Methodology in Rehabilitation

UNIT 3

Introduction

The field of rehabilitation is becoming increasingly important in Bangladesh population ages, seriously ill and injured individuals survive with impairments, and quality of life assumes greater importance in health outcomes assessment. Like other branches of health care, progress in rehabilitation depends on advances in research. However, the rehabilitation process is different from some other facets of health care in that it focuses simultaneously on health outcomes that range from cellular to social. This fundamental difference affects the research methodologies that are appropriate to the field. The strengths and limitations of existing research methods need to be taken into consideration and novel strategies developed to handle the complexity inherent in rehabilitation practice.

Time needed to finish this unit	Approximately 6 weeks

Lessons of this unit

Lesson 1: Application of Clinical /Rehabilitation Reasoning in Practice
Lesson 2: The Research Methodologies in Rehabilitation Reasoning
Lesson 3: Approaches of Clinical Reasoning
Lesson 4: Use of Evidence in Decision Making
Lesson 5: Problem Oriented Clinical Decision Making Concept

Lesson-1: Application of Clinical or Rehabilitation Reasoning in Practice

Learning Objectives

On completion of this lesson, the learners will be able to-

- understand about critical thinking.
- critical Reflection, Critical Reasoning, and Judgment in Rehabilitation Practice
- use of Critical Thinking and Improvement of Clinical Reasoning
- potential barriers to improved critical thinking

	Keywords	Critical Thinking, Critical Reflection, Critical Reasoning, Critical Judgment, Intuition, Perception

Subject-matter

There are certain terminologies used in clinical reasoning. The meanings of these terminologies seem to be interchangeable but their meanings are not interchangeable. They have distinct meaning and are applicable in particular cases. Critical thinking in clinical thinking can be improved but also have some potential barriers.

3.1.1. Basics of Critical Thinking

Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It can also be defined as the objective analysis and evaluation of an issue in order to form a judgment.
Critical thinking in rehabilitation is an essential component of professional accountability and quality nursing care. Every clinician must develop rigorous habits of critical thinking, but they cannot escape completely the situations and structures of the clinical traditions and practices in which they must make decisions and act quickly in specific clinical situations.

3.1.2. Critical Reflection, Critical Reasoning, and Judgment in Rehabilitation Practice

Critical reflection is an extension of "critical thinking". Critical reflection is a reasoning process to make meaning of an experience. Critical reflection is a crucial professional skill, but it is not the only reasoning skill or logic clinicians require. The ability to think critically uses reflection, induction, deduction, analysis, challenging assumptions, and evaluation of data and information to guide decision making.
Critical reflective skills are essential for clinicians; however, these skills are not sufficient for the clinician who must decide how to act in particular situations and avoid patient injury. For example, in everyday practice, clinicians cannot afford to critically reflect on the well-established tenets of "normal" or "typical" human circulatory systems when trying to figure out a particular patient's alterations from that typical, well-grounded understanding.
Critical reasoning is a process whereby knowledge and experience are applied in considering multiple possibilities to achieve the desired goals, while considering the patient's situation. It is a process where both inductive and deductive cognitive skills are used. Sometimes clinical reasoning is presented as a form of evaluating scientific knowledge, sometimes even as a form of scientific reasoning. Critical thinking is inherent in making sound clinical reasoning.
Clinical judgment the process by which the nurse decides on data to be collected about a client, makes an interpretation of the data, arrives at a nursing diagnosis, and identifies appropriate nursing actions; this involves problem solving, decision making, and critical thinking.

3.1.3. Intuition and Perception

Intuition is the ability to acquire knowledge without proof, evidence, or conscious reasoning, or without understanding how the knowledge was acquired. Intuition is the instant understanding of knowledge without evidence of sensible thought. According to Young, intuition in clinical practice is a process whereby the nurse recognizes something about a patient that is difficult to verbalize.

Intuition is characterized by factual knowledge, "immediate possession of knowledge, and knowledge independent of the linear reasoning process". When intuition is used, one filters information initially triggered by the imagination, leading to the integration of all knowledge and information to solve problem. Clinicians use their interactions with patients and intuition, drawing on tacit or experiential knowledge, to apply the correct knowledge to make the correct decisions to address patient needs. Yet there is a "conflated belief in the professionals' ability to know what is best for the patient" because the professionals' and patients' identification of the patients' needs can vary.

Direct perception is dependent upon being able to detect complex patterns and relationships that one has learned through experience are important. Recognizing these patterns and relationships generally occurs rapidly and is complex, making it difficult to articulate or describe. Perceptual skills, like those of the expert nurse, are essential to recognizing current and changing clinical conditions. Perception requires attentiveness and the development of a sense of what is salient. Often in nursing and medicine, means and ends are fused, as is the case for a "good enough" birth experience and a peaceful death.

3.1.4. Use of Critical Thinking and Improvement of Clinical Reasoning

Clinical reasoning and critical thinking are frequently used in nursing literature as synonyms to describe processes associated with the work of rehabilitation professionals with patients. Other terms are used–analytical thinking, clinical judgment, critical judgment, clinical decision-making, creative thinking, problem solving, reflective thinking, diagnostic reasoning–however, the way authors explain concepts related to these terms differ considerably.

It does not seem appropriate to consider clinical reasoning and critical thinking as synonymous; critical thinking involves some skills and attitudes necessary for the development of clinical reasoning, which is based on existing knowledge and context (possible goals, needs of patients, available resources).

Two studies, however, are cited in understanding critical thinking in rehabilitation. One addresses the characterization of critical thinking of rehabilitation professionals through habits of the mind and cognitive skills, and the second, presents a theoretical framework that characterizes the clinical experience as the main ally in improving critical thinking.

The enhancement of critical thinking is the key to achieving high standards of diagnostic accuracy, since the proposition of diagnoses and interventions is a complex task.

The strategies that can be employed to improve critical thinking are:

- To reflect on one's own life and personal values and the development of relationships with patients and one's profession;
- To recognize and promote a work environment that values nurses as knowledgeable workers and invites them to debate and question;
- To think about one's own thinking;
- To connect with the thinking of others;
- To identify and challenge assumptions, inferences and other interpretations;
- To consider alternative possibilities and make use of reflective scepticism;

- To balance reflective scepticism – one's own truth and those of others;
- To develop sensitivity to contextual factors;
- To assess the credibility of evidence;
- To recognize and accept intuitive knowledge;
- To tolerate the ambiguity of clinical judgments;
- To control anxiety about the possibility of being wrong.

Institutions can also promote the improvement of critical thinking through:

- The offering of educational opportunities appropriate to different learning styles;
- Teaching approaches that encourage creativity, testing, discovery and questions (e-mails, texts, poetry, debate);
- Carrying out activities in small groups;
- The use of role development techniques;
- Reading articles and writing critical essays;
- Simulations, puzzles and analysis of representations in the media (newspapers, magazines);
- Analysis of case studies and clinical scenarios;
- Development of projects proposing changes;
- Adopting the strategy of PBL (Problem Based Learning);
- Encouraging the participation of nurses in the decision-making process in clinical units;
- Encouraging dialogue among peers, which favours proactive processes;
- Supporting a formal and informal organizational culture for nursing professional development.

3.1.5. Potential barriers to improved critical thinking

- Conflicts at the work place (repetitive solutions, impaired ability to listen, troubled relationships among rehabilitation professionals and physicians),
- The stereotyped use of diagnostic categories,
- Specialization and excessive demands on professional's time.

Learner's Activity	How can improve your critical thinking?

Summary

Critical thinking is the person analysis and evaluation of an issue where critical reflection is the extension of critical thinking. In critical reasoning the knowledge and experience are combined to achieve the desired goals whereas in clinical judgement the data is collected, interpreted and made decision considering the patient's situation. Perception is an idea that is obtained through experience whereas intuition is the direct perception independent of reasoning. To improve critical thinking, one should follow the steps mentioned in the above text; institution can also help in improving one's critical thinking in several ways. Certain barriers may arise in critical which need

to overcome.

