birth Marks
5. Approximate Age
6. Approximate time of death (by history and post mortal changes)
7. Probable cause of death
8. Referral to Forensic Medicine By Filling the form, & form of reason for referring.
   - Special form available in ED (Body Description form)
   - Special form available in ED (Reason of referral for Forensic Medicine)

B. **It all depends on the request of attending police.**

   E.G. - Collection of blood
   - Collection of dress
   - Collection of Hair

6. **NEEDLE PRICK (Outside the Hospital)**

   In any case of suspicion of contamination by hepatitis B or AIDS pt.:
   1. Inform police (If Assault)
   2. Follow infection control policy
   3. Fill incident report & send to Primary Health Care by fax
   4. Inform Medical Resident on duty.
## POST MORTAL CHANGES

<table>
<thead>
<tr>
<th>SIGNS</th>
<th>DISTRIBUTION</th>
<th>TIME</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. HYPOSTASIS</strong></td>
<td>START AFTER</td>
<td>1 – 2 HRS.</td>
<td>CHANGE IN POSITION</td>
</tr>
<tr>
<td></td>
<td>COMPLETE AFTER</td>
<td>4 – 6 HRS.</td>
<td>8 HOURS FIXED</td>
</tr>
<tr>
<td><strong>1st. RIGOR MORTIS</strong></td>
<td>LAX LOWER JAW &amp; BODY STARTS</td>
<td>&lt; 2®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FACE &amp; NECK</td>
<td>2®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SHOULDER &amp; CHEST</td>
<td>4®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TRUNK &amp; ABDOMEN</td>
<td>6®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UPPER LIMBS</td>
<td>8®</td>
<td></td>
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<tr>
<td></td>
<td>LOWER LIMBS</td>
<td>10®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPLETE</td>
<td>10 - 12®</td>
<td></td>
</tr>
<tr>
<td><strong>C. DISAPPEARANCE OF RIGOR MORTIS</strong></td>
<td>FACE &amp; NECK</td>
<td>14®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CHEST &amp; SHOULDER</td>
<td>16®</td>
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<td></td>
<td>TRUNK &amp; ABDOMEN</td>
<td>18®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LIMBS</td>
<td>20 - 24®</td>
<td></td>
</tr>
<tr>
<td><strong>D. DECAY</strong></td>
<td>GREENISH DISCOLORATION OF RT. LOWER QUADRANT ABDOMEN</td>
<td>6 - 8® SUMMER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DECAY ALL OVER THE BODY</td>
<td>12 - 24® WINTER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BROWNISH DISCOLORATION &amp; CHANGING LINES OVER THE CHEST, ABDOMEN &amp; BACK</td>
<td>24 – 36® SUMMER</td>
<td></td>
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<tr>
<td></td>
<td>VESICLES</td>
<td>48 - 72® WINTER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEELING OF SKIN</td>
<td>1- 2 DAYS SUMMER</td>
<td></td>
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<td>3 - 4DAYS WINTER</td>
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<td></td>
<td></td>
<td>3 DAYS SUMMER</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>5 DAYS WINTER</td>
<td></td>
</tr>
<tr>
<td><strong>E. INSECTS</strong></td>
<td>FLIES</td>
<td>AFTER</td>
<td>IN WINTER IT WILL BE</td>
</tr>
<tr>
<td></td>
<td>LARVAE</td>
<td>36° - 48°</td>
<td>DELAYED BY</td>
</tr>
<tr>
<td></td>
<td>LARVAE GROW IN SIZE</td>
<td>3-4 DAYDS</td>
<td>2 – 3 DAYS</td>
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<tr>
<td></td>
<td>COCCON</td>
<td>AFTER 5–7 DAYS</td>
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<td>FLIES HATCH</td>
<td>10 DAYS</td>
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<tr>
<td></td>
<td></td>
<td>2 WEEKS(15 DAYS)</td>
<td></td>
</tr>
</tbody>
</table>
7. **DEATH CERTIFICATE**:
   1. Inform police if not brought by them
   2. Take good history medical, surgical, drug, time of (body)finding
   3. Full examination look for dress, place, of incident, injury marks, surgery, injection marks
   4. Fill the death certificate form
   5. Time of death from history and post mortal changes.
   6. If you are not satisfied with natural cause of death refer case to forensic medicine
   7. Reason of referral to forensic medicine should be specified (fill the specific form)
   8. If C.P.R. done, time of death, the time of completion of C.P.R. with flat ECG.
   9. If the body with out Post Mortal Changes, it should be reexamined after two hours to confirm death.
   10. Body description form should be added to any unknown dead body.

**Signature on Burial License**:
1. It is the full responsibility of mortuary personnel to check proper Death Certificate and that there is no opposition on burial by Doctors, Police, or Family.
2. ED Doctor can sign after mortuary personnel signature and clear Name & Stamp.

**EXAMINATION OF DEAD BODY OUTSIDE HOSPITAL** (Not in other Hospital):
- Police request received by Director on duty
- Director on duty request ED shift In-charge to assign one doctor to go, if number of doctors allow.
- If not, Director on duty should arrange for one of the wards R.O.D to work in ED, so ED Doctor can go.
1- Dead Body Examination Report

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Age</th>
<th>Gender</th>
<th>Name</th>
</tr>
</thead>
</table>

2- Examination time:

<table>
<thead>
<tr>
<th>Time</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td></td>
</tr>
</tbody>
</table>

3- Death Announcement:

a) Place:

<table>
<thead>
<tr>
<th>Out Side the hospital</th>
<th>In Side the hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>Another medical institute</td>
</tr>
</tbody>
</table>

b) Approximate Time of Death:

<table>
<thead>
<tr>
<th>Time</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td></td>
</tr>
</tbody>
</table>

4- Detailed Medical Report:

Past Medical & Surgical Report:

5- The Apparent Cause of Death:

a) TRAUMA

- Other
- Assault
- Industrial
- M.V.A

b) NATURAL:

- Unclear illness or senility
- Known illness

6- Primary Cause of Death, that lead to Cardiopulmonary Arrest:

- Bleeding
- Hypovolemia
- Infection
- Asphyxia
- Cancer
- Metabolic & Electrolyte Disturbances

Doctor Name:.................................. Signature:.................................. Date:..................................
### Dead Body Referral to Forensic medicine

**Referral Cause:**

1. **Finding of suspicious sign**
   
   Which is .................................................................
   
   1- ووجود علامات شبهة جنائية
   
   وھﻲ .................................................................

2. **Police Suspicion:**

3. **Family Suspicion**

   The need of Post Mortal Study
   
   Was Explained to the family.

   In case the Father change his opinion to
   Natural Death, And No suspicion sign on
   the body or by police the death consider
   natural.

   في حالة تغيير قناعة والد المتوفى إلى ان
   الوفاة طبيعية، وعدم وجود علامات اشتباه على
   الجثة أو من الشرطة، يعد تصنيف الوفاة إلى
   طبيعية.

4. **Young age (<40)**

   Without clear cause of death
   
   For young Saudi in the Present
   
   Of father Acceptance, Consider Natural.

   4- صغر عمر المتوفى (<> 40)
   
   بدون وجود سبب ظاهري للوفاة.
   
   الصغري الصغير السن وفي وجود قناعة
   الوالد بطبيعة الوفاة، تعد وفاته طبيعية.

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* ترفع التوصية من خلال مكتب التقارير الطبية إلى الشرطة بتحويل الجثة إلى الطب الشرعي في الحالات 1
  
  و 2 مع طلب إحضار جميع التقارير الطبية ووقائع الوفاة، والإذن بالتشريحة. وترفع في الحالة 3 و 4
  
  بنفس الطالبات وبإمكان اعتبار الوفاة طبيعية بعزة كامنة لا يستدل عليها إلا بالتشريحة، في حل عدم اشتباه
  
  الشرطة، وظهور تقارير طبية أو تقارير من الشرطة عن وقائع الوفاة قد تفسر الوفاة الطبيعية، ووجود
  
  قناعة من ولي المتوفى كتابة بطبيعة الوفاة.
8. **Near Drowning**:
   - Do not waste time draining water from lungs.
   - Ensure clear airway (Check for F.B), proper suction, ABC resuscitation.
   - 100% O₂ (E.T.T & C.P.R in need).
   - Ventolin nebulizer in case of bronchial spasm
   - CBC, S.lyte, ABG, C-xray
   - Look for associated injury
   - Stomach decompression with nasogastric tube.
   - Refer to M.R.O.D for admission and other supportive measure.
   - Inform police.

9. **SUICIDES**:
   1. Inform Police
   2. Doing all the necessary management
   3. All suicidal patient should be admitted with joint supervision by psychiatrist on call. And under close observation.
   4. If by chemical ingestion fill the informing form and send to Primary Health Care by fax.

