

# Medical Decision Making

## Lecture 2



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**A decision** is the process of choosing a course of action in a given situation, **to achieve some goals**.

Every moment of every day, we're faced with judgments and decisions. Some are relatively:

❑ **inconsequential**: such as which way to walk to work.

❑ **easy or habitual**, such as what time to wake up in the morning.

❑ But many are both **consequential**, as in medical decisions.



# Components of medical decision:

● **Alternatives:** actions that can be taken. **Not acting** is usually also an alternative. Example: treat a man with **localized prostate cancer**

- with surgery,
- treat with radiation therapy,
- or leave untreated.

● **States of the world:** conditions that **may or may not be present**, that are **relevant to the results of the decision**, and that are **not under the control of the decision maker**. For example:

- whether the cancer **will respond to radiation therapy**,
- whether it has **metastasized**,
- whether it will **recur**,
- how soon the man would die of natural causes.



● **Outcomes**: Each pairing of a chosen alternative with a state of the world results in outcomes.

For example, if radiation therapy is chosen, and the cancer responds to radiation therapy, the outcomes might include:

1. increased life expectancy for the patient,
2. side effects of the therapy, etc.

Outcomes can be immediate or delayed.

● **Utilities (efficacies or Value)**: A utility is the psychological or subjective value of an outcome.

• For example, if one outcome of the radiation therapy is nausea, some people will find that outcome worse than other people.

• An outcome's utility (or disutility) is a measure of how good (or bad) the outcome is to decision maker.



● **Objectives**: Finally, the decision maker has objectives, values, or goals, that they would like to achieve when making the decision.

Sometimes these goals are explicitly stated:

- "I want to live as long as I can.
  - I want to be able to function the way I function now.
- “ sometimes these objectives can conflict, and tradeoffs become necessary -- a shorter life with higher functioning vs. a longer life with less functioning, for example.



# Decision Situations

Decisions can be thought of as being made under one of four conditions

**1. Certainty:** The **states of the world are known**. The problem is:

- to **determine the outcomes that will result from each alternative** (easy),
- to decide **what the utilities of those outcomes** are (harder), and
- to decide **how to resolve tradeoffs** when one alternative better achieves objective A, and another alternative better achieves objective B.

**2. Risk:** The **states of the world are unknown**, but **their probabilities are known**. For example, **I don't know if the cancer will respond to radiation therapy**, but **I know** that in 45% of patients of this cancer, **it does**. So in addition to the problems associated with decisions under certainty, **we must also evaluate probabilities, and combine information about probabilities and outcomes**.



3. **Uncertainty**: The states of the world are unknown, and even their probabilities are unknown.

There may be no clinical trials about the effectiveness of some treatment.

Now we have all the problems of decisions under risk.

