

## INTRODUCTION:

Problem-solving methodologies often involve a systematic approach that combines pattern recognition with analytical reasoning. Doctors utilize both "System 1" (fast, intuitive) and "System 2" (slow, analytical) thinking to diagnose and treat patients. This often involves identifying the problem, gathering information through history and physical exams, formulating a differential diagnosis, ordering appropriate tests, and then developing and implementing a treatment plan.

## STEPS:

### 1. Problem Identification and Definition:

- Recognize and clearly define the patient's problem, often using a problem statement that includes "what, where, when, and significance".
- Verify the problem by observing the situation first-hand and gathering information through interviews and surveys.

### 2. Information Gathering:

- Take a detailed patient history, including past medical history, medications, allergies, and social history.
- Perform a physical examination to assess the patient's condition.
- Order appropriate laboratory and imaging tests based on the initial assessment.

### 3. Formulation of Differential Diagnosis:

- Based on the gathered information, generate a list of possible diagnoses.
- Prioritize diagnoses based on likelihood and severity.

### 4. Evaluation and Testing:

- Order further tests (if needed) to differentiate between potential diagnoses.
- Continuously evaluate the patient's response to treatment and adjust the plan as necessary.

### 5. Treatment Plan Development and Implementation:

- Based on the confirmed diagnosis, develop a comprehensive treatment plan.
- Communicate the plan to the patient and address any concerns or questions.
- Implement the treatment plan, which may involve medication, lifestyle changes, or other interventions.

### 6. Monitoring and Evaluation:

- Monitor the patient's progress and response to treatment.
- Make adjustments to the treatment plan as needed based on the patient's response and new information.



## 7. Reflection and Learning:

- Reflect on the case, both during and after the treatment process.
- Identify areas for improvement and learn from the experience to enhance future problem-solving skills.

### Key Aspects of Medical Problem Solving:

- **Hypothetico-deductive reasoning:**

This involves forming a hypothesis (a possible diagnosis) and then testing it with further information and tests.

- **Pattern recognition:**

Doctors often recognize patterns in symptoms and presentations, which can lead to a quick diagnosis, especially in acute situations.

- **Clinical judgment:**

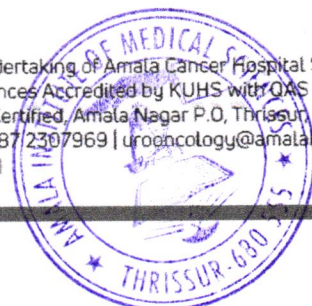
This involves integrating information from multiple sources, considering the patient's individual circumstances, and making decisions based on clinical experience and knowledge.

- **Ethical considerations:**

Medical problem solving also involves ethical considerations, such as patient autonomy, beneficence, and non-maleficence.

- **Communication and collaboration:**

Effective communication with patients, families, and other healthcare professionals is essential for successful problem-solving.



**Paediatrics AETCOM – Case Scenarios for Discussion**

**Case 1**

A 9 year old boy is scheduled for surgery to remove a cyst from his right arm. However, the surgeon mistakenly operated on the left arm. The error is discovered only after the surgery, and the correct procedure has to be performed in a second operation. Is the Doctor negligent ?? Substantiate.

**Case 2**

A 7 year old child is brought to the Emergency Department after a serious car accident, suffering from multiple fractures and internal bleeding. The child is in critical condition and requires immediate treatment, including surgical intervention. Due to the severity of the injuries and the child's unstable condition, the attending physician does not have the opportunity to discuss the risks of surgery in full with the parents. The child's mother is unable to reach immediately, and the father gives verbal consent for the procedure. The surgery is successful, but the child suffers complications post operatively, including a severe infection due to trauma. The parents file a lawsuit, alleging that the physician did not obtain proper consent for the treatment and failed to provide sufficient information about the risks involved in the surgery. Can the Doctor be sued? Explain.