10. **BURNS**:
    1. Inform ED Police
    2. Doctor should write his finding in M.R Draft after doing necessary management
    3. Proceed to General rules for admission for the following cases:
        - < 2 yrs or > 60 yrs.
        - Deep burn like electrical, oil & tar
        - Face, feet, hand, genitalia & circumferential burn.
        - Children > 10%, & Adult > 15% surface area burn.
        - Inhalation and other associated injuries.
        - Clean the burn area, cover with green sheet, give I.V analgesia & Intra Venus Fluid until R.O.D see the patient
    4. Children > 15% & Adult > 25% need burn unit to be referred to hospital with this facility by plastic R.O.D
11. **FOOD POISONING**

**Specimens to be collected:**

1. Rectal Swab - To Diarrhea Center
2. Gastric Contents - 1 to Toxicology for Chem. Analysis
   In 2 Container 1 to Municipality for Bacteriological Analysis
3. Blood 5 ml. to Toxicology
   a. Report to the Hospital Police on duty.
   b. Report to the Municipality - Mr. KHALID AL AQEL (Office # 8331686 & Home: # 8434321).
   c. Fill carefully the informing report form and Fax it to the Health Office (Fax # 8430265 & tel: # 8273342).
   d. Send the informing report second morning to infection control nurse. To fax later, the outcome if patient is admitted.
   e. Give the medical management needed.
12. **CHEMICAL POISONING:**

1. Please refer to Toxicology center & take there advise
2. Fill Toxicology form and take the sample needed and send urgently (Blood 5 CC, Gastric lavage & Urine)
3. Send chemical sample or containers to Toxicology center (if there’s any)
4. Inform the Police
5. Do the necessary Medical Management

**First Aids in ED**

* Insure good airway
* Intra venous fluid
* Prevention of further absorption

- Remove clothes with toxin and wash toxin in body with water & soap.
- Good ventilation (100% O₂ for Co poisoning)
- Insert N.G.T (Not in late corrosive ingestion)
- Do gastric lavage with saline
- Give activated charcoal 20 – 50gm.
  
  In 100 – 200ml saline
- Diuretics & Cathartic

6. Refer to Medical Resident on duty for further supportive medicine & antidote & Dialysis
7. Fill-up the informing report, to be faxed to the Health Office (Fax # 8430265)
8. Send the informing report second morning to the infection control nurse. To fax later, the outcome if patient is admitted.
13. **HEAT STROKE**:
   1. Start the patient on IVF (D 5% NS or R.L)
   2. Record temperature on arrival.
   3. Remove outer dressing.
   4. Cool the patient with cold water, wet bed sheet & fanning.
   5. Give any supplement care needed.
   6. Look for other causes of raised temperature.
   7. Take blood for CBC, RBS, Urea, Cri & S.lyte.
   8. Refer case to M.R.O.D

**Medical Cases that needs to be reported**:

1. **Malaria Positive** - The ED Nurse fills up the necessary form and submits to the Indoor Lab.
   For Blood Film.
2. **Cholera Througner** - Inform Medical ROD and FEVER HOSPITAL for 1 & 2.
3. **Diarrhea**:
   - Collect Rectal Swab (for suspected cases)
   - Fill up the necessary form
   - Forward specimen to Diarrhea Center
   - Medical management accordingly

4. **Others**:

1. **Rabies**
   - Transmission usually by a bite of animal with virus in the saliva (dog, cat, fox, wolf, bat & cattle etc.)
   - Rodent almost always do not carry rabies
   - Incubation usually 3 - 8 weeks (can be from 7 days - 7 years)
   - Because of limitation of supply, give A.R.V only for dog bite.
   - If the animal is alive and well 10 days after the bite then animal is assumed not to have rabies virus in saliva at the time of bite. So no need for 4th dose A.R.V, because of limitation of supply.
   - If animal killed, brain tissue must be sent to laboratory for the virus immunofluorescence study.
**Management**

1. Local wound treatment (look page on wound caring)
   - Bite wounds should not be sutured

2. Passive immunization with human rabies immunoglobulin (HRIG)
   - In suspected rabies cases from history or severe wounds
   - 20 Iu/Kg. B. Wt. I.M give half of it around the wound.
   - Do not use the same anatomical site or syringe for vaccine (Another limb)
   - Do not use to previously vaccinated persons.

3. Human Diploid cell vaccine (H.D.C.V) or P.A.R.V
   - 1 Ampoule I.M (Deltoid area) in the days below
   - Previously immunize patient give D0 & D3 only
   - Stop immunization if immunoflurescence study on animal is (-) unless looking for immunity

2. **Scorpion Sting**
   - First symptoms, other than local pain, appear from 5 minute to 24 hours
   - Death can occur after several minutes to 30 hours
   - Close observation for all patients
   - Admission for all symptomatic (systemic) patient
   - M.R.O.D evaluation for a symptomatic patient.
   - Avoid Dextrose solution & plasma
   - Avoid barbiturate, pethidine, morphine & beta blockers

1. Give anti-venom immediately (slow I.V) to all patient. At least 5 x 1ml. ampoule diluted in 20 – 50ml saline after skin test. Can be repeated after 2 hours if no improvement.

2. Infiltrate site of string with 1% lignocaine for pain

3. A.T.V

4. In case of positive skin test give anti-venom, keeping in hand Adrenaline (0.1%), Hydrocortisone & Anti-histamine for resuscitation in case of Anaphylaxis reaction.

5. K.V.O or keep patient on ½ Normal Saline.

6. Other treatments according to medical advise (CNS, BP & Cardiac)

7. Fill-up the form

8. Monthly reporting to M.O.H
3. **Snake Bite**:

- Try to get advise from Poison Centre
- All cases need close observation & referral to M.R.O.D for admission
- Cases with minimal pain, less than 1 inch surrounding Edema and Erythema at 12 hrs. No systemic involvement usually do not require anti-venom
- You may need to do fascitomy if severe Edema, & if no pulses felt.
- CBC, Coagulogram, Blood Grouping, LFT, RFT, S. Lytes should be done immediately for all.
- Use anti-rapid (Polyvalent purified antisnake serum)

1. Wound care refer to wound care management
2. Tourniquet (use within first 1 H)
   - * For lymphatic and venous, keep palpable pulse
   - * Not to be released until incision and suction done and anti-venom ready for administration.
3. Incision and suction (for 30 minutes)
   - * Within 30 minutes after snakebite
   - * Longitudinal
4. A.T.V
5. Anti-venom (after skin test, epinephrine 1/1000 should be around)
   - 20 – 40 ml. slow I.M in the limb root (not local)
   - Sever - slow I.V after dilution 3 – 5 vials in 500ml N.S or D5%W (can get > 15 vials in need)
   - repeat or raise the dose until clinical improvement (no relation to patient’s weight, children need more)
6. Admission by M.R.O.D
4. **Insects Sting** : (e.g. honey bee, wasp & etc.)
   - Most deaths occur within 15 to 30 minutes
   - Death cause is combination of shock, respiratory failure, central nervous system change.

1. Local cool application
2. Tourniquet, to slow absorption of venom
3. 0.3 – 0.5ml of 1 : 1000 epinephrine S.C (I.V in severe reaction) can repeat every 20 – 30 minutes
4. I.V anti-histamine, anti-pruritic, and analgesia
5. Remove the venom sac.
6. Oxygen and other supportive means as needed
7. Refer symptomatic patient (systemic) to M.R.O.D

5. **Marine Sting** : (e.g. sting rays)
   - Venom is heat liable
1. Copious irrigation of sting site to wash out any toxin and spine fragments
2. Soak sting site in hot water as the patient can stand without injury for 30 min. – 1 hour.
3. After do wound debridement.

**CODE BLUE/CODE RED** (Please see the multiple trauma):

**Disaster plan** - Normal Status
- ED Major Accident Plan (Please see Disaster Plan Manual)
- **Yellow Alert ➔ Red Alert**

**REFERRAL SYSTEM TO OPD**:
1. No referral is entertained unless it is Emergency
2. ED can’t refer cases directly to OPD
3. Contact the on Duty Resident and he can refer to OPD after attendant in ED & examine the patient. (Orthopedic & Ophthalmology only)
ADMISSION ROLE THROUGH ED:
1. Usually admission should advice by specialty resident on duty (ROD) if not there, his specialist or consultant on call.
2. In multiple trauma cases, if no agreement, trauma team leader (Senior Gen. Surgery resident) should decide that.
3. Medical Director, Chief of ED, admit patient if condition allow to the proper ward, if no action taken in 30 min. by the team in step 1 & 2 and objection then is not allowed.
4. Admission should be for real emergency only.
5. Non-eligible patient admitted in life threatening condition or limb saving without money guarantee to start.
6. Non-eligible patient can be admitted with non life threatening condition or limb saving after down payment & a guarantee for full payment.
7. Decision of admission ward should be done before allowing patients to go for endoscope, U/S or CT scanning (admitting paper should be send to admission office without delay)
8. No patient should be allowed to retain to ED after finishing CT Scan, U/S or endoscope.
9. Incident report should be written for any case stay more than four hours in E.D, specifying causes of delay.