Study Skills

Multiple choice questions

Tick (√) the correct answer

1. Critical thinking in rehabilitation and clinical education is related to-
   a. self-directed
   b. patient-directed
   c. family directed
   d. community directed.

2. Where scientific and technological research based knowledge is required?
   a. Critical reflection
   b. Critical thinking
   c. Rehabilitation reasoning
   d. Clinical reasoning.

3. Intuition stands for-
   a. evidence based knowledge
   b. sensible thought
   c. instant knowledge
   d. all of the above.

Short Questions

1. What is critical thinking?
2. Describe Critical Reflection, Critical Reasoning, and Judgment in Rehabilitation Practice
3. What are the Use of Critical Thinking and Improvement of Clinical Reasoning?
4. What are the Potential barriers to improved critical thinking?

Lesson-2: Research Methodologies in Rehabilitation Reasoning

Learning Objectives

On completion of this lesson, the learners will be able to

- Understand different methodological issues in disability and Rehabilitation studies as basics.
- Acquire knowledge about steps of rehabilitation studies.

 **Keywords**	Research, Methodology, Evidence, Research Process

Subject-matter

Research is the only way to prove any phenomenon. There are many types of researches. Objectives of different types of research vary from each other. There are several steps in finishing a research on particular topic. Evidence is the key element of proving something. There are many sources of evidence. We can give priority on evidence to prove something depending on its level of origin.

3.2.1. Definition of Research

The Advanced Learner's Dictionary of Current English lays down the meaning of research as "a careful investigation or inquiry especially through search for new facts in any branch of knowledge." The term 'research' refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analysing the facts and reaching certain conclusions either in the form of solutions(s) towards the concerned problem or in certain generalisations for some theoretical formulation.

It is used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories.

Research Methods versus Methodology

Research methods refer to the methods the researchers use in performing research operations. In other words, all those methods which are used by the researcher during the course of studying his research problem are termed as research methods.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically.

3.2.2. Types of Research

Basic Research: Fundamental research is mainly concerned with generalisations and with the formulation of a theory. "Gathering knowledge for knowledge's sake is termed 'pure' or 'basic' research." Research concerning some natural phenomenon is an example of fundamental research.

The main motivation here is to expand knowledge, not to create or invent something. Basic research is directed towards finding information that has a broad base of applications and thus, adds to the already existing organized body of scientific knowledge.

Applied Research: Applied research aims at finding a solution for an immediate problem facing a society or an industrial/business organisation. Research to identify social, economic or political trends that may affect a particular institution is an example of applied research. The central aim of applied research is to discover a solution for some pressing practical problem.

Quantitative Research: Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Quantitative research aims to measure the quantity or amount and compares it with past records and tries to project for future period. The objective of quantitative research is to develop and employ mathematical models, theories or hypothesis pertaining to phenomena.

Qualitative Research: Qualitative Research is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research.

3.2.3 Definition of Evidence:

Evidence is something that furnishes proof. **Evidence**, broadly understood, is anything presented in support of an assertion. This support may be strong or weak. The strongest type of evidence is that which provides direct proof of the truth of an assertion. At the other extreme is evidence that is merely consistent with an assertion but does not rule out other, contradictory assertions, as in circumstantial evidence.

Scientific evidence consists of observations and experimental results that serve to support, refute, or modify a scientific hypothesis or theory, when collected and interpreted in accordance with the scientific method.

In philosophy, the study of evidence is closely tied to epistemology, which considers the nature of knowledge and how it can be acquired.

3.2.4. Types of Evidence

Digital evidence: Digital evidence or electronic evidence is any probative information stored or transmitted in digital form that a party to a court case may use at trial. Before accepting digital evidence a court will determine if the evidence is relevant, whether it is authentic, if it is hearsay and whether a copy is acceptable or the original is required

Personal experience: Personal experience of a human being is the moment-to-moment experience and sensory awareness of internal and external events or a sum of experiences forming empirical unity such as a period of life.

Scientific evidence: Scientific evidence is evidence which serves to either support or counter a scientific theory or hypothesis. Such evidence is expected to be empirical evidence and interpretation in accordance with scientific method. Standards for scientific evidence vary according

to the field of inquiry, but the strength of scientific evidence is generally based on the results of statistical analysis and the strength of scientific controls.

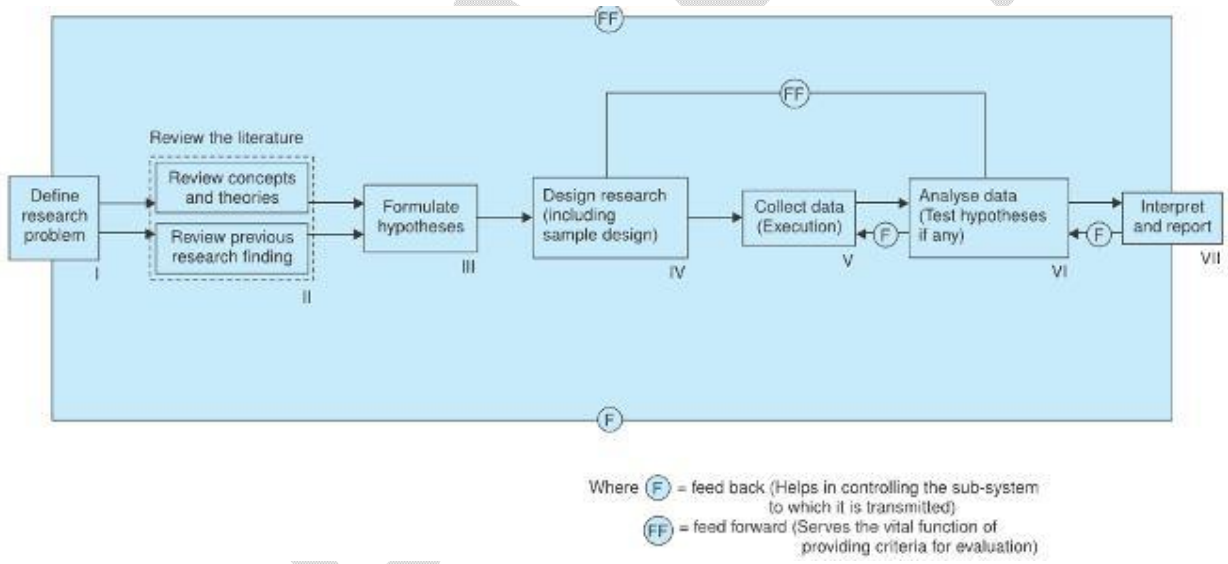
Testimonial: In law and in religion, testimony is a solemn attestation as to the truth of a matter.

Physical evidence: Physical evidence (also called real evidence or material evidence) is any material object that plays some roles in the matter that gave rise to the litigation, introduced as evidence in a judicial proceeding (such as a trial) to prove a fact in issue based on the object's physical characteristics.

Trace evidence: Trace evidence is created when objects contact. Material is often transferred by heat or induced by contact friction.

Relationship evidence: Relationship evidence describes a particular class of circumstantial evidence - evidence of events and interactions between witnesses (often the accused and the complainant) extraneous to the offences charged. The admissibility of this type of evidence derives from common law principles that stand outside the direct operation of the Uniform Evidence Acts ("UEA").

3.2.5 Systematic process of producing evidence/Research



3.2.6 Source and Hierarchy of evidence

Levels of evidence (sometimes called hierarchy of evidence) are assigned to studies based on the methodological quality of their design, validity, and applicability to patient care. These decisions gives the "grade (or strength) of recommendation."

