

ADVANCED ASSESSMENT

Critical Thinking Skills

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Objectives

- ◆ Why is critical thinking important
- ◆ Define the components of critical thinking
- ◆ Compare pre-hospital to in-hospital
- ◆ Differentiate between:
 - ◆ **critical life-threatening**
 - ◆ **potentially life-threatening**
 - ◆ **non life-threatening**

Objectives

- ◆ Evaluate the benefits and limitations of
 - ◆ Protocols
 - ◆ Standing orders
 - ◆ Patient care algorithms

Introduction

- ◆ Paramedic profession has changed
- ◆ 21st century healthcare has changed.
 - ◆ technology of the day has changed our status.
 - ◆ we are professionals, not technicians.
 - ◆ to fulfill this role you must develop new ways of handling situations.
 - ◆ develop critical thinking skills.

Why Is Critical Thinking Important?

- ◆ every patient is unique.
- ◆ ***very few, if any, patients have read the textbook.***
- ◆ patients seldom look like the book says they are supposed to...e.g. have “pressure-like” chest discomfort when having a heart attack.
- ◆ don’t rely on so-called “classic” presentations
- ◆ employ a systematic, yet focused approach to every patient and don’t rely on “pattern” recognition

Goal For Every Paramedic



- ◆ develop **Differential Diagnosis**.
 - ◆ narrow it to a Field Diagnosis.
 - ◆ develop and Implement a treatment strategy.
 - ◆ reassess & re-evaluate
 - ◆ do it well!!!

Components of Critical Thinking

- ◆ Sound knowledge
- ◆ Formulating a differential diagnosis
 - Looking at signs & symptoms in terms of their sensitivity & specificity
- ◆ Determine a treatment plan while weighing the risk/benefit ratio for all interventions
- ◆ Re-evaluating

Sound Knowledge

- ◆ a thorough knowledge of body systems and medical conditions is essential for processing information obtained through patient assessment and history gathering
- ◆ without a sound knowledge, you would not know what information is relevant and what information is missing to help you make decisions about treatment

Scenario # 1

- ◆ Your patient is a 58 year old male. His chief complaint is shortness of breath. He tells you his chest is a little uncomfortable. The patient appears to be in moderate to severe distress with 1-2 word dyspnea. Auscultation reveals coarse crackles in both lower lobes.
- ◆ At this point, what is the differential diagnosis?

Differential Diagnosis

- ◆ AMI
- ◆ acute pulmonary edema 2° to CHF
- ◆ cardiogenic shock
- ◆ pulmonary toxin
- ◆ pneumonia
- ◆ COPD exacerbation
- ◆ anaphylaxis
- ◆ ?

The Patient Is Getting Worse!!

- ◆ as you are taking a history, the patient is becoming less responsive.
- ◆ you quickly assess the pulse and find it weak and difficult to count.
- ◆ the wife tells you he has a history of heart trouble and that he described the chest pain as “heavy” in nature.
- ◆ his medications include an ACE inhibitor, a nitrate, a diuretic and an antigout drug
- ◆ now what do you think the problem may be?

Differential Diagnosis

- ◆ AMI
- ◆ acute pulmonary edema 2° to CHF
- ◆ cardiogenic shock

Sensitivity & Specificity

“**Sensitivity** is the likelihood of a positive test result in patients with disease; it measures how well the test detects the disease. It is the complement of the false-negative rate (eg., the false-negative rate plus the sensitivity = 100%).

Specificity is the likelihood of a negative test result in patients without disease; it measures how well the test excludes disease. It is the complement of the false-positive rate.”

Merck Manual.

Sensitivity & Specificity

Remember the scenario: 58 year old male with SOB and he tells you his chest is a little uncomfortable. 1-2 word dyspnea and coarse crackles in both lower lobes.

Sensitivity: the frequency with which a sign or symptom occurs in a given illness – e.g. shortness of breath occurs frequent in the setting of AMI (high sensitivity)

Specificity: describes the uniqueness of a sign or symptom for a given medical condition – e.g. “heavy chest discomfort” occurs in few conditions other than AMI, therefore it is a symptom that has a high specificity for AMI

Why Did You Have to Take Vital Signs?

- ◆ as you prepare equipment, your partner has been taking vital signs. He reports the following:
 - ◆ BP is 60/40
 - ◆ pulse is 60
 - ◆ respirations are 32 and shallow
 - ◆ what other diagnostic tools will you use?
 - ◆ what other information do you wish to have?

What Else?

- ◆ How about allergic to morphine.
- ◆ Oh yeah, and aspirin.
- ◆ And this Paramedic with you is working his first day.
- ◆ You are 30 minutes or more from the closest hospital.
- ◆ Your radio quit working.