OBSERVATION:
1. Should not be for more than six hours.
2. They should be seen by specialty resident on duty in need before observation.
POLICY AND PROCEDURE ON THE MANAGEMENT OF AN INDIVIDUAL PATIENT WITH MULTIPLE TRAUMA

DEFINITION:
Multiple trauma is trauma to more than one organ, it is a serious condition and it needs immediate attention. The patient is considered in shock if his blood pressure is below 90 mm/Hg. For this patient eligibility is not applicable, all multiple injured patients have the right to be managed immediately.

INITIAL MANAGEMENT:
This must be started by ED Doctors in Resuscitation area. No family members should be allowed to attend the resuscitation. The ED Doctor or Nurse must call immediately the trauma team by phoning the telephone operator (2222) and asking him to announce “CODE RED”. Senior ED Doctor is fully responsible for the patient until the trauma team arrives in the ED thereafter, the trauma team is responsible for the patient.

TRAUMA TEAM (CODE RED TEAM):
To be called to any multiple trauma shocked patients.

1. Senior General Surgery Resident (Team Leader)
2. Senior ICU Resident
3. Senior Orthopedic Resident
4. Senior Neurosurgery Resident
5. Senior Thoracic Resident
6. 4 Nurses from ED.
   • The nursing supervisor should be present as an observer.
DUTIES OF THE TRAUMA TEAM:

The trauma team leader is responsible for the priority in resuscitation and management. The cause of shock must be recognized as soon as possible. If further investigations are needed (e.g. US, CT etc.), this must be decided by the leader of the trauma team who feels that further investigations are really mandatory, and that the management of the patient can not be completed without this investigation. The trauma team must decide on the location of admission and under whose care the patient will be. The concern consultant and specialist must be informed immediately and he is fully responsible about the management of the case.

Code Blue: Use Extension Number 2222 used for any shocked or arrest patient (Medical).

Team:
1. Senior Medical R.O.D (Team Leader). If known cardiac in acute chest pain unit CCU R.O.D. is responsible
2. Senior I.C.U. R.O.D
3. Senior Ward Resident (most experience ED Physicians)
4. Four Senior Nurses at least needed (with the Nursing Supervisor) titled as :
   - A for airway – assure good airway, airway piece (naso-or oro-pharyngeal airways) suction, ambu bags, O₂ source & connection, ETT laryngoscope, stylet, Magill forcep, ventilator. Ventilate in need before doctor come.
   - B get vital sign connect patient to (E.C.G, monitors, D.C. shock machine) & record, help in cardiac massage
   - C1 start two IVL take sample and start fluid C1 give I.V. drugs and record
   - C2 start two IVL take sample and start fluid C2 prepare medicine and circulate.
CARDINAL RULES OF MANAGEMENT:

- *The patient must be shifted only AFTER STABILIZING HIM, if possible*

*Quick History:* Time and place of accident type and mechanism of injury & important past history.

1st. **Primary Survey (A, B, C):** Quick examination to discover life threatening injuries after removing clothing (Chest heamo. or pneumothorax, cardiac tamponade, flail chest, internal abdominal bleeding, major vessels injury, head injury, & cervical spine).

1.A. **Secure air way with cervical spine control**
   - Air way, suction (as appropriate) E.T.T, cricothyrodoctomy (needle, surgical).

2.B. **Ensure good air way entry (breathing)**
   - Spontaneous (oral, nasal, laryngeal) mask or cannula, ambu bag, E.T.T
   - Give oxygen 100%
   - Consider needle aspiration, I.C.T insertion for pneumothorax or massive hemathorax
   - Seal all open chest wound.

3.C. **Ensure proper circulation.**
   - Two big bore canulas (16 G or bigger) in large veins for rapid volume replacement.
   - Give bolus 1 –2L Ringer Lactate, children 10ml/kg. BWt.
   - Take blood for CBC, Chemistry, ABG, Cross matching & Toxicology sample in need.
   - Use crystalloid, colloid, starch product or blood to ensure rapid normalization of blood pressure with help of CVP sometimes (patient die of low blood pressure not low hemoglobin).


5. Control all visible bleeding points.

6. Assess for signs of intra-abdominal bleeding, cardiac tempanade (consider pericardiocentesis, U.S or peritoneal lavage).

7. N.G.T & Fally’s catheter.

8. Obtain necessary X-rays with portable technique started with cervical spine, chest, pelvic.

9. Request blood for transfusion by emergency procedure (See Blood transfusion Policy) in need.
10. D. Disability


Pupil size & reactions.

• Use slow I.V valium to control fits.
• If no lateralization signs exist at admission time, no C.T Scan of the brain is indicated.
• C.T Scan brain for stable patient only.

11. E. Exposure & Environment

2nd. Secondary Survey: Detailed history & head to toe examination. (GCS, RTS)

• Ensure immobilization of fractured extremity by splinting, traction, or P.O.P.
• Ensure anti-tetanus injection is given.
• Call other specialty in need.
• Ensure good documentation of history, symptoms, signs & management done.

Intra thoracic & intra abdominal bleeding should be managed before intra cranial bleeding.

ADMISSION RULES:

1. Multiple trauma patient with shock secondary to internal hemorrhage must be admitted under the General Surgery Consultant on call. If the shock is secondary to chest or bony injuries then admission will be under the concerned specialty and not in General Surgery. Eligibility is not applicable here.

2. Multiple trauma patient without shock, if comatose, must be admitted under Neurosurgeon on call.

3. Multiple trauma patients without coma or shock must be admitted under the on call consultant for the mostly affected organ.

4. The trauma team will consult in need on call Specialists and Consultants required.

5. The consultant under whom a patient is being admitted must be immediately informed by that specialty resident on duty and clearly documented in the file.

6. All patients with multiple trauma should ideally be admitted to ICU.

7. No patient should be taken to the O.R before the consultant under whom the patient is being admitted informed.
TRANSFER OF EMERGENCY PATIENTS BETWEEN HOSPITALS

POLICIES & PROCEDURES:

A. The following shall be considered in transferring of a patient from one hospital to another.
   1. Any patient who is eligible for care to a hospital other than the one where he is currently
      a patient and whose medical condition will allow safe transfer shall normally be
      accepted by a hospital where bed and medical services required are available.
   2. Any patient who is in need of a particular medical service which is not available in the
      hospital where he is currently a patient.
   3. Non-eligible patient in need of particular medical service which is not available in all
      private hospitals in the area.
   4. Private patient who is ready himself, or by his sponsor, or insurance company to pay for
      his medical care needed.

B. Geographic area division & hospital level & distribution line level will be respected.

C. The consultant or specialist on call of the main patient’s condition, or his ROD (after day time),
   - Will be the one to refer and complete the referral papers.
   - At the receiving hospital shall decide whether the patient will be accepted for transfer or
      not.

D. The referring hospital should be the one to provide the transportation after the patient has been
   accepted.

E. If the patient is leaving against medical advise, the receiving hospital will arrange for the
   transportation.

F. If the ambulance is NOT coming from the referring hospital, the physician or nurse assigned to
   accompany shifting of the patient has the right to refuse if he feels that the patient’s condition is
   unstable for safe transfer.

G. Referral form (Ministry Form) must be completed and fax with a short but substantial medical
   report to the receiving hospital.

H. In urgent condition, use the Direct Line to contact the specialist or ROD in the receiving hospital.

I. If transportation will be coming from the receiving hospital, the transportation form should be
   faxed to them.
J. If the patient (Saudi or Eligible) is transferred from a government hospital to private because of non-availability of beds or any particular medical service.

- Contact the reporting room in the emergency safety & ambulance services administration on the phone # 8429012 or 8412464 ext. 110 to help in the arrangement & to guide you to the available bed needed in the hospitals in the area. Starting with your geographic (distribution) referral governmental hospital by getting direct personal contact to them.

- Send short medical report stating the medical care needed on the referral request form to the reporting room by fax # 8429012 or 8412464 ext. 111. & To your requested hospital.

- Reporting room (The Referral Coordinator) will coordinator with the referring Doctor in difficult condition, in which the treating doctor fail to get a bed to his patient through his direct contact to the hospitals, by faxing the report to the possible hospitals & and phoning to follow up the referral.

- Testament (Guarantee) should be filled up, in Referring hospital by the patient or his guardian, conforming that the Ministry of Health Is not responsible for any expenses after 24 hours in the private hospital. If patient or his family does not accept shifting back to the government hospital.(it should be send with the papers to the accepting hospital).

- Referring hospital & Accepting hospital should fax the form (Request to return a patient) to the Reporting room on the first morning after, to reassure Pt. return in 24 hrs.

- The private hospital should send a fax daily to the reporting room requesting the patient shifting, unless patient request is to continue treatment there at his own expenses.