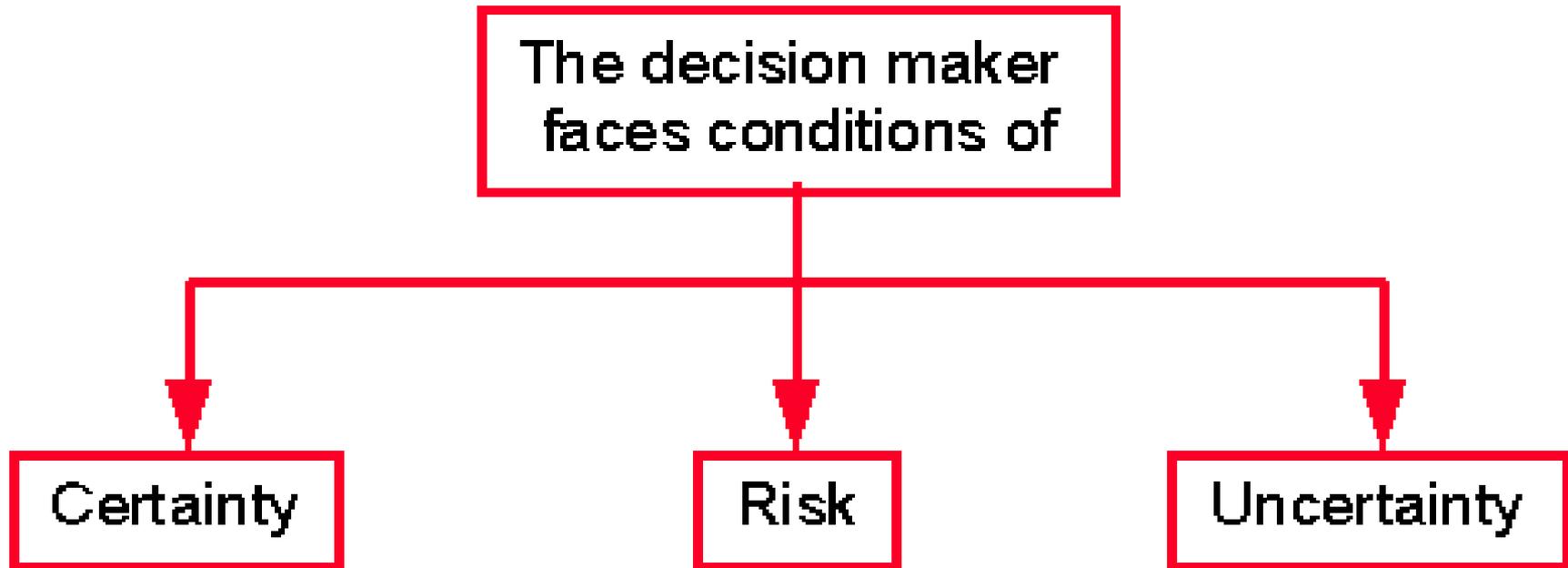
4. **Conflict**: The states of the world also include other peoples' choices.

Their choices may depend on your choices (or their beliefs about your choices).

We have all the problems of decisions under uncertainty, and we have to think about *strategy* - how to respond to or influence someone else's actions.

\* The study of decision under conflict is usually called *game theory*.





Level of ambiguity and chances of making a bad decision

*lower*

*moderate*

*higher*



The **importance** of developing and using **effective clinical decision-making skills** was reinforced to:

1. **facilitate quality-assured healthcare** , aims to improve its efficiency, quality, and cost effectiveness.
2. Health professions **continue to self-regulate standards of practice** but, as health employees, **practitioners** are also assessed through **quality audit and individual performance appraisal**.
3. **greater public accountability** of health professionals, means that clinical decisions and interventions **must be explained, justified, and defended when challenged**.
4. **to raise standards of care**, accompanied by performance-related pay to encourage health professionals to review and adapt their practice in line with organizational and managerial changes.
5. **identify targets to increase public access to high quality healthcare**.



# What is a "good" decision?

A well-made decision can have a favorable or unfavorable outcome, as can an ill-made decision.

However, a well-made ("good") decision:

- Consider both **positives and negatives** of alternatives, and allows positives to compensate for negatives (is "**compensatory**")
- Considers present and **future outcomes** .
- Considers the **objective/values** of decision makers.
- Makes appropriate **use of all available relevant information**
- **Good decisions = safe care.**



# The Core Skills of Clinical Decision Making

Good, effective clinical decision making requires a combination of experience and skills.

These skills include:

1. **Pattern recognition**: learning from **experience**.

2. **Critical Thinking**: **removing emotion** from our reasoning, being 'sceptical' (not easily convinced; having doubts), with the **ability to**: Clarify goals, examine assumptions, be open minded, recognize personal attitude.

❑ **critical thinking** : is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action

### 3. Communication Skills: :

**Active listening** - the ability to listen to the patient, what they say - what they don't say, their story, their experiences and their wishes thus **enabling** :

- ❑ a patient- centered approach that **embraces self-management**;
- ❑ **information provision** - the ability to provide information in a comprehensible way to allow patients/clients, their care givers and family **to be involved in the decision making process**.

**4. Evidence-based approaches**: using **available evidence and best practice guidelines** as part of the decision making process.

5. **Team work:** using the gathered evidence to join up help, support and advice from colleagues and the wider multi-disciplinary team.

