How to do research in clinical practice

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Research

- While caring for patients in clinical practice
- Encounter questions about diagnosis, prognosis and treatment
- Each issue pertaining to
- Aetiology
- Clinical manifestations
- Treatment become subject of research

Research in clinical practice

- Not require elaborate equipment
- Epidemiology of the condition
- Clinical manifestations
- Treatment modalities
- Each of the above issues can be studied on a large number of patients, and their records, prospective & restrospective studies, newer treatment methodology

Rustom Jal Vakil (1911-74)

- Hypotensive properties in serpentina (1940)
- Dried roots or Rauwolfia (1949) on 50 cases of essential hypertension
- Drop in BP after 4 weeks therapy
- International attention
- Again report in 1956, 72% cases benefit
- Lasker award 1957

- Medical research has made a fundamental contribution to health and wellbeing
- A huge amount of medical research is carried out every day
- Promote rigorous reporting of all clinical studies

Implementation of medical research in clinical practice is essential for the continuous improvement of patient treatment and care.

- Clinical research can be looked upon as a broad term including basic-oriented research, & disease-oriented research

Bronchogenic carcinoma

- Adler, 1912 : Primary malignant neoplasms of the lung are among rarest form of disease
- 50 years: dramatic increase in incidence in the West; India did not lag behind
- 1961; Viswanathan: records of 15 teaching hospitals in India rise
- Wig; lung cancer frequent among cases with chest diseases

Clinical study in 1964-65, Hubli Ind J Chest Dis 1967;9(3):161-4

Age in years	number
• 40-49	6 (20%)
• 50-59	10
• 60-69	4

presentation

- 17 smokers ; 10-30 years, 8 light, 7 moderate, 5 heavy, 3 nonsmokers
- 4 beedi, 3 cigarettes
- All men
- Cough, expectoration 17 (85%)
- Dyspnoea 14 (70%)
- Pain chest 12 (60%)
- Haemoptysis 8 (10%)

Other manifestations

- Enlarged lymph nodes 12
- Clubbing 8
- Vocal cord palsy 8
- SVC obstruction 4

Radiological findings

- Large homogeneous opac 7
- Massive atelectasis 4
- Round opacity 4
- Wedge-shaped shadow with collapse 3

* Pleural effusion 2

Establishment of diagnosis

- Bronchoscopic biopsy 6
- Lymph node biopsy 6
- Autopsy 3

- Squamous cell carcinoma 11
- Adenocarcinoma 3
- Anaplastic carcinoma 1

Lessons learnt

- Presentation in late stages
- Receiving treatment as tuberculosis
- Absence of AFB in sputum
- Absence of fever
- No response to anti-tuberculosis drugs
- Early diagnosis, greater hope for surgical resection

Pellagra in Gulbarga JIMA 1970; 54(2):73-75

- Study 1967-68
- Cajal: 1730 ***mala de la rosa***
- ***Symptoms, duration, season, socioeconomic conditions***
- **Symmetrical involvement of skin, diarrhoea, and mental changes**

Pellagra

- **Deramatitis 50**
- **Diarrhoea 18**
- **Mental changes 21**
- **Rural, agricultural labourers,**
- **Staple diet Jawar 45 (*sorgum vulgare)***
- **No milk 36**
- **No wheat 21**

Skin/biopsy

- Symmetrical involvement, exposed parts, thick scales, well defined margins
- Dorsum of hands, feet, neck
- Hyperkeratosis, parakeratosis , atrophic changes of epidermis, increased melanin deposition
- Nicotinic acid 300 mg a day, diet
- Improvement in 4-6 weeks

Pralidoximes in diazinon poisoning (JIMA 1966: 46:263

- Diazinon used for suicidal intent
- Freely available in market
- Organophoshate insecticides react with acetylcholinesterases & result in stable phosphorylated acetyl cholinesterases
- Widespread accumulation of acetylcholine in body
- Muscarinic, nicotinic and CN effects

Pralidoximes in diazinon poisoning

- **PAM (Ayers, US; Sumitomo, Osaka, Japan)**
- **Reactivates cholinesterase inhibited by phosphate esters**
- **Acts as antidote for cases of poisoning with organophosphorous insecticides**

Diazinon poisoning

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1965 study

- 20 cases (18-37 y; 12m-8f)
- Coma, froth, respiratory difficulty, Gastrointestinal manifestations, fasciculations
- 20 cases
- 10: atropine 05 mg every 10’ (180-230 mg)
- 3 deaths (pulmonary oedema)
- 10: atropine with pralidoxime 1 gm IV over 5’ and atropine (36-52 mg), all recovered

Diazinon poisoning

- **Therapeutic benefit**
- **Pralidoxime chloride/iodide: dramatic improvement if administered within 6 hours**
- **Specific antidote which reactivates inhibited acetylcholine-esterase**
- **Atropine, counteracts muscarine side effects only**

3 Examples

- 1. **Bronchogenic carcinoma by studying hospitalised patient, smoking, male, mistaken treatment as tuberculosis**
- **2. Pellagra: noted in jowar eaters, skin manifestations, improved diet, nicotinic acid**
- **3. diazinon poisoning: treatment with atropine and pralidoxime**

Clinical practice

- aims to ensure that the studies are conducted scientifically and documented properly.
- Research may involve a new drug, a survey of the condition,
- noting various clinical manifestations
- Research can be carried out by any clinician with limited resources

Clinical research

necessary to establish the safety and effectiveness of specific health and medical products

comes from randomized controlled clinical trials that are designed to answer important scientific and health care questions

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to be conducted according to principles and standards -“Good Clinical Research Practice” (GCP).

Good Clinical Research Practice (GCP)

a process that incorporates established ethical and scientific quality standards for the design, conduct, recording and reporting of clinical research involving the participation of human subjects.

conduct of clinical research

A complex activity and this complexity is compounded by the need to involve a number of different individuals with a variety of expertise, all of who must perform their tasks skillfully and efficiently.

WHO Principles of GCP

- **Research involving humans should be scientifically**
- **conducted in accordance with basic ethical principles; respect for persons, beneficence, and justice**
- **justified and described in a clear, detailed protocol.**
- **Identify foreseeable risks and discomforts and benefits**

Clinical research

- **initiate only if the anticipated benefit(s) for the individual research subject and society clearly outweigh the risks.**
- **should receive independent ethics committee/institutional review board (IEC/IRB) approval/ favourable opinion prior to initiation.**
- **conducted in compliance with the approved protocol**
- **informed consent should be obtained from every subject prior to research**

Clinical research

- **continued only if the benefit-risk profile remains favourable.**
- **medical personnel should be responsible for the medical care of trial subjects,**
- **Each individual involved in conducting a trial should be qualified by education, training, and experience**
- **All clinical trial information should be recorded, handled, and stored in a way that allows its accurate reporting, interpretation, and verification.**

Clinical research

- The confidentiality of records that could identify subjects should be protected, respecting the privacy and confidentiality
- Investigational products should be manufactured, handled, and stored according to Good clinical practice
- Systems with procedures that assure the quality of every aspect of the trial should be implemented

Research in clinical practice

- Can be carried out by an individual or a group of individuals
- New manifestation
- Incidence
- Treatment
- Following good clinical research practice

research

- Earlier it was carried out by a single individual
- Still can be carried out
- Careful planning, observation, documentation, writing, presentation/ publication
- Should have zeal, enthusiasm, and updated knowledge


Thank You