- After that the private hospital should send a request letter for his 24 hours medical care directed to the General Director, with medical report & detailed invoice (in Arabic & English) & guarantee of not taken money from the patient, transferee request,& coordinating form. The request should be deliver to the Emergency safety & ambulance services administration.
K. Transferring of patient should be done after he has been stabilized and necessary diagnostic and supportive measures has been given.

L. Emergency Physicians are not responsible to arrange for patient’s transfer or to accept transfer.

M. Non-eligible patient need to be transferred from private to government hospital because of non-availability of medical services needed in all the private hospital in the area. Should come with a sponsor to but a down payment for the care, & to fill the testament (Guarantee) to pay any further expenses.

N. Transfer of patient should be done only after prior arrangement, with the approval from the receiving hospital, and also with the confirmation of the availability of the bed and medical care needed for him.

N.B.

- Primary health care center & hospital of less than 100 beds will arrange the transfer of patient to their geographic referral hospital. If service in needed is not available, they will try to ask help from other hospital through fax and phone. If still not possible then patient should be sent with out delay to their first geographic referral hospital, and to inform the hospital about that by phone or radio.
2. **RESPONSIBILITIES:**

1st. **Consultant (Specialist) or ROD of the Sending Hospital:**
1. Fill the referral form (1-A) and transportation form.
2. Prepare a medical summary.
3. Fax the medical summary and the referral form to the receiving hospital. (See attachment for fax numbers and telephone numbers). And if they need the help of Reporting Room, they should fax the report to it, and phone through the help of patient affairs office or Director on duty.
4. To call the consultant (specialist) at the receiving hospital to discuss the patient’s care and his condition in urgent cases.
5. Call reporting room on phone #8412464 ext. 110 (8155777 ext. 3542 can be used). If they want to know the availability of the bed needed.
6. Inform the patient and his family and/or guardian about the transfer to another hospital, where he will be admitted or treated as an outpatient, as decided by the receiving hospital.
7. Arrange the team, for patient shifting (Escort), to observe the patient.
8. Fill the coordination form for private hospital transfer, & send it with the patient and other pertinent papers.

2nd. **Receiving Hospital Admission Shift Coordinator, Patient’s Affair Office or Director On Duty (4 PM to 7 AM or week ends):**

1. Receives the medical summary and the Referral form and forward it to the concerned consultant or ROD through the Medical Director in day time.
2. Confirms the answer given by the consultant or specialist and fax or phone the referring hospital for acceptance or refusal of the patient.
3. Confirms that the patient is eligible for care at the hospital
4. Assists the consultant or specialist from the referring hospital in contacting the consultant or specialist of the receiving hospital.
5. Arranges in providing a vehicle to transport the patient.
6. Confirms Testament (Guarantee) is filled up, and the transfer form appropriately.
7. Fax the request to return a patient to the reporting room.
3rd. **Receiving Hospital Consultant or ROD:**

1. Reviews the medical summary and the referral form received from the sending hospital.
2. Reviews the patient’s care and condition with the referring doctor in need.
3. Ensures the following:
   a. That bed is available on the ward where the patient will be admitted.
   b. That the medical care required is available.
   c. Informs (if patient is accepted):
      - The receiving Emergency Physician
      - CCU or ICU doctor in charge if beds there are needed
      - Ward R.O.D. Concerned with patient
      - Patient’s Affair office or Director on Duty (4 PM – 7 AM or week end).

4. Informs the referring doctor through the Patient’s Affair office whether or not he will accept the transfer of the patient.

4th. **ESCORT NURSE:**

1. Assuring present & functioning of equipments needed for transfer in the transportation request. & fill his/her part in Appendix II. & reviewing equipment in the Ambulance with the responsible nurse in ED before the trip.
2. Responsible for the safety of the patient & ambulance equipment and its tidiness during the course of the trip.
3. Assuring present of medical report, referral form, transportation form, & acceptance from receiving hospital.
4. Secures the signature of the accepting Nursing Supervisor from receiving hospital. (Appendix II) and to deliver it to the Nursing office after the trip.
5. Filling ambulance trip checklist, & deliver it to ED nurse in-charge of the shift to prepare the ambulance till next trip.

* Escort Nurse should be from the treating Doctor’s ward for best medical care. & should be arrange though the treating ward, nurse in charge of the station & the nursing office.
5th. **RECEIVING HOSPITAL AMBULANCE TEAM RESPONSIBLE FOR THE TRANSFER OF THE PATIENT:**

1. Reviews the completed Referral form, Transportation form and medical summary report.
2. Goes to the sending hospital to get the patient.
3. Assesses the patient’s condition and ensures that he is stable enough to be transferred:
   a. If the patient is stable enough to be transferred, accompanies the patient during the transfer.
   b. If the patient is NOT stable enough to be transferred, cancels the transfer and notifies the treating doctor of the referring hospital.

F. **ATTACHMENTS:**

1. Referrals Form (1-A).
2. Transfer Order Form and Checklist. (Appendix I & II).
3. Testament (Guarantee).
5. Fax and Telephone numbers.
6. Coordination form for patient transfer acceptance.
7. Referral covering letter.
8. request for patient return.
# FAX & TELEPHONE NUMBERS

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AMBULANCE MANAGEMENT

OBJECTIVE:
To establish readiness of hospital ambulances and to assign responsibilities among the hospital staff respectively.

GENERAL RULES:
1. Ambulance medical readiness (technical) will be the responsibility of Emergency Department. There would be one, paramedic or nurse (ambulance nurse in-charge) assigned. And to be supervised by the ED Charge Nurse and Chief of the department. The shift charge nurse will cover him/her in the night time.
2. Ambulance mechanical readiness is the responsibility of Transportation Department

DUTIES AND RESPONSIBILITIES OF AMBULANCE NURSE IN-CHARGE
1. Ensures technical (medical) readiness of the ambulance.
2. Complete ambulance checklist form every after use and daily, after examining ambulance readiness: it’s equipment and functioning, emergency kit bag contents, expiry date of medicines, availability of disposable, tidiness and cleaning of the ambulance.
3. Ensure and checks for readiness of equipment for Mobile Medical Aid Team (Pre-hospital team) monthly and every after use.
4. Receives trip report form, from the escort nurse who filled it up completely, and performs routine check-up of the ambulance, replaces used disposables, account for the availability of equipment and functioning. The outcome will be submitted to the Chief of ED who can raise officially to the Director. any misused of ambulance, any loses or equipment wreckage/malfunction, untidiness, ambulance parked outside shaded area, etc.
5. Checks for the presence of additional supplies needed for transporting specific patient with the help of the escort nurse (ward nurse) according to the treating doctor’s request in the transfer order.
6. Attends inspection as required by the ED Chief or Medical Director and presents report requested about his duty.
7. Evacuates supplies in the ambulance in cases the care is subject for maintenance and return supplies back after the car’s repair as informed by the transportation department.
**DRIVER RESPONSIBILITY:**

1. Responsible for any lost of supplies.
2. Assure the ambulance is clean, from in and out (not medical equipments).
3. Fill fuel tank after his trip.
4. Responsible of his misused behavior (Car accident, traffic penalties).
5. Report any accident, or disability in the vehicle.
6. The ambulance must be park in a proper shaded parking slot.
7. Stay in the ambulance if it got out of order out side his institute & inform or contact transportation department in his base hospital or the nearest hospital, or to the Reporting room in emergency administration, to send him help to shift the patient immediately with the nearest means (MOH, Red Crescent, Private Sector).
8. Use the official uniform while on duty.
9. Join the courses he got named for, for more experience and certificates.
10. Present with the ambulance in the required place & time.
11. Assure, to get signed ambulance exit form, which is to be shown to the gate security.

**CHIEF DRIVER RESPONSIBILITIES:**

1. Fill up the ambulance maintenance registration form (1,2,3,) that contains skeleton number & plate number, vehicle number in the institute, driver’s name, dispatch & return time, after trip checking (using of the shaded park, cleanliness, fuel & oil level, body injury or break down, traffic violation penalties, or misuse of the uniform. and to rise these point to the chief of transportation department. And to raise and register the time of routine or emergency maintenance (oil change, tires, battery and tubes, wire , ….).
2. Stay in driver’s room & in contact with the drivers out in mission.
3. Make driver’s schedule, assuring naming duty in charge driver, take his responsibility at nigh & weekends.
4. Send the help teams to any ambulance breakdown in an outside mission (ambulance for patient shifting if they are in a reasonable distance or assuring getting help ambulance from another institute from MOH, Red Crescent or others. In coordination with the Reporting room in the emergency administration. At the same time to send a lift truck to carry the Driver & to pull the ambulance from the road.

5. Receiving ambulance request form, from the nursing office (treating ward) or Reporting room in emergency administration, And to send the ambulance to the required place & time.

6. Informing the ambulance nurse in charge about the vehicles breaking down or maintenance schedule in order for the later to evacuate the medical supplies form it, and to inform back the nurse for returning the supplies upon the completion of the repair or maintenance.