It's important to **communicate with colleagues**, listen and be respectful, whilst also being persistent when you need support so that you can **plan as a team** when necessary.

6. **Sharing:** getting feedback from colleagues on your decision making.

7. **Reflection:** using **feedback from others**, and the outcomes of the decisions to reflect on the decisions that were taken in order to **enhance practice delivery in the future**.

It's also important to reflect on your whole decision making strategies to ensure that **you hone (improve) your decision making skills and learn from experience**.

# Programmed And Non-programmed Decisions.

The degree to which decisions are programmed depends upon the number of times similar decisions have been made in the past.

- **Programmed decisions** are decisions that occur often enough when standardized rules are used to make them.

These standardized rules can take the form of decision guidelines, standard operating procedures, or check-lists.

Programmed decisions help ensure that tasks are performed smoothly and consistently.

- **Non-programmed decisions** are decisions that occur infrequently enough when standardized rules cannot be used to make them.

When making non-programmed decisions, doctors must rely on their experience and intuition.



# The Rational Decision-Making Model.

Rational (balance, normal, based on reasons, coherent (عقلاني ومنطقي) ) decision making keeps the decision maker focused on facts and logic and helps guard against inappropriate assumptions (expectations) and pitfalls (drawbacks or consequences ).

The approach is aimed at;

- Obtain complete and perfect information,
- Eliminate uncertainty
- Evaluate all information rationally and logically.

The output from this process is to produce a decision that best serves the interests (welfare) of the patient.



# The six steps in the classical decision making model are;

1. Recognizing the need for a decision: Decision making is necessary when there is a gap between the actual state and the desired state.

2. Diagnosing the problem: Diagnosis allows to understand why a gap between actual and desired states exists.

In diagnosing the problem, doctors collect data and information ( history) about each plausible explanation for the gap.

3. Developing alternatives: Only after identifying the cause of a problem ,doctors begin to develop alternative solutions.

According to classical decision-making theory, all possible alternative solutions should be explored.



4. Selecting alternatives: Doctors must decide **which alternatives to implement**.

Optimal solutions are alternatives that address a particular problem in the most complete way possible but at lowest cost.

5. Implementing alternatives: Implementation occurs when the ideas and principles represented in a decision are actually put into operation by doctors.

6. Exercising control and follow-up: Classical decision making is completed only when doctors exercise control and follow-up.

There were **three main areas** where professionals made the majority of their decisions:

1. **Intervention decisions** – where the decision made had **the aim of modifying the patient situation**.
2. **Communication decisions** – where the **aim of the decision was to give or receive information**.
3. **Evaluation decisions** – where the **aim of the decision was to review or evaluate patient data** so that the current health status of the patient could be determined.



# The decision-making approaches we use:

## ❖ Patterns.

Most of us were trained in medical school to recognize patterns.

■ **Examples:** If we see a 28-year-old woman with new onset chest pain, we're probably thinking about anxiety or musculoskeletal issues.

■ Some additional history tells us that she has a 6-week-old infant, her first child.

■ She's otherwise healthy and has no chronic medical conditions.

■ She tends to notice this chest pain most often when she's going to the park carrying her new infant. We're still thinking about anxiety or musculoskeletal problems, or may be gastroesophageal reflux disease (GERD).

■ However, if we see a 65-year-old man with new onset chest pain, we're probably thinking about **cardiac issues**.

■ Like the female patient, he also has some changes in his life. He recently became a grandfather. His past medical history is notable for **hypertension and hyperlipidemia**. He notices the chest pain most when he's going to the park with his new grandchild.

■ Now we're almost certainly considering a **cardiac** problem.

■ Clearly we **need some other strategies** to help keep us alert and prevent us from getting caught up in patterns, because the female patient that we ended up treating for anxiety may have a myocardial infarction (MI), and the male patient who endured a series of cardiac tests may have debilitating anxiety.