Level of Evidence	Description
Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II	Evidence obtained from at least one well-designed RCT (e.g. large multi-

	site RCT).
Level III	Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
Level IV	Evidence from well-designed case-control or cohort studies.
Level V	Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI	Evidence from a single descriptive or qualitative study.
Level VII	Evidence from the opinion of authorities and/or reports of expert committees.

This level of effectiveness rating scheme is based on: Ackley, B. J., Swan, B. A., Ladwig, G., & Tucker, S. (2008). *Evidence-based nursing care guidelines: Medical-surgical interventions.* (p. 7). St. Louis, MO: Mosby Elsevier.

Learner's Activity	Describe in details about steps of a research process?

Summary

Research is the systematic investigation whose outcomes help to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories. Basic research helps to expand existing knowledge and invent new thing; Applied research is used to solve need problem; Quantitative research is used find quality or amount of something; Qualitative research indicates certain qualities present or absent in someone. Evidence helps to ascertain something depending on its strength and weakness. If several randomly selected data give similar result which is the strongest evidence than other ways of getting evidence.

Study Skills

Multiple choice questions

Tick (√) the correct answer

1. Research knowledge is obtained through-
   a. sporadic investigation
   b. discrete investigation
   c. systematic investigation
   d. discontinuous investigation.

2. The purpose of applied research is to-
   a. solve practical problem
   b. find new result

c. discover new thing
d. get qualitative data.

3. Which one is needed to prove something?
   a. evidence
   b. witness
   c. experimental data
   d. all of the above.

Short Questions

1. Define research.
2. what are does or research?
3. What are the steps of rehabilitation studies?
4. Define evidence and its hierarchy.

Lesson-3: Approaches of Clinical Reasoning

Learning Objectives

On completion of this lesson, the learners will be able to-

- understand different clinical reasoning approach.
- acquire knowledge about Hypothetico Deductive Reasoning (HRD).
- understand about three track reasoning
- understand about ethical reasoning
- gain knowledge about pattern recognition
- understand about knowledge, cognition and metacognition.

Keywords	Deductive reasoning approach, Pattern recognition approach, Track reasoning

Subject-matter

There are various approaches in clinical reasoning. Each approach has its own style of reasoning. Expert and novice may use each approach in different ways in clinical reasoning. Reasoning can be done through different ways. Different ethical matters should be addressed during clinical reasoning.

3.3.1 Deductive reasoning approaches

"Skilled clinicians began forming tentative hypotheses in the earliest moments of their encounter with the patient.... Multiple tentative hypotheses were typical in the early part of the interview." (Elstein 1978)

Four stage process-

- cue acquisition
- hypothesis generation
- cue interpretation
- hypothesis evaluation

Cue acquisition

- involves recognising data needed for a particular case;
- process of selection is used to focus on relevant data;
- influenced by previous experience of similar cases - *source of error*.

Hypothesis Generation

- involves creating a list of possibilities;

- Elstein (1978) found that experts collect three to five cues before generating their first hypothesis;
- Less accurate learners gathered fewer cues before hypothesising
- Involves inductive reasoning - i.e. moving from a set of specific observations to a generalisation (Dewey 1938. Ridderikhoff 1989)
- multiple hypotheses are ranked in a hierarchy of probability

Cue Interpretation

- involves appropriately evaluating which cues are relevant to specific hypotheses under consideration
- Elstein (1978) reported a three point scale for cue interpretation

+1 cue confirms hypothesis
-1 cue disconfirms hypothesis
0 cue does not contribute to hypothesis evaluation

Hypothesis Evaluation

- The practitioner chooses which hypothesis he / she believes is supported by the evidence
- However the clinician may—
  - only seek evidence for a preferred hypothesis;
  - disregard disconfirming evidence;
  - make the evidence fit a preferred hypothesis;
  - overemphasise unusual findings - *sources of error*.

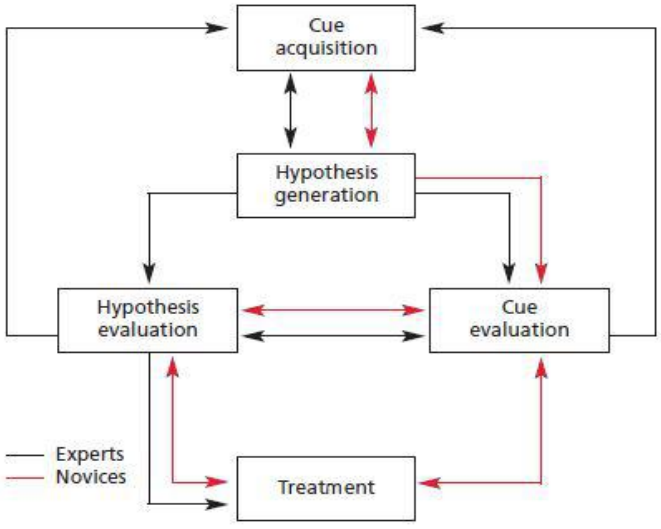


Fig. 3.1: Evaluation process of hypothesis

3.3.3. Pattern Recognition Approach

Basics of Pattern Recognition

- The pattern recognition approach to clinical reasoning involves the recognition of cues.
- Accumulation of experience and knowledge in a particular domain of physiotherapy, enables the physiotherapist to build up a repertoire of predicaments and assists the therapists in solving future problems by recognizing and comparing cues previously encountered.
- Direct automatic retrieval of information from a well-structured knowledge base.

- Enables conclusions to be reached in the face of imprecise data and limited premises.
- Based mostly on categorization (grouping) and the use of prototype model (constructing of abstract association) based on experience.
- Used in familiar case by experienced clinicians.
- Characterized by speed and efficiency.
- "Expert reasoning in non-problematic situations looks like pattern recognition or direct automatic retrieval from a well-structured network of stored knowledge"(Elstein 1990).
- Experts have the ability to retrieve the previous pattern quickly and efficiently as they are stored in their long term memory.
- Pattern recognition is an **accurate**, **rapid** and **efficient** process of a strategy in clinical reasoning.

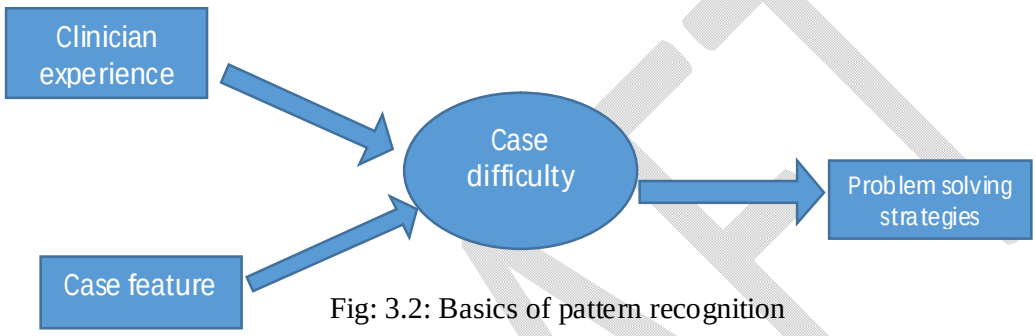


Fig: 3.2: Basics of pattern recognition

Clinician experience and case features interact to determine case. Difficult determines choice of hypothesis testing or pattern recognition strategies.

Common elements of Pattern recognition

Timing	Result	Reliance	Utilizes	Basis	Direction
Immediate/ almost instantaneous	Hypothesis formation	Organized knowledge from prior experience	Significant case features	Highly organized knowledge	Forwards reasoning strategy

Synthesis of these elements lead to an overall understanding of Pattern recognition (PR)

PR involves immediate hypothesis formation based on a pattern of highly significant features / cues recognized in a case that are matched with similar instances from prior experience. It is deemed to have occurred when a single hypothesis is formed based on a prototype from a similar case and context.