DUTIES AND RESPONSIBILITIES OF TRANSPORTATION DEPARTMENT (General Services Dep.):

1. The chief of transportation will supervise drivers, & mechanical ambulance readiness and maintenance schedule ,&Fuel and Oil need.

2. Try with the institute administration & chief of emergency department to get the ambulance driver’s courses in special driving, CPR basic cardiac life support, first aids, safe patient shifting,...

3. Making & following ambulance registry & ambulance use.

4. Assuring the present of suitable shaded parks for the ambulance with night lighting. & to raise to his superior what can raise the standard of work.

5. Completing ambulance exit form ( # 4) & to sign it by (Institute Director, or transportation Director, or Chief of ED, or Director on Duty) for ambulance driver & assuring no ambulance exit without it, with the cooperation of the gate security.

* Director on Duty will be responsible of this part from 4 PM – 7 AM & Weekends.
DUTIES AND RESPONSIBILITIES OF THE TREATING PHYSICIAN:

1. Complete the transportation form and the medical report, do the necessary call and fax for transportation according to the policy and procedure of transfer or emergency patients between hospitals.

* Transportation form: contain information about escort need and it’s type, the need for special equipment for transportation, time and destination.

DUTIES AND RESPONSIBILITIES OF THE NURSING OFFICE:

1. Naming the escort nurse after it has been requested in the transfer form filled up by the treating doctor. Preferably the escort should come from the treating doctor ward.
2. Coordinate with General services office or Director on duty for ambulance exit form.

DUTIES AND RESPONSIBILITIES OF THE ESCORT NURSE:

1. See policy and procedure of transferring emergency patient between hospital. (Patient care, tidiness of ambulance content, completing the trip report form and delivering it immediately after trip to the ambulance in charge nurse or ED duty in charge nurse).

Attached papers:
♦ Form for checklist of ambulance and emergency kit bag.
♦ Form for trip report.
♦ Policy and Procedures of transferring emergency patients between hospitals.
♦ Form for ambulance maintenance registry (1,2,3.).
♦ Nurse daily check form.
♦ Exit form.
THE TEACHING AND ACADEMIC ACTIVITIES OF SAUDI BOARD RESIDENTS IN E.D. ARE DESIGNED TO:

1. Improve the knowledge and skills in diagnosing emergency condition and resuscitation.
2. Master CPR, triage, wound suturing, IV fluids used and indication.
3. Learn to manipulate machines such as monitor, DC shock, infusion pump, nebulizer and Doppler.
4. Improve skills in airway management
5. Observe and learn (under supervision) the following emergency procedures:
   - Cut down
   - O2 Mask use
   - Intubation ETT
   - Pericardiocentesis
   - Intercostal tube placement
   - Peritoneal lavage
   - Tracheostomy
   - Central Line placement
   - Limbs splinting
   - Use of IV emergency drugs, e.g. Inotropes, Anticoagulant, Nitroglycerin, thrombolytic agent, Anticonvulsive, antiarrhythmic agents.
6. Attend at least 75% of Departmental Activity as follows:
   1. Every Saturday lecture at 2 PM (He is expected to give lectures depending on the topics given to him)
   2. 1st Monday of the Arabic Month Departmental Meeting.
Management of Common Emergencies

1. Renal Colic:
   a. Do urine analysis, KUB, CBC, S.Lytes, RFT.
   b. Management of Simple Renal Colic:
      Restrict hydration - All diuretics are contra indicated.
      Antispasmodic - Buscopan IV
      NSAID - Voltarine, Brufen, - reduce the edema
   c. Persistent Pain 2 ampoule Buscopan I.V in 250ml D5% NS within 3 hrs.
      Pethedine 50mg IM
   d. Admission - Severe recurrent pain not responding
      - Fever, ↑ WBC, Shock
      - High Creatinine, urea levels or anuria.

VASO-OCCCLUSIVE CRISIS IN SICKLER:

Treat Precipitating factor:
- Infection, Dehydration, Acidosis, Vasospasm in cold weather.
- Sickler can get other painful acute illness.
  - Over hydration I.V.
  - Analgesia NSAID-----opiates. Try to avoid addiction to opiates. (use sosagon)
  - Oxygen mask or cannula.
  - Keep warm.
  - Check CBC, Chemistry, and X-rays and ABG, and other as needed.
  - Admission in unrelieved crisis, recurrent severe, associated illness.

ANAPHYLACTIC RESPONSE:
- Respiratory distress, shock, pruritus, urticaria, Angioedema, G.I and cardiac manifestation.
  - Epinephrine (1 : 1000) 0.2 - 0.5 ml S.C Q 3min as required.
  - IVL epinephrine (1 : 50,000).
  - Resuscitation - A.B.C.
  - Volume expanders and Vasopressor agent if intractable hypotension.
  - Oxygen + Bronchodilator nebulizer (E.T.T).
  - Antihistamine
  - Corticosteroids intravenous.
  - Referral to M.R.O.D.
DYSPNOEA:

b. Pathological
- Obesity
- Upper Airway obstruction – F.B, laryngeal edema, tumor.
- Pulmonary – Pneumonia, COPD, Pulmonary embolism, Pneumo or hemo thorax.
- Cardiovascular – CCF, Acute pulmonary oedema, haemorrhage, Anaemia.
- Chest wall – Trauma, deformities, muscle disease.
- Abdomen – Acute Abdomen, Abdominal distension.
- Metabolic – Acidosis, diabetes, Renal failure, fever, thyrotoxicosis.
- Neurological – Hemiplegia
- Neurosis – Hysteria.

BRONCHIAL ASTHMA MANAGEMENT:
- Ventoline Nebulizer 1 ml in 3 ml N.S with oxygen Q 20 min.
- Hydrate the patient with IVF.
- Hydrocortisone 4 mg/kg IV (in severe cases)
- Aminophylline 5 ml/kg slow stat IV, follow by (0.6-0.9 mg/kg/hr. drip) half the stat dose if patient on Aminophylline. (try not to use)
- ABG, Pulse oximeter.
- Severe, refer to MROD, E.T.T + muscle relaxant and ventilate.

CONVULSIVE SEIZURES:
- Epilepsy, trauma, toxins, withdrawal, hypoxia, hypoglycemia, electrolyte disturbance, fever, space occupying lesions, vascular, CNS infection, hysterical.
- Treatment of Status Epilepticus:
  * A.B.C Res., Intubate and IVL.
  - Diazepam 10 mg IV over 2 minutes.
  - Phenytoin 1GM (15-20mg/kg) IV slowly over 30 min.
  - If continue, repeat Diazepam 10 mg I.V slowly.
  - Phenobarbital 300 mg IV over 30 min. and repeat in need two or three times, caring to respiratory and cardiac function.
  - Look for other causes.
  - Referral to MROD for admission.
**COMA:**

- Common causes:
  a. C.N.S Trauma contusion and bleeding, space occupying Lesion (blood, tumor, pus, infarction) and infection.
  
  b. Metabolic and diffuse cerebral disorders, hypoxia (cardiac, pulmonary, vascular), hypoglycemia and hyperglycemia eg. DKA, poisoning, shock, postictal, electrolyte disorders, organ failure.
  
  c. Psychiatric disorders.

- Resuscitation A.B.C role in CPR area.
- Dextrose 50 % IV 50 ml (+ 100 mg Thiamine in ? Alcoholic) after intubate and establishing I.V.L.
- Naloxone (?Narcotic)
- History if possible,
- Detailed head to toe examination.
- CBC, chemistry, ABG. Toxicology sample.
- Continuous/close monitoring of ECG, pulse, BP, (pulse oximeter) oxygen saturation. Consciousness level, input and output.
- NGT, foley’s catheter.
- Refer to MROD for admission, CT scan Brain and later lumbar puncture in need.

**DIABETIC KETOACIDOSIS.**

- RBS, ABG, Electrolyte + ABC resuscitation
- Refer to MROD.
- IVF 1-2 L (N.S, R.L) stat. When plasma glucose falls to 300 mg/dl IVF (D5% W).
- Regular insulin 15 U IV STAT bolus (0.15u/kg), Continue IV (R.I) 0.1u/kg/hr.
- HCO₃ therapy 80-100 Meq NaHCO₃ in 1L (0.45)
  - Indication:
    - DKA with shock or coma
    - PH < 7.1
    - Severe hyperkalemia
CARDIAC ARREST:
• Causes: MI, profound shock, Asystole, V.F.

MYOCARDIAL INFARCTION:
• Common causes of chest pain:
  - Cardiac: angina, infarction. Pericarditis, neurosis.
  - Aorta: dissecting aneurysm
  - Pulmonary: infarction, pneumothorax, pleuritis.
  - Mediastinum: inflammation and tumors.
  - GIT: aesophagitis, reflex and diaphragmatic hernia, spasm, tumors, peptic ulcer, biliary colic and cholecystitis, pancreatitis, splenic infarction, A. hepatitis and liver tumor, colitis.
  - Chest wall: Trauma, ribs fracture, castochondritis, herpes Z., muscles, (rheumatic), spinal pathology, breast pathology, chest wall infection.

