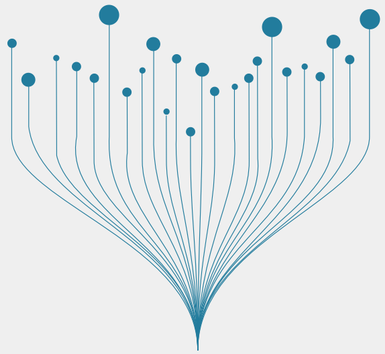


EVIDENCE-BASED MEDICINE:

Conducting and Analyzing Clinical Research

Focusing on Methodologies and Result Interpretation

Dr. Ahtisham Ali
Riphah Institute of Pharmaceutical Sciences

ABOUT ME

Dr. Ahtisham Ali

Masters in Pharmaceutical Chemistry
(Drug Discovery & Development)

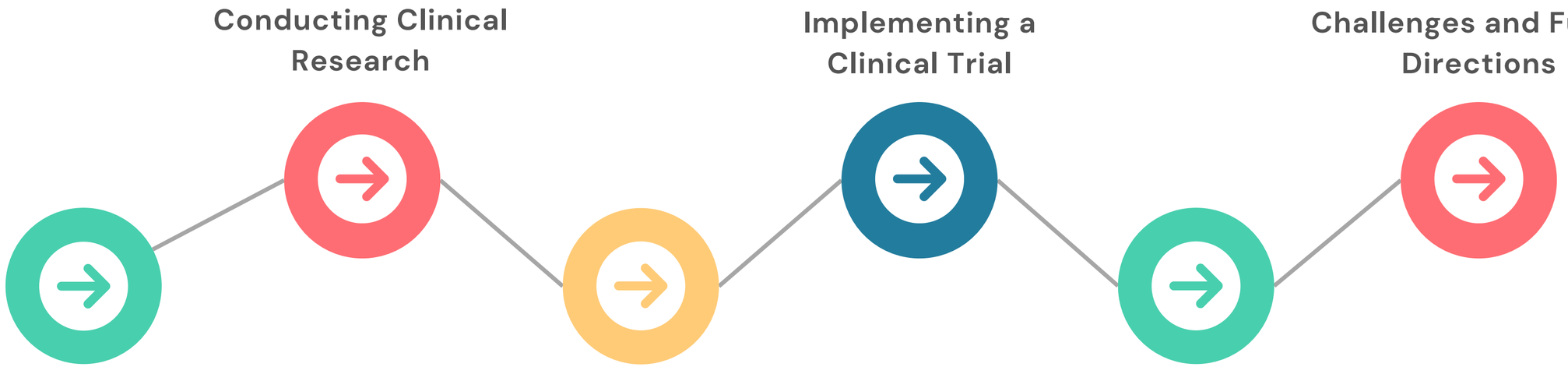
Working as a **Clinical Pharmacist** at MedCity International Hospital, Islamabad.

Research works include **Systematic Reviews & Meta Analyses** on relevant research problems as well as several review articles.

Currently doing **molecular docking** & CISH protein analysis.

"STOP DREAMING
AND START
DOING"

OUTLINE

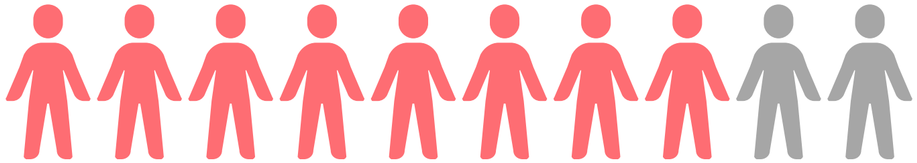

Introduction to Evidence-Based Medicine (EBM)
Conducting Clinical Research
Study Designs: Focus on Clinical Trials
Implementing a Clinical Trial
Applying Results to Medical Practice
Challenges and Future Directions

INTRODUCTION TO EVIDENCE-BASED MEDICINE (EBM)

- **Definition:** Integrating clinical expertise, patient values, and the best available evidence.
- **Importance:** Ensures effective, safe, and efficient medical practices.
- **Objective:** Understand clinical trial methods and their impact on medical decisions.

KEY STEPS IN CONDUCTING CLINICAL RESEARCH

1. Formulating a research question (**PICO framework**).
2. Designing the study (e.g., **randomized controlled trials** [RCTs], cohort studies).
3. Identifying and recruiting **participants.**
4. Ensuring **ethical considerations** (e.g., informed consent, IRB approval).



Study Designs

- **Randomized Controlled Trials (RCTs):**

  Gold standard for assessing interventions.

  Randomization minimizes bias.

- **Other designs:**

  Cross-over trials.

  Pragmatic trials (real-world settings).

  Example: Comparing a new drug vs. placebo.

IMPLEMENTING A CLINICAL TRIAL

Key steps:

- Defining inclusion/exclusion criteria.
- Establishing endpoints *(e.g., survival rate, symptom reduction)*.
- Creating a protocol (intervention details, duration).
- **Blinding:** Single, double, or triple to reduce bias.
- **Data collection:** Standardized procedures.

ANALYZING RESULTS

- **Statistical methods:**

  Descriptive (mean, median).

  Inferential (t-tests, ANOVA, regression analysis).

- Interpreting p-values and confidence intervals.
- Ensuring adequate sample size (power analysis).

ASSESSING THE QUALITY OF EVIDENCE

Grading frameworks:

- **GRADE** (Grading of Recommendations Assessment, Development, and Evaluation).
- **CONSORT** (Consolidated Standards of Reporting Trials) guidelines.
- Common biases and limitations in trials (e.g., selection, publication bias).

APPLYING RESULTS TO MEDICAL PRACTICE

- Assessing relevance to patient population.
- Integrating results into clinical guidelines.
- **Example:** EBM application in choosing treatment for hypertension.
- Communicating findings to patients effectively.

CHALLENGES AND FUTURE DIRECTIONS

- Ethical dilemmas in trial designs.
- Managing conflicting evidence.
- **Innovations:** AI in trial design, personalized medicine.
- Emphasis on real-world evidence alongside RCTs.

SUMMARY

- The importance of rigorous methodologies.
- Evidence-based medicine as a dynamic process.
- **Call to action:** Engage in critical appraisal and application of evidence.

THANK YOU

Feel free to ask questions...