**Case 3**

A 17-year-old boy, Rinto, visits the pediatric department along with his mother complaining of chronic headaches, difficulty sleeping, and lack of focus in school. During the consultation, Dr. Danny requests to speak with Rinto privately as part of routine adolescent care. In the private conversation, Rinto reveals that he has been experimenting with recreational drugs and complaints of having severe thoughts of self harm. Rinto explicitly asks Dr. Danny not to disclose his drug use or mental health struggles to his mother, fearing her reaction would worsen the situation. Should Dr. Danny reveal the condition of Rinto to his mother? Substantiate.

**Case 4**

A 11 year old boy presented to Emergency Department with complaints of fever & severe breathlessness. On Examination, respiratory rate – 32/min, SPO2 – 87%. Chest X-ray revealed severe bilateral lower lobe pneumonia. In view of Emergency condition of the child, he was shifted to PICU. Duty Paediatrician intubated the child in view of falling saturation who came out of the ICU to explain the same to the bystanders. During Conversation, parents noted the slurred speech of the Doctor & there was smell of alcohol on his breath. The condition of the child improved after the procedure & further treatment. But the parents filed a case against the Doctor in the Police Station.

Will the case stand ? Explain.

**Case 5**

A 6 year old boy presented to Emergency Department with 80% burns. Attending Doctor demanded professional fee for giving treatment but parents were poor and couldn't afford the amount the Doctor asked for. Later the boy succumbed to injuries. Can the Doctor be sued for not attending the boy? Explain.

**Topics intended to be Discussed**

1. Components of Medical Negligence
2. Privileged Communication
3. Respondeat Superior
4. Res Ipsa Loquitur
5. Professional Secrecy
6. Consent
7. Emergency Doctrine
8. Professional Misconduct



5. A 30 year old male presented with history of loss of appetite, malaise and jaundice of 2 months duration. LFT: there was icterus and hepatomegaly. Investigations revealed raised liver enzymes. He gave a history of blood transfusion in the past.

Picture of the causative agent is shown

- a. What is the probable diagnosis? 1 mark
- b. What are the modes of transmission? 2 marks
- c. What are the serological markers? 3 marks
- d. What are super carriers? 1 mark
- e. How do you prevent this disease? 2 marks
- f. Name 2 hepatitis viruses which are transmitted through faeco oral route.

1 mark

6. A 56 year old male presented to the OP with complaints of fever, running nose, dry cough and sore throat. He gives history of contact with his son who was tested positive for Covid 19 two days back

- a. Name two other viruses causing similar illness? (1 mark)
- b. Discuss the pathogenesis of this condition. (2 marks)
- c. What are the samples to be collected for diagnosis? (1 mark)
- d. What are the tests done for the diagnosis? (2 marks)
- e. Name two vaccines available in India? (2 marks)
- f. What are the infection control measures to be followed by the health care worker while giving care to this patient. (2 marks)



13. A 10 year old boy presented with abdominal cramps and passage of frequent blood tinged stools. Wet film examination showed no cyst, ova or trophozoites. The isolate obtained from the culture of stool sample is provided to you.

a. What is the clinical condition?

(1 mark)

b. Name the most probable organism

(1 mark)

c. What is the infective dose in this condition?

(1 mark)

d. Identify the medium with growth

(1 mark)

e. Name four organisms causing this condition

(2 marks)

f. Discuss the pathogenesis

(2 marks)

g. Name two enrichment media and two selective media

used for stool sample

(2 marks)



4. Which are the blood borne viruses? Discuss the steps of blood spill management (3+7 marks)

5. What are the types of transmission based precautions and site 2 examples for infections transmitted by each mode. (3+3marks)

Add a note on any one type of transmission based precautions (4marks)

6. A 28 year old medicine resident reported to HICC with complaints of needle stick injury on his left thumb 1 hr back. The source sample was tested and was found to be reactive for HIV antibody. Discuss the post exposure prophylactic measures that should be undertaken. (10 marks)

7. A health care worker reported to HICC with complaints of needle stick injury on his left thumb 1 hr back. The source sample was tested and was found to be positive for Hepatitis B surface antigen. He has not received Hepatitis B vaccination before. Discuss the post exposure prophylactic measures that should be undertaken. (10 marks)