Management:
• History & Examination
• E.C.G. + Cardiac Enzymes, Full chemistry
• Chest X-ray sitting portable.
• Give Morphine 2 - 4mg I.V. after starting I.V.L. (Q 5 – 10min.)
• Nitroglycerin 0.3 – 0.4 mg sublingual (BP >100 mmHg)
• Oxygen 4 L/min nasal cannula (keep PO₂ >70 mmHg)
• ASA 160 – 325 mg P.O. preferable chewed
• Shift patient to C.P.R. area (If still not there) for continuous E.C.G. monitoring & oxygen saturation, B.P.
• Refer case to M.R.O.D for admission to C.C.U & further management of I.V. Nitroglycerin (10 μgm/min), Streptokinase (1.5 million units) or tissue plasminogen activator (100 mg). Arrhythmias care, pulmonary edema, cardiopulmonary support.
CARDIAC ARREST: (A.B.C) role

- Cardiac Massage (CPR)
- Defibrillation 200 W
- If pulse recurred with V.F.
  - Defibrillation 360 Jouls
  - I.V, ET adrenalin 1:10,000 1 mg Q5min.
  - I.V. Lignocaine 100 mg.
  - Bretylium 5 – 10 mg.kg
  - NaHCO3  1 mEq/kg I.V
  - I.V. Pracorinamide 250 mg,
  - Repeat cardiac massage, defibrillation in between if checked No pulse.

- If Asystole
  - Cardiac massage (CPR)
  - 1 ml adrenaline 1:10000 dil IV, IC, E.T Q 5 min.
  - Atropin 1 mg IV, Q 5 min
  - Sodium Bicarbonate 1 meq./kg. IV
  - 0.01mg. Isoprenaline

* Repeated Defibrillation should be with maximum energy.*
**ASYSTOLE/ PULSELESS BRADYCHARDIA**

(Confirm asystole in 2 leads)

Trauma ? Transport

- Start CPR
- Establish IV access, intubate
- Epinephrine 1:10,000, 0.5 – 1 mg IV push (or 1-2mg ET) q 5 min.
- Atropine 1 mg iv push (repeated once in 5 minutes)
- Consider Sodium Bicarbonate 1 mEq/Kg IV (may repeat 0.5 mEq/kg every 10 minutes)
- Consider pacing

(If the rhythm is unclear and possibly ventricular fibrillation, defibrillate as for VF - see VF algorithm).

---

**ELECTROMECHANICAL DISSOCIATION**

(Normal rate & rhythm, no pulse)

Trauma ? Transport

- Start CPR
- Establish IV access, intubate
- Epinephrine 1:10,000, 0.5 – 1 mg Iv push, (or 1mg ET) q5 minutes
- Consider sodium Bicarbonate 1 mEq/kg. IV (may repeat 0.5 mEq/kg every 10 minutes)
- Consider correctable causes:
  - Hypovolemia: Fluid challenge /PASG
  - Cardiac Tamponade: Pericardiocentesis
  - Tension pneumothorax: Needle thoracentesis
  - Hypoxemia: Improve oxygenation
  - Acidosis: Ventilation/ Bicarbonate
  - Pulmonary embolism: Hospital therapies
  - Distributive shock: Fluid challenge, vasopressors
VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA

Witnessed Arrest
Precordial thumb
Check pulse, if none:

Un-witnessed arrest

Begin CPR
↓
Defibrillate with 200 joules
( check pulse and rhythm after each shock)
↓
Defibrillate with 200-300 joules
↓
Defibrillate with 360 joules
↓
Continue CPR if no pulse
↓
Establish IV access, intubate
↓
Epinephrine 1:10000, 0.5 – 1 mg IV push (or 1 mg ET) 5 minutes
↓
Defibrillate with 360 joules
↓
Lidocaine 1 mg/Kg IV, ET
↓
Defibrillate with 360 joules
↓
Bretylium 5 mg/kg IV push (or Lidocaine 0.5 mg/kg IV ET )
↓
Consider Sodium Bicarbonate 1 mEq/kg IV
(May repeat 0.5 mEq / kg every 10 minutes)
↓
Defibrillate With 360 joules
↓
Bretylium 10 mg/kg IV push (or lidocane 0.5 mg/kg IV, ET)
↓
Defibrillate With 360 joules
↓
Repeat Bretylium, or Lidocaine

Defibrillate with 360 joules.

Note: if rythym converts after lidocaine or bretylium, start an infusion of the appropriate agent (lidocaine 2 - 4 mg/min; bretylium 2 mg/min).
PREDICTING DIFFICULT INTUBATION

Classification and Grading systems to Predict Difficult Intubation

Difficult direct laryngoscopy is associated with certain anatomical finding which may be discovered form:

♦ mandible & c/spine x-rays (Whit and Kander 1975)
♦ the thyromental distance (Patil et al 1983)
♦ the Mallampati test (Mallampati et al 1985)
♦ the Wilson scoring system (Wilson et al 1988)
♦ Mallampati + thyromental data (Frerk 1991)

AIRWAY-RELATED CLASSIFICATION YOU SHOULD KNOW:

♦ Mallampatie and Modified Mallampati Classification
♦ Cormack and Lahane Grading System
♦ Measurement of thyromental Distance and its Importance
♦ Wilsom Score
♦ Bellhouse-Dore’Socre for Atlanto-Occipital Extension
♦ Concept of “Mandibular Space”

RELATIVE TONGUE/PHARYNGEAL SIZE

♦ How much of the pharynx is obscured by the tongue?
♦ Basis for Mallampati test

MODIFIED MALLAMPATI TEST (FRERK 1991)

♦ Seated patient opens mouth as wide as possible and sticks out tongue as much as possible
♦ Observer looks from patient eye-level to inspect pharyngeal structures (with light)
♦ Patient may not phonate
♦ Classification depends on the structures seen

MALLAMPATI

Classification : Visible Structures

I- Soft palate, uvula, pillars
II- Posterior pharyngeal wall visible below soft palate but pillars obscured by base of tongue
III- Only soft palate visible
IV- Soft palate not visible.
PROBLEMS WITH THE MALLAMPATI TEST
♦ Doesn’t consider neck mobility
♦ Doesn’t consider size of the mandibular space
♦ Interobserver variability

MEASUREMENT OF THYROMENTAL DISTANCE (PATIL 1983)
♦ Head fully extended on the neck
♦ Measure distance between the prominence of the thyroid cartilage and the bony points of the chin
♦ Possible intubation trouble if under 6 cm.

ATLANTO-OCcipital joint extension
RAPID SEQUENCE INTUBATION
FLOW SHEET – THE FIVE P’S

1. PREPARATION
   (Personnel, Drugs & Equipment)

2. PREOXYGENATION
   (100% Oxygen for 5 min. or
    3 conscious deep breaths)

3. PREMEDICATION
   Depolarizing Route
   Atropine 0.01-0.02 mg/kg
   Lidocaine 1.5 mg/kg
   Fentanyl 3 Ugm/Kg
   Nondepolarizing Route
   Vecuronium 0.01 mg/Kg
   Pavulon 0.01 mg/kg

4. Paralytic dose
   Defasiculting dose
   Vecuronium 0.01 mg/Kg
   Pavulon 0.01 mg/kg
   Nondepolarizing agent
   Vecuronium 0.15 mg/Kg
   Pavulon 0.1 mg/kg

5. PASS THE TUBE (intubation)

CONFIRMATION
   (Auscultation /CXR
   MAINTENANCE
   Sedation/ Paralysis (Refer to attached table)

Defasiculting dose: One tenth the paralytic dose
Nondepolarizing agent: a priming dose may be given after premeds & 2 minutes before ETT
RAPID SEQUENCE INTUBATION: The Five P’s

1. Perform adequate history and physical
   Use the AMPLE mnemonic
   Considering indications & contraindications
   Consider alternatives (no intubation, awake intubation, surgical airway…)

2. Prepare personnel, drugs and equipment
   Equipment: stylet, laryngoscope & blades, Magill forceps, oxygen, patent large bore IV, suction (Tonsillar & ET suction) ECG monitor, pulse oximeter, BVM
   Drugs: sedatives, paralytic agents, reversal agents (see tables “sedative” & “NMB”)

3. Monitor: continuous ECG and pulse oximetry

4. Preoxygenate
   Allow the patient to spontaneously breathe 100% for 5 minute. If the clinical scenario demands urgency: 3 conscious deep breaths Do not BVM assist, as this may inflate the stomach