More of this fiasco later.

Field Diagnosis

- ◆ at this point you should be narrowing it down to a cardiac event.
- ◆ what is the management plan?

Management Plan

- ◆ Oxygen high flow
- ◆ MONA-maybe?
- ◆ Cardiac Monitor

HOUSTON WE HAVE A PROBLEM!!!!

Patient Acuity

- ◆ Critical Life Threatening
 - ◆ major Multi-system Trauma
 - ◆ devastating Single System Trauma
 - ◆ end Stage Disease
 - ◆ acute medical condition
 - ◆ acute exacerbation of chronic condition
 - ◆ compounding co-morbidities
 - ◆ no time for critical thinking
 - ◆ skills are performed by instinct
 - ◆ drawing on your training
 - ◆ patient fits standard algorithms

Risk:Benefit Ratio

Oxygen high flow	◆ Risk	◆◆◆ Benefit
Cardiac Monitor	◆ Risk	◆◆◆ Benefit
SpO ₂ Monitor	◆ Risk	◆◆◆ Benefit
ASA	◆ Risk	◆◆◆ Benefit
IV access	◆ Risk	◆◆◆ Benefit
NTG	◆◆◆ Risk	◆ Benefit
Morphine	◆◆◆ Risk	◆ Benefit
Fluid bolus	◆◆◆ Risk	◆ Benefit
Transport	◆ Risk	◆◆◆ Benefit

Patient Acuity

◆ Definition:

- ◆ Severity or acuteness of your patient's condition.
- ◆ There are 3 classes:
 - ◆ **Critical Life Threatening**
 - ◆ **Potentially Life Threatening**
 - ◆ **Non-Life-Threatening**

Patient Acuity

- ◆ Potential Life Threatening
 - ◆ Serious Multi-system Trauma
 - ◆ Multiple disease etiologies
 - ◆ Diabetic with cardiac complications
 - ◆ Cardiac history with COPD

*Can become unstable at any moment
Can be our greatest challenge!*

Patient Acuity

- ◆ Non-Life Threatening
 - ◆ Majority of EMS Calls
 - ◆ Minor illness or injury
 - ◆ Requires very little critical thinking

Protocols and Algorithms

- ◆ Protocols, standing orders and algorithms help promote a standardized approach to the “classic patient”.
- ◆ Clearly defines and outlines performance boundaries.
- ◆ However:
 - ◆ What about the patient that doesn’t fit the model?
 - ◆ The patient with multiple, serious problems?
 - ◆ Promotes “cookbook” medicine.

Critical Thinking Skills

- ◆ The ability to think under pressure and make clear, precise and accurate decisions weighing all the factors and risks & benefits of treatments.
- ◆ Your patient depends on your critical thinking ability.

These cannot be taught!
This ability is developed over time!!

SUMMARY

- ◆ For an effective critical thinking process, several elements must be present:
 - ◆ **know anatomy, physiology and pathophysiology – Review it often!!!**
 - ◆ focus on large amounts of data simultaneously
 - ◆ organize the data
 - ◆ differentiate between relevant and irrelevant data
 - ◆ analyze and compare similar situations
 - ◆ be able to defend the decision

Paramedic Practice

- ◆ 3 things to do in a short time.
 - ◆ gather information.
 - ◆ evaluate the information.
 - ◆ process the information.
- ◆ turn that information into the field diagnosis.
- ◆ develop and implement a management plan.

Narrow the Field

- ◆ first part of the history taking will give you the differential diagnosis.
- ◆ that is a broad group of problems and hard to use them to develop a plan.
- ◆ must be able to narrow the problems to a field diagnosis.
- ◆ from the field diagnosis is the plan.

Facilitating Behaviours

- ◆ stay calm
- ◆ plan for the worst
- ◆ work systematically
- ◆ remain flexible
- ◆ reassess
- ◆ re-evaluate
- ◆ don't be afraid to discuss situation with your partner and/or with medical control

Thought for the Day

- ◆ to be an excellent paramedic, you must be like a duck:
 - ◆ cool and calm on the surface
 - ◆ paddle feverishly underneath

Useful Thinking Styles

- ◆ do not allow distractions, unless situation says-”get out” for personal safety
- ◆ reflective vs. impulsive
- ◆ divergent vs. convergent
- ◆ anticipatory vs. reactive

Mental Checklist

- ◆ Scan the situation
 - ◆ Colombo (or CSI) medicine
- ◆ Stop and think
 - ◆ every action causes a reaction
- ◆ Decide and act
 - ◆ “stand back - take in the big picture
- ◆ Maintain control
 - ◆ “may I have the Zoll, LifePak 12 please”
- ◆ Reevaluate