## ❖ Scientific method

- I like to think of each patient encounter as a small research project and apply the scientific method to it – starting with a problem, developing a hypothesis, collecting and analyzing data, and then confirming or rejecting my hypothesis.
- While most of us don't think about it in quite this way, this is more or less what we do.
- **For example**, a patient presents with **a fever, productive cough and decreased appetite**.
- **The hypothesis is pneumonia, bronchitis or an upper respiratory infection (URI)**.
- We collect some data to help us confirm or reject our hypothesis. The data tell us that our patient has **a temperature of 102 degrees** and **some crepitation** at the **right base on auscultation**. We decide that's not quite enough information on which to base a decision, so we also **order a chest X-ray**. It shows a **right lower lobe infiltrate**. We're then able to confirm our diagnosis is Pneumonia

## ❖ Probabilities

- ❑ This approach really concern about knowing your patient, gathering a little data and establishing **an opinion of the likelihood of a given outcome.**
- ❑ Consideration of probabilities is **helpful in selecting the right test and helping to interpret the utility of its results.**
- ❑ We can get caught in this trap when we **are uncertain about a diagnosis.**
- ❑ If a patient sees **a cardiologist**, testing is focused on the **heart.**

## ❖ Differential diagnoses

- ❑ In medical school, we generated many **lists of differential diagnoses**.
- ❑ We still do this, but our lists **are narrower**.
- ❑ We don't have the time or tendency to identify the breadth of differential diagnoses that we once did.
- ❑ Many of us take a **probabilistic approach** in which we begin by **analyzing the diagnoses that seem most likely**.
- ❑ The **disadvantage** of this strategy is that we may tend to work on our focus a little too soon. Some may begin by **focusing on the worst diagnoses and trying to rule those out**.
- ❑ Some take a more practical approach, **focusing on the diagnoses that we can actually do something about today**. It certainly makes us feel better to come up with a treatment plan at the time of the initial visit.

## ❖ Tests:

Of course, test results affect how we make clinical decisions.

- ❑ It's important to be aware of the limitations of the tests we choose to do.
- ❑ Because they can be influenced by other factors, index tests provide only surrogate answers – for example, an adrenocorticotrophic hormone (ACTH) stimulation test for adrenal insufficiency. The gold standard test in this case would be an adrenal gland biopsy, but that is probably unnecessarily invasive, so we use the index blood work instead.
- ❑ We also have to remember that the “normal” range for a laboratory test is two standard deviations from the mean, which means that roughly 5 percent of abnormal results are truly normal.
- ❑ Finally, we may need to question a test result when things just don't add up and either repeat the test or consider taking a different approaches to get the answer need



## ❖ Treatment thresholds

**threshold** : The point that must be exceeded to begin producing a given effect or result or to elicit a response

- ❑ Once we've arrived at a diagnosis, we often have to make complicated **decisions about treatment**.
- ❑ One way to do this is by **establishing thresholds** that must be crossed before initiating a particular treatment.
- ❑ When the **treatment has marked benefit for the diseased person and low risk for the non-diseased person**, the **threshold is low**.
- ❑ When the treatment has only **limited benefit for those with the disease and a moderate risk for those without the disease**, the **threshold is higher**.
- ❑ For example, **decongestants or expectorants for URI** are low threshold treatments. Most people are not going to be harmed by them, even those who don't actually have a URI, and those who do have a URI probably will benefit from their use.
- ❑ We have a much higher threshold for the use of **oral antifungals** for **onychomycosis**, for example. Even if taken properly, these **drugs offer limited benefit, help only some patients and have the potential to cause liver damage**.
- ❑ Of course, the threshold isn't always high or low, and any **number of other influences can come into play that make it difficult to formulate treatment plans**. For example, whether to **prescribe narcotics for pain can be one of the toughest treatment decisions of all**.



## ❑ The context: your patient's and your own

By virtue of our training, physicians know how critical it is to consider the patient's context, both in the process of diagnosing the problem and in developing a treatment plan.

We must consider our patients' life circumstances, including :

- Age and sex
- their socioeconomic status,
- health insurance coverage,
- work schedule
- religious and cultural preferences,
- and ask ourselves how likely the patient is to adhere to our plan, both in terms of treatment and follow-up.