5. Premedicate with adjunctive agents
   consider Atropine/ lidocaine
   Atropine: always with patients < 1 yr./ usually with patient 1-5 yr.
   Receiving succinylcholine
   Occasionally with patients > 5 yr./ usually with bradycardia
   Dose – 0.01 – 0.02 mg/kg (initial minimum dose 0.1 mg) to max. 1mg 1-2 min, before ETT
   Lidocaine: may blunt rise in ICP, reduce sympathomimetic pain response, reduce cough stimulus
   Dose: 1.5 – 3.0 mg/kg 1-2 minutes before ETT

   Opiod blockade of sympathoadrenal response
   Fentanyl: 2-3 ugm/kg child or 3-5 ugm/kg adult
   Defasiculation, if using succinylcholine
   1/10th paralytic dose
   Pavulon: 0.01 mg/kg or Vecuronium 0.01 mg/kg

   Priming if using nondepolarizing NMB agent
   1/10th the same NMB paralytic dose, 2 minutes before ETT
6. Assist ventilation, with concomitant use of cricoid pressure
(only if necessary to prevent hypoxemia)

7. Sedate the patient
   Refer to attached table “commonly used sedating agents” & suggested sedatives for clinical scenarios”
   Thiopental: 2-5mg/kg 0.5 – 1mg/kg if hypotensive
   Ketamine:  0. 5 – 2 mg/kg
   Midazolam: 0.1 – 0.4 mg/kg
   Fentanyl:  2-5 (up to 10) ugm/kg
   Others: nonbarbiturate sedatives eg, etomidate, propofol

8. Paralyze:
   Administer NMB agents to create muscle relaxation, check NM blockade i.e.
   apnea, jaw slackness, refer to attached Table “ NMB agents”
   Depolarizing: Succinylcholine 1.0 – 1.5 mg/kg (> 10kg) or 1-2 mg/kg (<10 kg)
   Nondepolarizing: Vecuronium : 0.15 - 0.2 mg/kg or Pancuronium 0.1 mg/kg

9. Pass the tube:
   Intubate and secure the tube
   Maintain in-line cervical spine immobilization

10. Verify endotracheal tube placement (auscultate/capnogram/ CXR)
    Assure adequate sedation for prolonged paralysis
    Arrange mechanical ventilatory support
# RSI: SUGGESTED SEDATIVES FOR CLINICAL SCENARIOS

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<td>Thiopental 0.5 –1 mg/kg IV</td>
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<td>Etomidate</td>
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<td>Midazolam</td>
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<td>Mild hypotension without HI</td>
<td>Ketamine 1-2 mg/kg IV</td>
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<tr>
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<td>Severe hypotension</td>
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<td>Status asthmaticus</td>
<td>Ketamine 1-2 mg/kg IV</td>
</tr>
<tr>
<td></td>
<td>Midazolam</td>
</tr>
<tr>
<td></td>
<td>Propofol</td>
</tr>
<tr>
<td>Status epilepticus</td>
<td>Thiopental 3-5 mg/kg IV</td>
</tr>
<tr>
<td></td>
<td>Propofol</td>
</tr>
<tr>
<td></td>
<td>Etomidate</td>
</tr>
<tr>
<td>Isolated HI</td>
<td>Thiopental 3-5 mg/kg IV</td>
</tr>
<tr>
<td></td>
<td>Propofol</td>
</tr>
<tr>
<td></td>
<td>Etomidate</td>
</tr>
<tr>
<td>Combative patient</td>
<td>Midazolam, propofol, thiopental- normal doses</td>
</tr>
</tbody>
</table>

## CONTRAINDICATIONS TO NMB AGENTS USED IN RSI

**Succinylcholine:**
- Crush injuries
- Glaucoma
- Penetrating eye injuries
- Significant neuromuscular disease
- One week or more following trauma or burns
- History or family history of malignant hyperthermia
- Pseudocholinesterase deficiency
- Myotonia
- Muscular dystrophy
- Paraplegia
- Hyperkalemia

**NONDEPOLARIZING MUSCLE RELAXANTS**
- Myasthenia gravis
# OXYGEN CYLINDER (CAPACITY & DURATION)

Never transport a patient on <500 psig.

E cylinder = 560 L of O₂ @ 2000 psi

E tank duration \( \text{(min)} \) = \( \frac{\text{PSI X 0.28}}{\text{Flow (L/min)}} \)

<table>
<thead>
<tr>
<th>FLOW</th>
<th>2000 psig</th>
<th>1250 psig</th>
<th>500 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>15L/min</td>
<td>37 Min</td>
<td>23 min</td>
<td>9 min</td>
</tr>
<tr>
<td>10 L/min</td>
<td>56 Min</td>
<td>35 min</td>
<td>14 min</td>
</tr>
<tr>
<td>5 L/min</td>
<td>&lt; 2 hrs</td>
<td>&lt; 1 hr</td>
<td>28 min</td>
</tr>
<tr>
<td>2 L/min</td>
<td>&lt; 4.5 hrs.</td>
<td>&lt; 3 hrs</td>
<td>&lt;1hr</td>
</tr>
<tr>
<td>Antidote</td>
<td>Toxin used for</td>
<td>Dose and comments</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Naloxone</td>
<td>Opiates</td>
<td>2 mg, less to avoid narcotic withdrawal, more if inadequate response; same dose in children</td>
<td></td>
</tr>
<tr>
<td>Nalmefene</td>
<td>Opiates</td>
<td>2 mg; much longer half-life than naloxone</td>
<td></td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>Tricyclics</td>
<td>44-88 mEq in adults. 1-2 mEq/kg in children; best used IV push and not by slow infusion</td>
<td></td>
</tr>
<tr>
<td>Flumazenil</td>
<td>Benzodiazepines</td>
<td>0.2 mg, then 0.3 mg then 0.5 mg, up to 5 mg; not to be used if patient has signs of TCA toxicity; not approved for use in children but probably safe</td>
<td></td>
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<tr>
<td>Calcium</td>
<td>Calcium channel blockers</td>
<td>1 gm calcium chloride IV in adults, 20-30 mg/kg/dose in children, over a few minutes with continuous monitoring</td>
<td></td>
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<tr>
<td>Glucagon</td>
<td>Beta-blockers and Calcium channel blockers</td>
<td>5-10 mg in adult, then infusion of same dose per hour</td>
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</tr>
<tr>
<td>Physostigmine</td>
<td>Anticholinergics</td>
<td>1-2 mg IV adults, 0.5 mg in children over 2 min for anticholinergic delirium, seizures or dysrhythmias</td>
<td></td>
</tr>
<tr>
<td>Ethanol</td>
<td>Methanol and ethylene glycol</td>
<td>Loading dose 10 ml/kg of 10%; maintenance dose 0.15 ml/kg/hr of 10%; double rate during dialysis</td>
<td></td>
</tr>
<tr>
<td>Atropine</td>
<td>Organophosphates &amp; carbamates</td>
<td>Test dose 1-2mg IV in adults. 0.03 mg./kg in children, titrate to drying of pulmonary secretions</td>
<td></td>
</tr>
<tr>
<td>Protopam</td>
<td>Organophosphates &amp; carbamates</td>
<td>Loading dose 1-2gm IV in adults; 25-50 mg/kg in children; adult maintenance 500 mg/hr or 1-2 gm q- 4-6hr</td>
<td></td>
</tr>
<tr>
<td>Pyridoxine</td>
<td>Isoniazid, Hydrazine, &amp; monomethylhydrazine</td>
<td>5 gm in adults, 1 gm in children, if ingested dose unknown; antidote may cause neuropathy</td>
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<td>-------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
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<tr>
<td>Pyridoxine</td>
<td>Ethylene Glycol</td>
<td>100 mg IV daily</td>
<td></td>
</tr>
<tr>
<td>Thiamine</td>
<td>Ethylene Glycol, Chronic ethanol</td>
<td>100 mg IV</td>
<td></td>
</tr>
<tr>
<td>Digoxin – specific FAB fragments</td>
<td>Digitalis glycosides</td>
<td>10-20 vials if patient in ventricular fibrillation; otherwise dose is based on serum digoxin concentration or amount ingested</td>
<td></td>
</tr>
<tr>
<td>N-acetylcysteine</td>
<td>Acetaminophen</td>
<td>140 mg/kg, then 70 mg/kg q 4 hr; IV form still investigational</td>
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<tr>
<td>Sodium Nitrite</td>
<td>Cyanide, H2S</td>
<td>10 ml of 3% (300mg; 1 ampule) in adults; 0.33 ml/kg in children, slowly IV</td>
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<tr>
<td>Sodium Thiosulfate</td>
<td>Cyanide</td>
<td>50 ml of 25% (12.5 gm; 1 ampule) in adults; 1.65 ml/kg in children, IV</td>
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<tr>
<td>Deferoxamine</td>
<td>Iron</td>
<td>15 ml/kg/hr IV; higher doses reported to be safe</td>
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<tr>
<td>EDTA</td>
<td>Lead</td>
<td>75 mg/kg/day by continuous infusion; watch for nephrotoxicity, best done in hospital</td>
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<tr>
<td>DMSA</td>
<td>Lead</td>
<td>Reported useful for arsenic &amp; lead as well; one 100 mg capsule per 10 kg body weight tid for 1 wk then bid with chelation breaks</td>
<td></td>
</tr>
<tr>
<td>BAL</td>
<td>Arsenic, Mercury and lead</td>
<td>3-5 mg/kg IM only</td>
<td></td>
</tr>
<tr>
<td>D-Penicillamine</td>
<td>Arsenic, lead and mercury</td>
<td>20 – 40 mg/kg/day; 500 mg tid in adults; may cross-react with penicillin in allergic patients</td>
<td></td>
</tr>
<tr>
<td>Methylene blue</td>
<td>Methemoglobin – forming agents</td>
<td>1-2 mg/kg IV, one 10 ml 10 % solution (100 mg) is initial adult dose</td>
<td></td>
</tr>
<tr>
<td>Folate or leucovorin</td>
<td>Methanol</td>
<td>50 mg IV q 4 hr in adults while patient has serious toxicity</td>
<td></td>
</tr>
<tr>
<td>Cyproheptadine</td>
<td>Serotonin syndrome</td>
<td>4 mg PO as needed; no parenteral form available, antidote may cause anticholinergic findings</td>
<td></td>
</tr>
<tr>
<td>Crotalidae antivenin</td>
<td>Rattlesnake bite</td>
<td>5 vials minimum dose, by infusion in normal saline at increasing rate dependent on patient tolerance; may cause anaphylaxis</td>
<td></td>
</tr>
<tr>
<td>Latrodectus antivenin</td>
<td>Black widow spider bite</td>
<td>1 vial by slow IV infusion, usually curative, may cause anaphylaxis</td>
<td></td>
</tr>
</tbody>
</table>
Nitroglycerine Drip
50 mg in 500ml. D5W

