Recognition and Management of the Critically ill Patient

The aim of assessment of seriously ill patient

1- Identify the physiological abnormalities.
2- Identify the most appropriate way to correct those abnormalities.
3- Diagnose the underlying problem.

The process involves taking a full history and thoroughly examining and investigating the patient occurs is different manner in the seriously ill patient. The difference is due to the urgency with which treatment needs to be started.
There is rarely time to take a full history or carry out a very detailed examination before initiating treatment.
Tasks that are typically carried out sequentially often have to be carried out in parallel with history taking, examination and initial resuscitation often occurring simultaneously.
Often it is necessary to restrict oneself to only the information required to guide the next treatment decision and to fill in missing components of history, examination and investigation after treatment has been Initiated on a "best guess" basis.
The working diagnosis needs to be repeatedly reassessed as more information becomes available and on the basis of response to treatment.

1) Initial Assessment

The first step in assessing a seriously ill patient is to estimate how ill the patient is and how much time is available for assessment and investigation before initiating treatment.

Warning signs of a severely ill patient:

Blood pressure Systolic <90 or mean<70mmHg
Heart rate >150 or <50 bpm
Respiratory rate >30 or <8 breaths/min
Conscious level GCS<12
Oliguria <0.5 ml/kg/h
Sodium <120 mmol/l or >150 mmol/l
Potassium <2.5 mmol/l or >6 mmol/l
Ph >7.2
Bicarbonate <18 mmol/l3

((Worried nurse Concerned experienced nurse))

A patient with any of these features should be assessed urgently by an experienced physician

Components of the initial assessment

Key components of the Initial assessment are assessment of airway patency, breathing and circulation.
Absence of any of these should prompt immediate resuscitation.
The severity of illness is often judged by assessing the compensatory response to the primary abnormality. In most cases This compensation involves activation of the sympathetic nervous system, and the magnitude of the sympathetic response gives an indication of the severity of illness.
It should, however, be noted that in the pre-terminal patient the compensatory response is exhausted and the patient may be bradycardic and bradypnic.
If the patient is already receiving supportive therapy, it is important to note the intensity of such therapy.

- For example, a patient with an arterial oxygen saturation of 92% on 2 L/min of oxygen through a nasal cannula is much less ill than a similar patient with a saturation of 92% on 15 L/min of oxygen.

Assess intensity of support

Inspired oxygen fraction needed to maintain saturation above 90%
Intensity of ventilatory support—positive end-expiratory pressure, minute ventilation
Dose of vasopressor & inotrope needed to maintain mean arterial pressure above 60 mmHg
Need for volume support to keep adequate urine output
Need for blood transfusion to keep hemoglobin above 8 g/dL
Need for sedation in agitated patients
Need for dialysis support or Worsening biochemistry

Seek help for specific problems

Cardiologist—complete heart block, acute coronary syndrome, cardiogenic shock, intra-aortic balloon pump insertion, pericardial tamponade, massive pulmonary embolism
Nephrologist—dialysis
Neurologist—acute stroke or undiagnosed depressed conscious level
Neurosurgeon—intracranial hemorrhage, head injury, severe cerebral edema
Trauma surgeon—polytrauma, abdominal trauma, thoracic trauma, compartment syndrome
Obstetrician—ruptured ectopic pregnancy, postpartum hemorrhage

Construct a working diagnosis and plan for further management

After initial resuscitation, assessment, investigation, and response, a differential diagnosis should be arrived at.
Reassess the patient frequently to modify initial plan if needed.

Brief relatives

After initial resuscitation, assessment, investigation, and response, the family should be briefed about the:

✓ likely diagnosis
✓ treatment plan
✓ approximate prognostication
✓ approximate duration of stay and
✓ consent should be taken for any invasive procedures.

Airway

Assessment of airway patency is vital. Look, listen and feel for evidence of airway obstruction.
Look for tachycardia, tachypnea, sweating, use of accessory muscles, drooling (epiglottitis), see-saw thoracoabdominal (paradoxical chest wall) movement and recession.
Remember that chest movement can occur even in the presence of complete airway obstruction.
Listen for gurgling or strider (note that stridor may be absent, particularly in severe cases and the presence of a normal oxygen saturation does not exclude a compromised airway).
Hypercarbia and a resulting decrease in conscious level indicate that the compensatory mechanisms are exhausted. Bradycardia indicates impending cardiorespiratory arrest.

➢ Inspiratory stridor is a rasping sound heard during inspiration and is a result of obstruction above or involving the larynx
➢ Wheeze is usually heard on expiration as a result of the lower airways collapsing
➢ Gurgling occur when secretion or liquid is present in the upper airways
➢ Snoring occurs during partial occlusion of the oropharynx due to relaxation of the oropharyngeal muscles and tongue

Breathing

✓ Effectiveness of Breathing
✓ Work of Breathing
Cyanosis, hypoxia?
Rate, depth, symmetry of chest movement? Use of accessory muscles?
Palpate chest wall for structural integrity

- Chest injury / flail / pneumothoraxes
- O2 therapy / Assisted ventilation
- Manage injury / pneumothoraxes
- Note that marked tachypnea is a useful marker of a severely ill patient, regardless of whether the patient has respiratory failure.
- Detection of cyanosis is often difficult and tachypnea is usually a more obvious, although non-specific sign of a problem.
- As with airway problems the severity of the problem is often best judged from the magnitude of the compensatory response.
- Pulse oximetry is a useful bedside test investigation, but it should be noted that significant desaturation is often a late feature of ventilatory abnormalities.
- Absence of a defect in oxygenation in a breathless patient should also prompt a search for non-respiratory causes such as metabolic acidosis and sepsis.

Selects the best single choice

1- Warning signs of a severely ill patient (all true except one)
   a. Systolic blood pressure <90 or Mean<70mmHg
   b. Heart rate >150 or <50 bpm
   c. Conscious level GCS<12
   d. Urine output 0.5 ml/kg/min
   e. Potassium >6 mmol/l
2- Airway assessment in critically ill patient
   a. Look for tachycardia
   b. Look for tachypnea
   c. Look for sweating
   d. use of accessory muscles.
   e. All the above
3- Which one is true regarding chest sounds?
   a. Inspiratory stridor is a rasping sound is a result of obstruction above or involving the larynx
   b. Wheeze is usually heard on expiration as a result of the lower airways collapsing9
   c. Gurgling occurs when secretion or liquid is present in the upper airways
   d. Snoring occurs during partial occlusion of the oropharynx.
   e. Crepitation is usually normal sound.
4- Tachypnea in critically ill patient (all true except one)
   a. marked tachypnea is a useful marker of a severely ill patient
   b. tachypnea is usually a more obvious than cyanosis.
   c. It is a sign of compensatory mechanism
   d. Could be caused by metabolic acidosis
   e. Not caused by sepsis.

End of part one…….

GOOD LUCK

Dr. Mahir Hussein Hasan
M.B.Ch.B/F.I.C.M.S/Anaesthesia