Available cues / data for developing hypotheses using PR

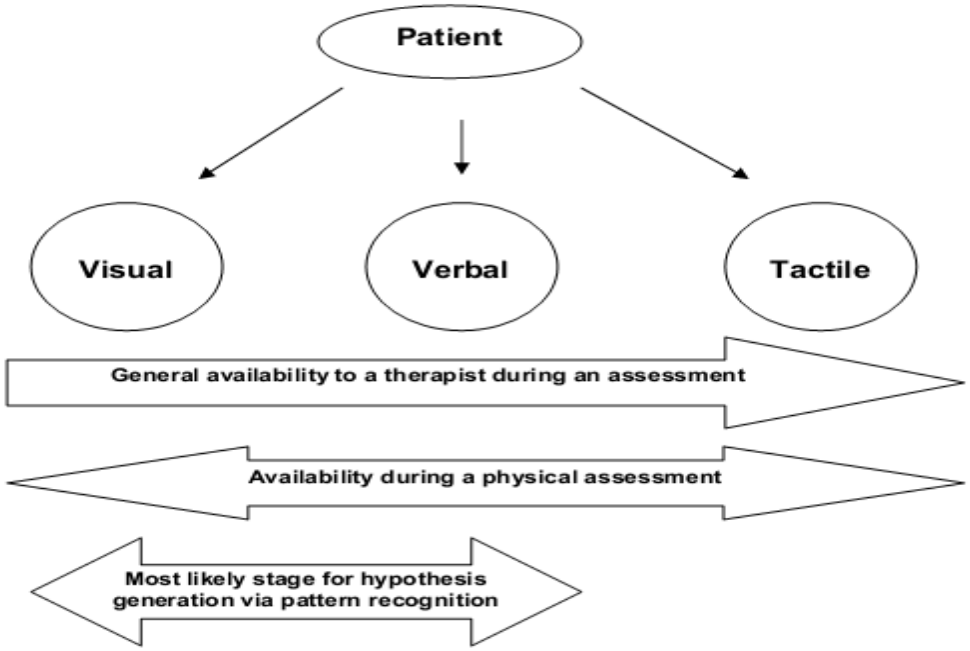


Fig. 3.2: Developing hypothesis using pattern recognition

Characteristics of pattern recognition

- Knowledge
- Categorization
- Efficiency
- Accuracy

Knowledge

- A highly organized knowledge is required for PR.
- The recognition of a unique clinical pattern is dependent upon an individual's propositional and non-propositional knowledge.
- Clinical patterns rely on an elaborate network of clinical and biomedical / biopsychosocial knowledge structures.
- PR facilitates this knowledge link between clinical patterns and their underlying (knowledge) structures.

Categorization

- Grouping of objects or events.
- Categorization specifically refers to the comparison of two or more distinguishable cases, objects or events.
- The recognition of a clinical pattern relies on finding a similarity between separate but similar

cases.

Efficiency

- The government currently demands evidence of value for money in public sector health.
- The private sector has the internal pressure of maintaining financial viability in an economic environment that is becoming more client/user funder.
- Forwards reasoning strategies such as PR are more efficient and potentially cost effective than backwards reasoning models such as HDR.

Accuracy

- The ability of an expert clinician to develop an accurate diagnostic hypothesis has been previously proposed to be influenced by the direction of reasoning.
- Forwards reasoning strategies is more accurate with experts, all notably have utilized either visual cues or low fidelity paper case methods.
- Accuracy can only be assessed by comparison of a clinician's understanding of a case with the actual case diagnosis.

3.3.4. Three Tracks Reasoning

Basics of Three Tracks Reasoning

Three Tracks Reasoning

Treating the whole person

(Fleming - M H (1991) the Therapist with the Three Track Mind, *the American Journal of Occupational Therapy*, 1007-1014)

- Concerned with the topic / concern that the therapist focuses on rather than the process of thinking.
- Therapists in a study employed different modes of thinking for different purposes or in response to particular features of the clinical problem.

Procedural Reasoning- *the physical ailment*

- Procedure is the "how to" of the therapeutic process;
- Something is wrong, so we try to fix it;
- Knowledge of diseases and conditions then fix it;

- Thinking about the person's physical ailments and what procedures were appropriate to alleviate them;
- Dual search for problem definition and treatment selection;
- Problem identification and treatment selection are seen as the central task;
- Demonstrated characteristics of hypothetico deductive reasoning;

- Interpret patterns of cues in the same manner;
- Characteristic of OTs who worked in a medical centre and those whose education involved long hours of medical lectures.

Interactive Reasoning: *The person as a person*

- Took place in face to face encounters between therapist and patient. Form of reasoning used to understand the patient as an individual;
- Used to;
- Engage the person in the treatment session;
- Know the person as a person;
- Understand disability from the patient's view point;
- Finely match goals and strategies to this patient, this disability, this experience - individualising treatment;
- Communicate acceptance, trust, hope;
- Use humour to relieve tension;
- Construct shared language of actions and meanings;
- Determine if session going well;
- Appear to function intuitively rather than analytically, empathic, necessary and legitimate form of therapy;
- To engage the client in the intervention session;
- To get to know the client as a person;
- To understand the disability from the clients point of view;
- To match the goals and interventions to the client;
- To communicate a sense of hope, trust, and acceptance to the client;
- To determine if the intervention is going well (Fleming, 1991).

Procedural reasoning guides treatment, Interactive reasoning guides therapy.

Conditional Reasoning: The person as a social being in the context of family, environment and culture.

The therapist—

- thinks about the whole condition, which involved the person, the illness, the meanings the illness has for the person, the family and the social and physical contexts in which the person lives;
- imagines how the condition could change - The imagined state is conditional - it might or might not be achieved;
- the success or failure of treatment was contingent on the patient's participation i.e. the patient must participate in the construction of the possible future image;
- the multidimensional process that involves complicated forms of thinking;
- the therapist reflects on the success/failures of the interactive and procedural reasoning;
- the therapist imagines what the future of the client would be like, and is able to constantly revise the therapy to suit this vision;

- the thinking moves beyond the present to a deeper level of interpretation of the person as a whole;
- have you ever had trouble imaging where a client will be in a few years down the road?
- have you ever struggled with what realistic long-term goals might be for your client?
- Integrates and moves beyond the other two tracks i.e. interpreting the meaning of therapy in the context of a possible future for the person;
- Imagination tempered by clinical experience and expertise.

Summary of Three Tracks Reasoning

- The therapist slips seamlessly between tracks.
- How do procedural, interactive, and conditional reasoning fit together?
- Picture these tracks (or for us stripes) running along side by side
- Therapist is thinking about a client he/she will rapidly switch from one track to another, without even thinking about it, in order to look at and solve different aspects of her clients' problems.
- Each track has a different focus.
- All the "how to" goes on the procedural track, the interaction to understand the person better goes on the interactive track, and the future vision is developed on the conditional track.
- The therapist puts all of these tracks together to form a holistic view of the person and to determine how to enable the client to reach his or her functional performance goals.
- The therapist uses multiple strategies to improve a client's level of functioning, and must have a full understanding of the client to plan effective interventions.