<table>
<thead>
<tr>
<th>DOSE mcg/min</th>
<th>Flow rate mg/tts/ min</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>3 ml/hr.</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>20</td>
<td>12</td>
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<tr>
<td>25</td>
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<tr>
<td>40</td>
<td>24</td>
</tr>
<tr>
<td>45</td>
<td>27</td>
</tr>
<tr>
<td>50</td>
<td>30 ml/hr</td>
</tr>
</tbody>
</table>
### NIPRIDE

**50 MG. IN 250 ML. D5W**

**BODY WEIGHT IN KILOGRAM**

<table>
<thead>
<tr>
<th></th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
<th>60</th>
<th>65</th>
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<th>75</th>
<th>80</th>
<th>85</th>
<th>90</th>
<th>95</th>
<th>100</th>
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<tbody>
<tr>
<td>0.5</td>
<td>6</td>
<td>6.7</td>
<td>7.5</td>
<td>8.2</td>
<td>9</td>
<td>9.7</td>
<td>10.5</td>
<td>11.2</td>
<td>12</td>
<td>12.7</td>
<td>13.5</td>
<td>14.2</td>
<td>15</td>
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<td>13.5</td>
<td>15</td>
<td>16.5</td>
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<td>19.5</td>
<td>21</td>
<td>22.5</td>
<td>24</td>
<td>25.5</td>
<td>27</td>
<td>28.5</td>
<td>30</td>
</tr>
<tr>
<td>1.5</td>
<td>18</td>
<td>20.2</td>
<td>22.5</td>
<td>24.7</td>
<td>27</td>
<td>29.2</td>
<td>31.5</td>
<td>33.7</td>
<td>36</td>
<td>38.8</td>
<td>40.5</td>
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<td>42</td>
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<td>48</td>
<td>51</td>
<td>54</td>
<td>57</td>
<td>60</td>
</tr>
<tr>
<td>2.5</td>
<td>30</td>
<td>30.5</td>
<td>33.7</td>
<td>41.2</td>
<td>45</td>
<td>48.7</td>
<td>52.5</td>
<td>56.5</td>
<td>60</td>
<td>63.7</td>
<td>67.5</td>
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<tr>
<td>3.0</td>
<td>36</td>
<td>40.5</td>
<td>45</td>
<td>49.5</td>
<td>54</td>
<td>58.5</td>
<td>63</td>
<td>67.5</td>
<td>72</td>
<td>76.5</td>
<td>81</td>
<td>85.5</td>
<td>90</td>
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<tr>
<td>3.5</td>
<td>42</td>
<td>47.2</td>
<td>53.5</td>
<td>57.7</td>
<td>63</td>
<td>68.2</td>
<td>73.5</td>
<td>78.7</td>
<td>84</td>
<td>89.2</td>
<td>94.5</td>
<td>99.7</td>
<td>105</td>
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<tr>
<td>4.0</td>
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<td>54</td>
<td>60</td>
<td>66</td>
<td>72</td>
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<td>84</td>
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<td>108</td>
<td>114</td>
<td>120</td>
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<td>4.5</td>
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<td>60.7</td>
<td>67.5</td>
<td>74.2</td>
<td>81</td>
<td>87.7</td>
<td>94.5</td>
<td>101.2</td>
<td>108</td>
<td>114.7</td>
<td>121.5</td>
<td>128.2</td>
<td>135</td>
</tr>
<tr>
<td>5.0</td>
<td>60</td>
<td>67.5</td>
<td>75</td>
<td>82.5</td>
<td>90</td>
<td>97.5</td>
<td>105</td>
<td>112.5</td>
<td>120</td>
<td>127.5</td>
<td>135</td>
<td>142.5</td>
<td>150</td>
</tr>
</tbody>
</table>

→ Desired dose mcg./kg/min
**Inotropes infusion using a syringe pump.**

**Dopamine**

It must be administered via a CV.

For a 65-70 kg. Patient:
- Dilute 400 mg dopamine to 48 ml D5W

For 75-85 kg patient:
- Dilute 500 mg. Dopamine to 48 ml. D5W

For a 90 – 100 kg. Patient:
- Dilute a 600 mg. Dopamine to 48 ml. D5W

<table>
<thead>
<tr>
<th>Rate of infusion:</th>
<th>mls./hr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To deliver:</td>
<td></td>
</tr>
<tr>
<td>2 micg/kg/min</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
</tr>
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<td>8</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

**DOBUTAMINE**

2 vials of 250 mg (500Mg) dilute with 48 ml of D5%W
Will give 2.5 micro gm/1ml
(dose X B. wt. X 60/2.5 =ml/hr)
INOTROPES DOSE CALCULATIONS IN I.V. DROPS

DOBUTAMINE

BASED ON 2 VIALS OF 250 MG. DOBUTAMINE IN 500 ML. IV SOLUTION

<table>
<thead>
<tr>
<th>BODY WEIGHT</th>
<th>DOSE 2.5</th>
<th>5.0</th>
<th>7.5</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>6 drops/min</td>
<td>12</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>50</td>
<td>7</td>
<td>15</td>
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<td>60</td>
<td>9</td>
<td>18</td>
<td>27</td>
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<td>42</td>
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</tr>
<tr>
<td>120</td>
<td>18</td>
<td>36</td>
<td>51</td>
<td>72</td>
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</table>

DOPAMINE

800 MG + 500 ML. IV SOLUTION

<table>
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<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
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<th>90</th>
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</tr>
</tbody>
</table>
STREPTOKINASE

CONTRA INDICATION:

- recent (<10 days) trauma or traumatic procedures, (e.g. surgery, biopsy or invasive diagnostic procedure).
- Severe uncontrolled hypertension.
- Hypertensive or diabetic retinopathy.
- Recent cerebrovascular events (e.g. stroke) within the last 2 months, or intracranial malignancy.
- Potential for internal bleeding (e.g. peptic ulcer, ulcerative colitis, diverticulitis, or visceral tumors).
- Haemorrhagic diathesis including thrombocytopenia, or pronounced hepatic or renal dysfunction.
- Patients with potential for cardiac embolism, (e.g. mitral valve disease with atrial fibrillation, bacterial endocarditis).

SPECIAL PRECAUTIONS FOR USE:

- The fall in blood pressure and bradycardia which is frequently observed in the treatment of acute myocardial infarction may be due to an excessively fast infusion rate and can be managed by decreasing the rate or temporarily discontinuing the infusion.

DOSAGE:

- acute myocardial infarction

- 1500000 1U (2 vials) of kabikinase in 100 ml of isotonic saline or dextrose 5% is administered as an intravenous infusion at a constant rate over 30-60 minutes.

- Should be administered as soon as possible after the onset of symptoms of myocardial infarction. The greatest benefit in mortality reduction is achieved when streptokinase is administered within the first 6 hours but substantial benefit has been demonstrated at up to 24 hours.
DAMMAM MEDICAL COMPLEX

EMERGENCY DEPARTMENT

POLICY AND PROCEDURE
REVISED AND COMPILED
YEAR 2005

BY:

DR. AHMED MUBARAK AL GHAMDI