8. An intern is posted in the Tuberculosis isolation ward. What are the transmission based precautions to be followed by him in the ward? (10 marks)



5. A 60 year old male who underwent splenectomy presented to medicine casualty with high grade fever, head ache and neck rigidity. CSF was sent for gram stain and culture. CSF gram smear is focussed

- |   |         |
|---|---------|
| a) What is the clinical diagnosis                     | 1 mark  |
| b) Interpret the smear                                | 2 marks |
| c) Name two primary pathogens causing this condition  | 2 marks |
| d) Name 2 bacteria causing this infection in neonates | 1 mark  |
| e) Name two culture media used for CSF culture        | 1 mark  |
| f) How will you treat this condition?                 | 1 mark  |
| g) What are the vaccines available?                   | 2 marks |

6. 12 year old boy presented with rice water stool and vomiting for three days. On examination the child is severely dehydrated. The isolate obtained from stool culture is provided.

- |  |         |
|--|---------|
| a) Identify the medium with growth.                          | 1 mark  |
| b) List four bacterial agents causing diarrhoea              | 2 marks |
| c) Name two transport media for this pathogen                | 2 marks |
| d) Name two selective media used for isolating this bacteria | 2 marks |
| e) What is the pathogenesis of watery diarrhoea?             | 2 marks |
| f) How will you manage this case?                            | 1 mark  |



4. Which are the blood borne viruses? Discuss the steps of blood spill management (3+7 marks)

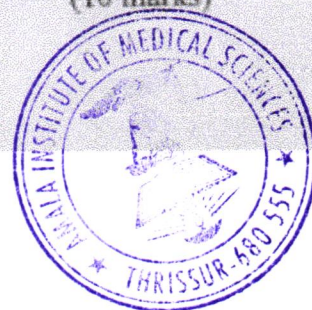
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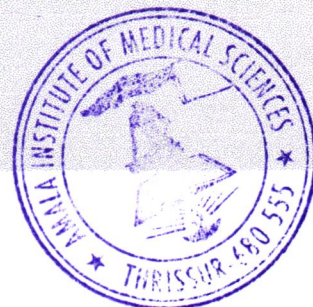
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- g) What are the vaccines available? 2 marks

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- e) What is the pathogenesis of watery diarrhoea? 2 marks
- f) How will you manage this case? 1 mark

*yellow  
slimes*



3. A 40 year old diabetic patient presented with carbuncle on right shoulder

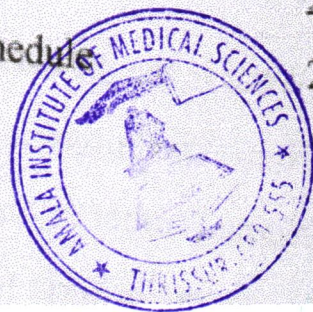
Gram stain of pus aspirate is focused.

- Put with 6/2/20
- a) Interpret the gram smear 2 marks
  - b) Name 4 systemic infections produced by this bacterium. 2marks
  - c) Name 2 toxins produced by this bacterium. 2marks
  - d) Name 2 toxin mediated diseases produced by this bacterium 2marks
  - e) What is MRSA? 1mark
  - f) How will you prevent transmission of MRSA 1mark

4. A 60 year old chronic smoker and alcoholic with complaints of fever with rigor, right sided catching type of chest pain during inspiration and breathlessness, cough with rusty sputum. O/E Conscious, Temp: 102 degree F, Pulse 120/mt regular. Resp. rate 40/mt, bronchial breathing in the right infrascapular area+

Gram stain of sputum sample is focused

- 65
- a) Interpret the smear 2mark
  - b) Name 2 important biochemical tests for identification. 1mark
  - c) Name two bacteria causing hospital acquired pneumonia. 2mark
  - d) How will you treat this patient 1mark
  - e) Name 2 bacteria causing atypical pneumonia. 2 mark
  - f) Name the vaccine for this organism and the schedule 2mark



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