3.3.5. Ethical Reasoning

Ethical reasoning concerned with—

- **Values:** Personal beliefs, derived through upbringing, experience of life, culture
- **Morals:** Behaviours (which are based upon / display the value system operating)
- **Ethics:** Study of behaviour, framework for articulating morals and values
- **Law:** Used where consequences of certain behaviours are so significant that a society chooses to put limits on the behaviour of its members

Ethical Framework

- Structure for examining issues pertinent to any decision about practice - either in the future or in the past
- Enables rational rather than emotional reasoning
- Provide a common language for discussing diverse belief systems
- Provides a theoretical basis for values behind Rules / Guidelines of practice

Four principles of Ethics

- **The principle of Autonomy:** That in certain areas an individual has a right to be self-governing.
- **The Principle of Justice:** That equals ought to be considered equally
- **The Principle of Beneficence:** That benefit or wellbeing of the individual ought to be promoted

- **The Principle of Non Maleficence:** that at the very least one ought to do no harm

Two Theories of Ethics

- Deontological
- Consequentialist

Deontological

- It is important not to consider the consequences of an action, but whether the act itself is intrinsically right or wrong. Moral actions then become duties
- The best outcome will be achieved if the right action is performed.
- 'Act only on the maxim through which you can at the same time will that it should become a universal law. Kant 1948.

Consequentialist

- Decisions are made on the basis that what is important is that the best consequences are achieved
- The right action is determined by weighing up the consequences of alternative decisions

Autonomy

- That in certain areas an individual has a right to be self-governing.
- Autonomy is the 'capacity to think, decide, and act on the basis of such thought and decision freely and independently' Gillon (1990).
- That the only purpose for which power can be rightfully exercised over any member of a civilised community, against his will, is to prevent harm to others. His own well, either physical or moral, is not a sufficient warrant.....Over himself, over his own body and mind, the individual is sovereign'. (Mill cited in Gillon 1990)

Autonomy is denied to—

- children and those who cannot look after themselves
  determined by
- age in law
- match between the level of rationality and maturity required for specific decision
  - depends on the complexity of the decision

Others' who might be affected by an action include

- **Foetus:** Abortion, drug taking or smoking while pregnant
- **The public:** Smoking, noise pollution, dangerous driving.

Intervention' to limit autonomy might include

- legislation
- persuasion
- social pressure

Application in Rehabilitation Health Care

Informed Consent: 'a voluntary, uncoerced decision, made by a sufficiently competent or autonomous person, on the basis of adequate information and deliberation, to accept or reject some

proposed course of action which might affect him/her' (Biley 1990).

- **Voluntary / unforced**
    - Balance of Power:
        - undressed patients, in bed or on a couch, health professional standing in uniform
        - Patient in pain, anxious, therapist seen as having power to relieve pain.
    - Environment:
        - hospital, GP surgery, patient's home
- **Sufficiently Competent**
    - children
    - elderly
    - confusion
    - mental health
- **Adequate Information**
    - language, clarity, ambiguity
    - accessibility of concept
    - all or part of information
        - risks and benefits, alternatives available, outcomes
    - weight placed on the information by the therapist
        - ?preferred choice

Confidentiality: respect for privacy is a part of autonomy

- **Truth telling**
    - Failing to tell a patient the truth about their condition deprives them of the right to make decisions about their own life;
    - The patient is able to adopt psychological strategies to cope with hearing bad news.
- **Paternalism**
    - The therapist / practitioner acts on behalf of the patient in their best interests;
    - Denies the patient's autonomy;
    - DOH Guidelines for gaining informed consent www.doh.gov.uk/consent.

Beneficence / Non Maleficence

- Consequentialist theory argues that beneficence may be viewed as representing a continuum rather than two separate principles;
- I.e. that we benefit an individual by not harming them;
- Deontological Theory asserts that there is an important difference between them;
- Non-maleficence is a perfect duty
    - 'one which allows no exception in the interests of inclination' (Kant)
- Beneficence is an imperfect duty
    - i.e. it is up to us to a certain extent to decide whom to help.

Difficulties arise in determining

- What is to count as well being?
- What is to count as harm?
- Whose concept of benefit and harm are we to consider?
- Acts of commission
- Acts of omission

Guidelines for Letting Children Die

- the brain dead child - as determined by two doctors;
- the permanent vegetative state - no response to any stimuli;
- the 'no chance' situation - treatment merely delays death;
- the 'no purpose' situation - the child may survive but it is unreasonable to expect them to bear the physical or mental impairment;
- the 'unbearable' situation - further treatment is more than can be borne e.g. cancer.

Principle of Justice

- that equals ought to be considered equally;
- applied in two health care decisions which go beyond the particular individual;
- to decide what treatments should be made available within allocated resources;
- to decide who should receive treatments if there are not enough available for those who need them.

Allocation of Medical Resources

- **Macro allocation**
  - how revenue should be distribute between competing claims e.g. health, education, defence;
  - which forms of healthcare should be funded eg community v acute, mental health v physical health.
- **Micro allocation**
  - which individuals should receive certain treatments eg ITU beds, physiotherapy.

Consequentialist Interpretation of Justice

- "Equal amounts of happiness are equally desirable, whether felt by the same or different people (Mill)";
- If the ultimate aim is the achievement of the greatest amount of happiness and equal amounts of happiness are equally desirable, then it would appear that unequal distribution of happiness is acceptable.
- The greatest benefit would be achieved if 1% of the population were excluded from health care where this 1% comprises the "*chronically ill with incurable illness, possessing insufficient intelligence to follow a medical regimen and receivi8ng expensive medical care" (Veatch 1981*.

QALYs

- Quality Adjusted Life Years;

- The essence of a QALY is that it takes a year of healthy life expectancy to be worth 1, but regards a year of unhealthy life expectancy as less than 1. Its precise value is lower, the worse the quality of life of the unhealthy person. (Williams 1992);
- treatments are assessed according to the number of QALYs that they would yield coupled with the cost of the QALY;
- Heart transplant 4.5 QALYs @ £5000 / QALY;
- Kidney Transplant 5 QALY's @ £3000 / QALY;
- Hip replacement 4 QALYs @ £750 / QALY.

Deontological Approach

- We should determine what our principles of justice will be by imagining what we would choose form 'behind a veil of ignorance' (Rawls)
- i.e. without allowing our own natural attributes or social circumstances to affect our decisions

Learner's Activity	What are the points to be considered in ethical resoning?

Summary

In deductive reasoning, clinical reasoning is through cue collection, suitable hypothesis formulation, cue interpretation and evaluation. In pattern recognition, hypothesis is developed through assessment of cues obtained from patient using visual, verbal and tactile methods. Pattern recognition helps in formulating reasoning strategy. Four ethical points such as values, morals, ethics and laws should be considered in reasoning.

Study Skills

Multiple choice questions

Tick (√) the correct answer

1. How many points scale introduced by Elstein to interpret cue?
   a. Three points scale
   b. Four points scale
   c. Five points scale
   d. Six points scale
2. Which one is non propositional knowledge?
   a. Skills
   b. Experience
   c. Books
   d. a and b
3. Characteristics of pattern reorganization are-
   a. knowledge
   b. efficiency

c. accuracy
d. all of the above.

Short Questions

1. Describe Deductive Reasoning approach.
2. Briefly describe three tracks reasoning
3. What is the ethical reasoning?
4. What is pattern recognition?

Lesson-4: Use of Evidence in Decision Making

Learning Objectives

On completion of this lesson, learners will be able to

- understand different evidence based practice issues.
- procedures of searching evidence.

Keywords	Evidence, Practice, Clinical reasoning, Synonyms, Search

Subject-matter

Evidence based practice is a combination of existing best evidence and clinician's expertise for making decision in clinical reasoning. To get the best evidence, the clinician needs to get the best answer of a series of questions. Evidence from external sources can be got through searching data base or literature.

3.4.1 Evidence Based Practice (EBP) and clinical reasoning

- Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients;
- The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research (Sackett et al, 1996);
- Clinical reasoning needs to be seen as a pivotal point of knowledge management in practice, utilizing the principles of evidence-based practice and the findings of research, but also using professional judgement to interpret and make research relevant to the specific patient and the current clinical situation (Higgs et al, 2004);
- Clinical reasoning is a dynamic process, in which EBP plays a part, the key principle is the systematic evaluation of your knowledge and influences on practice.

