Scientific Team

الفريق العلمي

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Medical uncertainty in clinical practice

• **Uncertainty (in medical student) stems from :**

1- Personal ignorance.
2- Limitation of available medical knowledge.

• **Patient factors in causing medical uncertainty:**

1- Uncertainty in history
2- Inappropriate prioritization of history
3- Test availability
4- Variable response to treatment
5- Access to variable sources of info on the same topic
6- Influence of society

• **Physician factors:**

1- Poor communication skills
2- Inappropriate assessment of probability
3- Physician's tolerance to uncertainty
4- Test interpretation
5- Inability to apply evidence – based treatment
6- Inability to appraise best evidence
7- Influence of medical organization and local practice environment

*** every diagnostic process begins with uncertainty
*** there are many cognitive errors that lead to a wrong diagnosis
*** The major obstacle to effective decision – making : uncertainty

Conceptualization of uncertainty:

• **Proposition 1 :** (sense of doubt that blocks or delays the action)

Features :

1- Subjective

2- Inclusive

3- Its effect on action

Delayed action occurs most explicitly in drawing a contrast between 2 generic decision making models (consequential action (alternatives ,values and there consequences)+ obligating action(implement the action that is appropriate for the situation)

• **Proposition 2** : (the ability to classify uncertainty types according to their **issue** and **source**)

3 basic issues :

1- Outcomes

2- Situation
3- Alternatives

2- 3 basic sources (causes):

1- Incomplete info
2- Inadequate understanding
3- Undifferentiated alternatives

• **Kinds of uncertainty:**
1- Technical (inadequate scientific data)
2- Personal (unaware of personal wishes)
3- Conceptual (inability of applying abstract criteria to concrete situation)

** One could with experience and effort address the issue of technical and personal uncertainty, the problem of conceptual uncertainty could continue to remain

Sources of uncertainty :

1- Variation among individuals

Major source: **A- biological** differences among individuals
(**host factors** : age / genetic make-up / gender / birth order / blood group / health / weight)

But the most important contributor is : **B- environment** (biological factors interact in a complex manner)
Significant environmental factors Include :
Diet , exercise , addiction, behavior , mental attitude , stress , social support , culture , infections , hygiene , education , income , traffic , crowding , health services , pollution

C-laboratories : diagnostic tools are never perfect even in most ideal conditions and they vary with respect to equipments, appliances, reagents, and methods; and the quality and quantity of technicians

2- Incomplete knowledge :

2 types of deficiencies are common

1- - --Lack of full information because :
- the patient has forgotten,
- is not able to explain,
- the records not available,
- the investigation required such as CT scan is prohibitively expensive, or
- because of lack of time as in an emergency situation.

2-- Limitation of knowledge (medical science is incomplete in many aspects)
+ limitation of recall

3- Diagnostic therapeutic and prognosis (diagnostic ,treatment ,prognostic)

How to make cope with uncertainity ?

1- Reduce ignorance by gaining full information and understanding
2- Attain as much control and predictability as possible (by learning and responding to the environment)
3- Wherever ignorance is irreducible , treat uncertainty statistically

• **Basic strategies of coping with uncertainty :**

1- Reducing uncertainty

a- Collect additional info
b- Deferring decisions until additional info become available
c- If there is no additional info available , extrapolating from available info
^ use statistical methods to predict future events
^ assumption – based reasoning
^ filling gap un firm of knowledge by making assumption
d- Control the sources of variability which reduce predictability.

2- Acknowledge uncertainty

This strategy is either unfeasible or too costly
**decision maker can acknowledge uncertainty in 2 ways :
a- Taking it into account in selecting course of action
b- Preparing to avoid or confront potential risks
***Organization cope with uncertainty this way by : structural response

3- Suppressing uncertainty

Include :
a- Tactics of denial (ignoring undesirable strategy)
b- tactics of rationalization

The evidence of evidence – based practice implementation EBP :

This practice available for a number of conditions such as asthma , heart failure , diabetes

EBP : reliable + sensible

Best evidence include observed evidence from :
1- Randomized controlled trails
2- Evidence from other scientific methods such as: descriptive and qualitative research
3- Use info from case reports
4- Scientific principles + expert opinion
Common elements of EBP models are :
1- Selecting a practice topic
2- Critique and synthesis of evidence
3- implementation
4- Evaluation of the impact on the patient care + providers performance
5- Consideration of the context / setting in which the practice is implemented
Steps of EBP :
1- Knowledge creating

Conducting research and packaging relevant research findings

2- Diffusion and dissemination

Involve partnering with professional opinion leaders and health care organizations

3- Organizational adoption and implementation (final stage)