The patient is the ultimate , definitive determinant of whether the plan is successful.



# Shared decision making

❑ The best decisions are often made in partnership with our patients.

We have knowledge of diagnostic techniques, diseases, prognosis, treatment options, preventive strategies.

❑ Our patients are experts as well. They have knowledge of their prior illnesses, social circumstances, habits and behaviors, risk tolerance, values and preferences.

❑ The process of sharing these two bodies of knowledge has several names, including patient-centered care and informed decision making.

❑ It is defined as: the process of interacting with patients to arrive at an informed, values-based choice among medically reasonable alternatives.

❑ Of course, not all patients are interested in this level of involvement, and some aren't able to participate actively.



## Factors influencing clinical decision making:

1. a multi-dimensional professional knowledge base.
2. a conceptual framework for care and practice.
3. individual practice models.
4. personal frames of reference that included their values, beliefs and attitudes.



## ❖ Factors that affect decision making

**There are many factors involved in clinical decision making.**

- ❑ In an ideal world decisions would be made **objectively**, with a full set of evidence, an endless bank of resources, no time pressures, minimal interruptions, decision support tools .
- ❑ However, this is not always the reality.
  - Clinical decision making is a balance of known best practice :

- **Knowing the subject area and evidence base**

There are a wide variety of online journals, books and reference materials you can utilize to research the evidence base. The Knowledge Network is a useful starting point.

- **Knowing Yourself**

Being aware of **your behavior, competencies, attitudes, emotions and values** and not just your own but also those of your patients/clients and colleagues. It's also important to know your limitations - being aware of when to seek help, advice and support. Remember - you are part of a team .



- **Knowing the Patient and Person**

Knowing the patient's preferences, their experiences of illness and their current situation or care needs and what is normal for that patient in terms of observation, mobility and level of function. It's important to consider feedback from decision making tools that you can use to capture patient information and analyse results.

- **Knowing the Environment**

Awareness and recognition of the approach to decision making and the wider team dynamics within your organization.

# Cognitive capabilities

- ❑ Capability to identify and collect relevant information and process these data in order to make decisions in the focal areas of problems, intervention, interaction and evaluation.
- ❑ Capability to predict the consequences of decisions.
- ❑ Capability to process and interpret a multitude of decision inputs to make ethical and justified decisions.
- ❑ Capability to make pragmatic (practical) decisions in the face of uncertainty and/or under-resourcing.
- ❑ Capability to adapt practice decisions to new and changing circumstances

## Emotional capabilities

- ❑ Awareness of emotions and when they are impacting on decision making, particularly awareness of self-efficacy.
- ❑ Capability to deal with problematic emotions in order to make difficult decisions required for patient management.
- ❑ Capability to identify and deal with patients' and care-givers' emotions that are impacting on management.
- ❑ Capability to establish and maintain effective relationships in the workplace with patients ,care-givers and work colleagues by managing the emotions of others

# Social capabilities

- ❖ Capability to **interact effectively** with others in the decision-making context.
- ❖ Capability to critically **learn from others**.
- ❖ Capability to **manage relationships** where differentials in power exist and to achieve effective decision making autonomy.
- ❖ Capability to **involve others** meaningfully and appropriately in collaborative decision making (including team members and at times patients and carers)

## GROUP DECISION MAKING ( GDM).

**Any decision-making process that is performed by several individuals is group decision making.**

### **Advantages Of Group Decision Making.**

- The amount of information and experience increased by including more individuals in the decision-making process.
- **GDM** tends to generate more alternatives.
- Communication and understanding are also increased when **GDM** is used. This, in turn, increases the likelihood of the decision's being accepted and supported.

### **Disadvantages Of Group Decision Making.**

- ❑ The amount of time needed for **GDM** is a big drawback.
- ❑ **GDM** can also force compromises when strong, decisive actions might be needed.
- ❑ **GDM** can encourage groupthink, which is a phenomenon that emerges in a group when the group members' desire for consensus and cohesion outweighs their desire to make the best possible decision