3.4.2 How do you evaluate evidence?

Is one type of evidence more valid than another?

The process of using evidence to guide practice by asking the following types of question:

- What is the best way to assess this problem?
- What is the best way to treat this problem?
- What is the rational for this practice?
- Could the treatment I deliver be done better, more efficiently, or more cost-effectively?
- Can I deliver the best treatment with the resource I have?
- What evidence supports my decision?
- What are the clinical implications of delivering this treatment?

- Have I overlooked an important treatment?

Do you have the confidence and ability to ask these questions?

Stages of EBP:

- Asking a question
- Searching for evidence
- Appraising the evidence
- Integrating into practice
- Evaluating effectiveness

The question asked will determine the answer gained. An understanding of your knowledge and how it is organised is essential when asking questions (reflective practice). A question that is clearly articulated is more likely to produce a useful answer.

Types of question

From clinical experiences

Foreground

- Intervention, diagnosis, prognosis etc
  - What is the most effective treatment for X?

Background

- Biological sociological, physiological
  - About a condition or test e.g. what are the muscles that contribute to back stability?

Foreground:

- What is the best thing to? (Effect of intervention)
- How will this disorder progress? (Prognosis)
- What test should I perform? (diagnosis)
- What could be the cause (aetiology)
- How is the patient feeling? (experiences)

Breaking questions up

- **Patient or problem**
  - Patients with chronic low back pain
- **Intervention**
  - mobilisations
- **Comparative intervention**
  - Exercises education
- **Outcome**
  - Pain reduction

Procedures of searching the evidence

The process of finding evidence based information for practice……

- Asking answerable questions
- Identifying synonyms and building search strategies
- Identifying appropriate information sources
- Searching for evidence

- Appraising results

Asking answerable questions

Usually, typing the full question into the search engine or database will rarely retrieve anything, and there is a risk that you will miss out key papers by not using all the possible terms that might be relevant. So, initially, when you start the searching process, the first thing to do is to identify all the key concepts. A useful framework is **PICO** (Patient/Problem/Population, Intervention, Comparison, and Outcome). This helps you think about the key terms that you need to look for.

Identifying synonyms and building search strategies

Now you have a list of the key concepts, you need to think of all the variations for each of those terms, for example, the Problem might be deep vein thrombosis. This is also known as DVT, venous thrombosis, even economy class syndrome. If you just search for deep vein thrombosis, you might miss out on some key research papers. Once you have all the relevant columns populated with the key concepts and related terms, then it is time to combine them. Within each column, you combine all the terms using the Boolean operator OR. Then, when those have all been combined, you combine all the columns with the Boolean operator AND. For example:

Patient/Problem/Population	Intervention/Exposure	Comparison	Outcome
Deep vein thrombosis	Compression stockings	Exercises	Blood clot prevention
OR	**OR**		
Deep vein thromboses	Compression bandages		
OR	**OR**		
Venous thrombosis	Ted stockings		
OR	**OR**		
Venous thromboses			
OR			
DVT			
OR			
Economy class syndrome			

Identifying appropriate information sources

When searching for high quality health information, it is important to use the right information source, so it is necessary to know what type of question you are asking. For example, are you looking for papers on diagnosis, treatment, prognosis, or harm? Another question is what type of study are you looking for, for example, guidelines, systematic reviews, randomised controlled trials, cohort studies.

Searching for evidence

There are two ways to search for your key concepts-

Free text search

A free text search will only look for the term, exactly as it is written, with no variations in terminology or spelling, so it is important to make a comprehensive list of all the synonyms so that you do not miss out on any important research. Free text is also known as natural language.

Subject heading search

Subject headings are also known as index terms, controlled language, thesaurus, MeSH (Medical Subject Headings). Whenever an abstract of a research paper is added to a database, it is assigned a set of subject headings collected in an index, as part of the database. This index is the database thesaurus, so, when you search the database, you can tick the option to map the search term to the thesaurus or index. The benefits of using subject headings is that if you search for deep vein thrombosis, the database will map to Venous Thromboembolism and will find papers that are specifically about venous thromboembolism, deep vein thrombosis, venous thrombosis, DVT, and other related terms.

Appraising results

Once the relevant results have been retrieved, they will need to be critically appraised to make sure they are accurate and reliable. This is an important part of the production process and should be carried out by the author(s) of the information product, as they have the clinical expertise to judge what is right. Medical library staff can also help with this stage. Biomedical journals are demanding a higher standard of reporting from researchers nowadays. However, there is still a need to critically appraise content to make sure that the research is robust, has been correctly reported, and can be replicated by other researchers. Particularly with drug-related research, it is important to check that all the relevant experiment results are included in the final paper, so that the data reported can be seen to be accurate and reliable.

Learner's Activity	Find out the best evidence based information of a specific case selected by your tutor and integrate your expertise with it as a clinician in making decision about the care of specific case of a patient.

Summary

The best patient care depends on how best the clinician in finding out the best evidence from the literature or database about a specific case and integrating his/her expertise, knowledge and experience. To get the evidence based information from literature or database you have to search through a systematic way. You may search evidence from free text using terminology with all possible synonyms and subject headings. After retrieving the search results, they must be evaluated for their accuracy and reliability.

Study Skills

Multiple choice questions

Tick (√) the correct answer

1. Evidence based practice deals with-
   a. patient rehabilitation
   b. patient care
   c. good clinical practice
   d. none of the above

2. How can you search evidence?
   a. through free text
   b. subject heading
   c. key words
   d. all of the above

3. Intervention is needed to-
   a. get final result
   b. mobilize
   c. decrease medicine use
   d. increase medicine use.

Short Questions

1. Define evidence Based Practice and briefly describe it.
2. What are the process of searching evidence?

Lesson-5: Problem Oriented Clinical Decision Making Concept

Learning Objectives

On completion of this lesson, learners will be able to-

- understand clinical decision making process.
- acquire knowledge about health and rehabilitation promotion with examples.

Keywords	Patient record systems, pattern recognition, Narrative reasoning

Subject-matter

To provide efficient and high quality patient care, the practitioners need to make decision for patient care plan by combining his/her experience with information from patient record systems. There are many ways patients' treatment details can be recorded such as Problem-Oriented Patient Record, problem-oriented information model, etc. Each system records patients' information in different ways. Each type of system has some advantages and disadvantages. There are different methods of treating patients used by different levels of practitioners.

3.5.1 Basics about clinical decision making

The linking of patient-specific data with medical knowledge is crucial for efficient and high-quality patient care. However, the task of extracting patient-specific data that are both useful and necessary for medical decisions is not a trivial task. Typically, today's patient record information model is time oriented; patient data are related to a unique patient ID and date of entry. Such a rigid model prevents easy access to and overview over information in the record, for instance to view patient data in relation to a specific medical problem.

The patient record contains a considerable amount of information valuable in different circumstances, but as the situation is today, most of the recorded clinical information in patient record systems is unstructured text. Record entire are composed of descriptions of patient's symptoms, signs, complaints, reason for encounter, personal, family, and social history, examination findings, etc. In addition, patients usually present more than one problem; so individual notes may contain information on many interleaving problems.

It is time-consuming to extract information from the record relevant to decisions that must be made during patient care. Clinicians work under severe time constraints leaving little time left for them to search for information. **Although, clinicians benefit from efficiency gains of computerized patient record systems, efficiency gains are not enough**

- Clinicians lose overview over record content after a few years of a long-term patient-clinician relationship
- The patient record accumulates over time and will contain information on many medical problems that, eventually, will have some relationship to one another.