Critical Decision Process

- ◆ Form a concept
 - ◆ Scene size up and initial assessment
 - ◆ Focused history and physical exam
- ◆ Interpret the data
 - ◆ Patient acuity
 - ◆ When you can't come up with a clear field diagnosis, treat what you find (if appropriate) & transport

Critical Decision Process

- ◆ Apply the principles
 - ◆ devise the management plan
- ◆ Evaluate
 - ◆ on-going assessment
- ◆ Reflect
 - ◆ QA with crew and ED physician
 - ◆ view chart audit it as a learning tool, not punishment

Reflective Vs. Impulsive

◆ **Reflective**

- ◆ Taking your time to figure out what is wrong
- ◆ Acting thoughtfully, deliberately, analytically
- ◆ Good in the non-life threatening situations

◆ **Impulsive**

- ◆ Acting instinctively
- ◆ No time to think
- ◆ Protocols, algorithm knowledge
- ◆ Good in the obvious or potential life threatening situations

Divergent VS. Convergent

◆ **Divergent**

- ◆ Takes into account all aspects of a complex situation
- ◆ The patient down a 30 foot embankment with multiple injuries.

◆ **Convergent**

- ◆ Focuses on the most important aspects
- ◆ The patient that is apneic, with a pulse

Experience teaches when to use which style

Anticipatory Vs. Reactive

◆ **Anticipatory**

- ◆ Anticipate and prevent
- ◆ Seen in the confident, experienced paramedics

◆ **Reactive**

- ◆ Let's see what happens first
- ◆ Seen in the less confident
- ◆ Can be costly to the patient

Thinking Under Pressure

- ◆ Develop “muscle memory”
- ◆ Inexperience causes “mental paralysis”
 - ◆ Practice, Practice, Practice
 - ◆ Take full advantage of lab time
 - ◆ Attend in-services with a new outlook

Putting It All Together

- ◆ Read the scene
 - ◆ Surroundings
- ◆ Read the patient
 - ◆ History /Physical
 - ◆ Vital Signs
- ◆ React
 - ◆ Decide what to do
 - ◆ Do it
- ◆ Reevaluate
 - ◆ Focused exam
 - ◆ Look for other problems
- ◆ Revise
 - ◆ Flexibility in the plan
- ◆ Review
 - ◆ I thought that tube *went* in there.

Summary

- ◆ maintain a working knowledge of anatomy, physiology and pathophysiology
- ◆ know the principles of emergency medicine
- ◆ gather information
- ◆ develop a working field diagnosis
- ◆ form a management plan
- ◆ evaluate the interventions
- ◆ compare your findings

What About Our Patient?

- ◆ the patient is “circling the drain”.
- ◆ now what?

What About Our Patient?

- ◆ always remember your basics.
- ◆ every advanced call has a basic component.
- ◆ don't be afraid to use them but do know why.
 - ◆ defend your plan

Question # 1

Which of the following is an advantage of protocols, standing orders and patient care protocols?

- A** they promote a standardized approach to patient care for classic presentations
- B** they promote linear thinking and cookbook medicine in all situations
- C** Allows for the paramedic to act as a physician
- D** Use when you want

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Question # 2

You have assessed a patient to be hypoglycemic. What phase of the critical thinking process have you entered when you initiate your treatment?

- A concept formation
- B data interpretation
- C application of principle
- D reflection on action

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Question # 3

A patient with a history of COPD presents with signs of CHF, but is wheezing as well. Why is it difficult to follow standard protocol / standing orders in this situation?

- A** transport is indicated as the patient meets more than on protocol
- B** because despite the presenting signs, glucagon is indicated
- C** COPD is a contraindication for NTG
- D** COPD with bronchospasm and CHF are both present requiring the Paramedic to use critical thinking to identify priority treatments.

Question # 3

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Question # 4

In which situation would a paramedic most likely utilize critical thinking?

A

diabetic patient with blood sugar less than 4 mmol/l

B

a patient with a sore neck post MVC

C

a patient with an obvious anaphylactic reaction

D

A patient with a sore neck post MVC with severe SOB when supine

Question # 4

In which situation would a paramedic most likely utilize critical thinking?

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B

a patient with a sore neck post MVC

C

a patient with an obvious anaphylactic reaction

D

A patient with a sore neck post MVC with severe SOB when supine

Well Done!

Ontario Base Hospital Group
Self-directed Education Program



MENU

QUIT

SORRY,
THAT'S NOT THE CORRECT ANSWER