3.5.2 The Problem-Oriented Patient Record

Lawrence L. Weed introduced the Problem-Oriented Medical Record (POMR) in the late 1960s with intentions of improving the structure of medical records. Implementations of POMR such as the Problem-Oriented Medical Information System (PROMIS) have yet to find widespread acceptance. Of the most persistent complaints against PROMIS are constraints on input data - the system was designed to direct clinicians to become more complete, rigorous, and systematic in documenting clinical information. PROMIS required change in all levels of health care delivery and forced replacement of existing practices, rather than function as an alternative or supplement.

3.5.3 The Helpful Patient Record System

POMR as a concept offers an intuitive and useful way to work with the patient record by structuring information related to a patient's medical problem into a unit, providing a context for dealing with medical problems, improving efficiency, and supporting continuity of care. Despite less successful experience with computerized POMR, we believe it is possible to overcome some of the known deficiencies - such as enforcing strict and thorough data entry - with a knowledge-based approach to implementation. We suggest extending the current patient record data model with knowledge that enables the system to reuse information that is already in the record, in situations where it is useful and needed. Our framework incorporates three features:

- **Process knowledge** of clinicians' work processes empowers the record system to recognize at what stage in the process they are and to determine relevant information needed at that stage. Our objective is not to take part in diagnostics of health problems but to contribute and indicate potentially relevant information for decision-making by taking advantage of information that already exists in the patient record. Adding process knowledge enables the system to adjust to the user and not vice versa.

- **A problem-oriented information model,** which structures related information into a problem unit. In contrast to POMR, our sense of a problem-oriented patient record (POPRC) has no mandatory binding to the classic SOAP format. The model is flexible and has no absolute restriction that every entry in the record must relate to a problem; some entries have no natural relation to a medical problem, while other entries are obvious problems and will, as a consequence, relate to a problem. Flexibility of the model lies in the fact that every record entry consists of a set of information units each labelled with a clinical heading, instead of linking record units to medical problems. The model handles uncertainty in early stages of a patient's medical problem and grouping of problems as sub problems, by making it possible to link record entries at a later stage, if and when they appear as (sub) problems.

- **Relevance ranking** of a set of information sources. For each activity in the primary care process we identify a set of information sources as relevant to that activity. The ranking that is done is based on: (1) problem orientation which abstracts information relevant to a medical problem and 2) a set of clinical headings that link information from the patient record to activities in the process model. Both provide a robust tool for navigating among information in the patient record.

3.5.4 Practical Patient oriented Clinical Reasoning as applied on the practical case

The process of clinical reasoning occurs throughout the physiotherapists' interaction with the patient and significant others (carers, health team members) where treatment plans and management strategies are devised, based on clinical data, knowledge, experience, patient choice and professional judgement (Higgs & Jones, 2000). The process entails choosing a particular treatment intervention over all possible options and continues throughout ongoing patient management (Jones, Jensen & Edwards, 2000). Banning (2008) states that the process of clinical decision making becomes easier and more manageable as practitioners become further experienced.

Practitioners are required to determine the most suitable reasoning processes for individuals, taking into consideration the context of the patient's situation and environment (Edwards, Mayer & Jones, 2005). Banning (2008) states that therapists require an adequate in-depth knowledge and experience in the relevant aspects of physiotherapy in which they work, in order to make sound clinical decisions. However, practitioners' decisions may be influenced by a number of factors; the values and beliefs of the patient and physiotherapist, the knowledge, interpersonal skills and practical skills of the physiotherapist, the patient's physical, psychological, social and cultural issues, and also the environment in which treatment occurs (Jones, Jensen & Edwards, 2000).

I shall be discussing the clinical reasoning processes that I experienced whilst treating a patient in a musculoskeletal outpatients department. The discussion will focus upon critically reviewing the reasoning processes underlying my decision making by focusing on a significant event that occurred whilst treating this patient and the factors which influenced the decision making processes.

Edith* was a 69 year old female who had recently fractured her right ankle when she fell awkwardly in her garden. Her leg was in plaster for six weeks and she was advised that she could fully weight bear through her plastered right foot. At her first appointment, a week had elapsed since the removal of the plaster and Edith was experiencing great difficulty in moving her ankle joint. She had diminished range of movement (ROM) in her right ankle which resulted in an insufficient gait pattern and she was unable to achieve heel strike. Edith was mobilising with two elbow crutches and was reluctant to bear weight through her right ankle. The focus of treatment was on increasing Edith's ROM in her right ankle in order to achieve heel strike, begin to weight bear through her right foot, re-educate gait and finally mobilize without any walking aids.

The significant event that I shall focus on will be my frustration with the initial lack of progress during treatment. Prior to Edith's treatment, I had been treating patients with reduced ROM in their ankle also as a result of fracture. As treatment plans and patient progress had been successful, I continued using the same treatment plan with Edith. The possible influences on my clinical reasoning processes were: Edith's attitude to physiotherapy which resulted in an alternative approach to treatment and my level of competence within the musculoskeletal field as a learner practitioner.

At Edith's first appointment, she spontaneously expressed her perspectives (beliefs, thoughts and emotions) of physiotherapy whilst I attempted to identify her problems and functional limitations. Gaining an insight into and understanding of Edith's past experiences and her underlying beliefs, thoughts and emotions is referred to as Narrative Reasoning (Jones et al., 2006). Narrative reasoning

is one type of clinical reasoning strategy which can be applied to physiotherapy (Edwards et al., 2001). Additional clinical reasoning strategies are set out in Appendix 3.

Narrative reasoning enabled me to identify Edith's negative attitude towards physiotherapy. Barron, Moffett & Potter (2007) state that attitudes are built upon beliefs regarding an experience in an individual's life; Edith's husband had recently had an unsuccessful total hip replacement and she blamed the lack of physiotherapy input for the failure of his operation. She had very little trust and faith in the physiotherapy profession, and believed that her ankle would remain ''poorly'' forever, like her husband's hip.

Edwards et al., (2004a) and Edwards, Mayer & Jones (2005) propose that patients' narratives should be considered when planning treatment interventions, as an individual's identified experiences, beliefs, emotions and attitudes can potentially affect the progress and outcome of treatment. It is important to provide the most appropriate intervention for the patient, as this could possibly influence their beliefs, resulting in an individual's change in attitude (Barron, Moffett & Potter, 2007).

Although Edwards (2004a, 2005) and colleagues emphasized the importance of considering the context of the patient, I failed to address this in my initial treatment plan and intervention. It is feasible that this could have been a contributory cause of Edith's initial lack of rehabilitation progress. As a novice practitioner in the musculoskeletal field of physiotherapy, I applied the Hypothetico-deductive approach to reason my way through the implementation of her treatment.

The hypothetico-deductive approach to clinical decision making comprises the following stages: cue recognition, hypothesis generation, cue interpretation and hypothesis evaluation (Banning, 2008). This process enabled me, during Edith's interview, to develop a hypothesis regarding diagnosis and to plan the assessment and treatment accordingly. Information collected during the subjective and objective assessment is referred to as cue recognition. This is followed by hypothesis generation where I began to formulate a hypothesis on the information accumulated (Doody & McAteer, 2002) regarding the nature of Edith's physical impairments and her functional limitations. The generation of hypotheses is followed by ongoing analysis of the patient.

I became extremely focused on Edith's reduced ROM. I embarked upon devising and introducing a treatment program focusing on mobilizing her ankle joint to regain the loss of movement. I mobilised her ankle with simple Active Range of Movement (AROM) and Passive Range of Movement (PROM) exercises. I applied my propositional knowledge gained prior to my placement and from previous experience in implementing AROM and PROM exercises on similar patients with ankle fractures, to help me clinically reason the implementation of these exercises. During treatment, a practitioner must ensure that the patient is receiving appropriate care based upon the best possible evidence, to assist in clinical decision making (Jones & Santaguida, 2005). Evidence suggests that mobilizations help increase ROM, decrease pain and increase greater functional outcomes (Lin et al., 2006). Dogra & Rangan (1999) recommend that early treatment should be carried out to an ankle that has been in plaster, as mobilizing the ankle joint will contribute to symmetrical gait.

The hypothetico-deductive clinical reasoning strategy is used by learners and novice practitioners in clinical decision making (Higgs & Jones, 2000). Coderre et al., (2003) consider this approach to be a 'weak' method due to the practitioner concentrating on superficial issues. Learners and novice

practitioners apply this strategy as it is best suited to their limited non-propositional knowledge. This application helps to formulate a diagnosis from which a treatment plan can be devised (Wessel, Williams & Cole, 2006). However, Doody & McAteer (2002) state its suitability for learners and novices as they continue to develop their knowledge. Barron, Moffett & Potter (2007) consider it advantageous for undergraduate physiotherapy learners to be provided with more information on psychosocial issues throughout their training, together with the possible impact on patient's progress and outcomes. This would assist in providing an individual with the most appropriate treatment plan.

It is not uncommon for expert practitioners to adapt to this clinical reasoning strategy when faced with unfamiliar conditions/situations (Wessel, Williams & Cole, 2006). Experts also tend to apply this approach when presented with limited clinical information (Coderre et al., 2003). Alternatively, they are inclined to use the Pattern Recognition approach to aid clinical decision making (Higgs & Jones, 2000). Hypothetico-deductive and pattern recognition are collectively known as diagnostic reasoning (Edwards et al., 2004a); an alternative clinical reasoning strategy.

The pattern recognition approach to clinical reasoning involves the recognition of cues (Banning, 2008). Accumulation of experience and knowledge in a particular domain of physiotherapy, enables the physiotherapist to build up a repertoire of predicaments (Coderre et al., 2003) and assists the therapists in solving future problems by recognizing and comparing cues previously encountered. This enables an expert to select the appropriate treatment intervention most suitable for the patient (Bond & Cooper, 2006). Experts have the ability to retrieve these patterns quickly and efficiently as they are stored in their long term memory (Coderre et al., 2003), portraying the pattern recognition strategy of clinical reasoning as an accurate, rapid and efficient process (Elstein & Scharz, 2002).

Experts have the ability to recognize other important aspects and consider these findings when implementing a treatment plan for the patient (Botti & Reeve, 2003). The focus on Edith's reduced ROM did not allow me to address her perspectives of physiotherapy and therefore I initially failed to apply treatment to suit her needs. Taylor (2002) comments that it is common practice for learner and novice practitioners to concentrate on the functional issues when attempting to solve a problem, rather than focusing on the context of the patient's circumstances. An expert would have considered Edith's perspectives from the initial assessment when devising her treatment plan and prescribed the most appropriate treatment.

Pattern recognition is rarely used by learners and novices due to their limited knowledge and experience (Coderre et al., 2003). I had no previous experience in treating patients with psychological problems and therefore these were difficult to address as I had few patterns of psychological issues stored in my long term memory. An expert is equipped with the necessary non-propositional knowledge of treating numerous patients with psychosocial issues and would be immediately aware that standard ROM exercises would not benefit this patient type. An alternative approach to the treatment plan would possibly have been applied. I was reliant on my general problem solving ability and propositional knowledge when making clinical judgments as I continue to acquire domain specific knowledge and have limited experience with physiotherapy related problems (Botti & Reeve, 2003). As my experience develops and I begin treating more patients, my knowledge and expertise will transform into more meaningful information to be stored in my long term memory.

This which will contribute to a more efficient and accurate reasoning, resulting in the development of my non-propositional knowledge.

My lack of experience and knowledge as a practitioner could possibly have influenced the fact that Edith's contextual information was not considered. Alternatively, it could have been due to the particular physiotherapy setting I found myself in. Jensen et al., (2000) states that physiotherapists in a musculoskeletal setting tend to focus on the movement/functional problem. However, physiotherapists in a neurology, geriatric and pediatric environment tend to place more emphasis on the patient's psychological, social and psychomotor status.

Following several treatment sessions involving mobilization of Edith's ankle with AROM and PROM exercises, I became aware of a significant lack of improvement in ROM in her right ankle. I reflected on the sessions and considered and evaluated the treatment given, progress made, areas of limited response and necessary adjustments for future sessions. Bartlett & Cox (2002) state that reflecting on decision making is part of the clinical reasoning process and is considered an important source of gaining non-propositional knowledge and learning in practice. This type of reflection is referred to as 'reflect-in-action' – i.e. reflecting on past practice and 'reflect-for-action' – i.e. planning for the future (Lahteenmaki, 2005).

It is believed that the reflections of more experienced learners and practitioners differ from learners who are embarking upon their clinical experience (Wessel & Larin, 2006). Reflect-on-action and reflect-for-action is common amongst learners/novices who do not have the ability to modify the treatment session during practice. We learn from errors that may occur during a session and reflect on how modifications may improve future sessions. However, experts have the ability to adapt treatment procedures during a session to suit the patient. This type of reflection is termed reflect-in-action (Lahteenmaki, 2005), enabling the physiotherapist to offer an individual the most appropriate treatment (Clouder, 2000). Reflect-in-action would appear to be acquired through experience. However, Clouder (2000) states that even a novice practitioner should possess such an essential skill.

As a result of reflection, I began contemplating whether Edith's negative attitude towards physiotherapy was influencing the lack of rehabilitation progression, as Barron, Moffett & Potter (2007) had mentioned that it is possible for psychosocial issues to impact on treatment and patient outcomes. Therefore, I decided to alter the approach of Edith's treatment and speculated in the benefit of a group exercise class. I chose to place her into a weekly lower limb hydrotherapy class to ascertain whether this would help contribute to building a positive attitude to improve ROM in her ankle. Devereux, Robertson & Briffa (2005) propose that a group exercise class would encourage Edith to develop a positive attitude through observing patients' progress and benefits gained from treatment. This positive attitude could be further acquired through socialization and peer support within a group setting (Petranick & Berg, 1997). Lepore, Gayle & Stevens (1998) suggested that group aquatic exercise classes increase self-esteem, improve mood and decrease anxiety from which Edith would benefit. Following several sessions of hydrotherapy, her ROM in her right ankle began to improve and in addition, I continued a weekly hand on session using Mulligan's mobilizations with movement to help further improve her ROM. I was eventually able to discharge Edith as she had

regained full ROM and function in her ankle, which resulted in a normal gait pattern without the need for any mobility aids.

Learner's Activity	Prepare a care plan for a specific problem of a patient selected by tutor by integrating your experience with extracted information from patient record system.

Summary

Patients will get proper care if practitioners have sufficient experience and efficient in using information from patient record systems. Today's patient record systems are just an unstructured text related to unique patient ID and date. It is a time consuming system to extract information during decision making. The patient record system should be such that information can be reused in particular cases. In clinical reasoning process, the learners and novices should use deductive reasoning approach whereas pattern recognition approach should only be used by the experience practitioners. Whatever approach is used, the practitioners must consider patient's situation (values, beliefs, conditions, cultural issue etc) interpersonal and physiotherapist's skills in clinical reasoning process to have the best position outcomes on patients.

Study Skills

Multiple choice questions

Tick (√) the correct answer

1. Extracting patient-specific data for medical decision is a-
   a. easy task
   b. trival task
   c. simple task
   d. difficult task.
2. Today's patient information recording system is-
   a. informatics
   b. structured text
   c. unstructured text
   d. sufficient.
3. Effective clinical reasoning depends on-
   a. theoretical knowledge
   b. professional knowledge
   c. patient historical knowledge
   d. none of the above.

Short Questions

1. How you can use HDR approach for patient management?

2. What is Pattern Recognition and who usually use this approach?
3. Describe narrative reasoning with an example.
4. Describe three tracks reasoning with a patient an example.

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