# Evidence Based Medicine and Clinical Practice: Physician Scientist

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***Int. Med. Col. J. 2025; 10(2): 39-40***

Medical science is empowered by the meticulous sciences, as it deals with human life, their emotion and spiritual trust. In the modern era, doctors are under high expectations as never met before. Healthcare is a teamwork that pivots around doctor. So, a doctor's role has become multifaceted, encompassing a wide range of responsibilities and tasks. The Danish Health and Medicines Authority tried to summarize the roles of a doctor under seven heads[1]. Whatever may be the number of roles, doctors need to be a medical expert, communicator, collaborator, leader, health advocate, scholar and professional. The vital role is expressed through skill of diagnosing illness, treating that and protecting society by proposing adequate measures for prevention. Apart from possessing high quality clinical competence, doctors are expected to contribute to the development of the healthcare delivery system by adding new ideas and means. The bookish knowledge and institutional practice are insufficient to meet the expectation. The demand of continuous and authentic updating of knowledge and skills of healthcare personnel has opened up the concept of 'Evidence-Based Practice (EBP)'.

In the later part of the last century, the concept of evidence-based medicine (EBM) could draw the attention of physicians. EBM was defined as 'a systemic approach to analyze published research as the basis of clinical decision making' and later improved as 'the conscientious and judicious use of current best evidence from clinical care research in the management of individual patient[2]. The endless world of the internet has opened up an unlimited scope for gathering information. But the fact is that the 'unfiltered' information and data are intermingled with the truth. In medical science, the available sources are also contaminated by regional peculiarity of the disease patterns and individual response to intervention. So, the concept of judicial selection of ideas is of prime importance in EBM practice and needs to be proven as effective through regional research concerned with generalizability.

Emotion about the best care for our patients' problems arises frequently in clinical practice and standard textbooks often fail to be of dependable help in confirming a diagnosis or the optimal therapeutic approach. Now-a-days, identification of current risk factors, screening or current trend become the principal concern of health care system. Fortunately, the availability of quality research, better information resources and better information technology make it possible for all clinicians to respond to these challenges by learning some basic literature search skills and acquiring access to key evidence resources in the hospital, in educational institution or at home. Searching evidence in favour of real life situation and availability of real matched scientific research finding have created a wonderful opportunity for the doctors to face the challenge with confidence and come out with good outcome.

A curious physician, while studying a research paper, tries to focus on the validity of the method, authenticity of the results and applicability to a patient. The process of carefully and systematically evaluating the strengths and weaknesses of a study to assess its validity, relevance and trustworthiness is critical appraisal. This critical appraisal is key

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to assess the credibility of the underlying research on which scientific knowledge is based[3]. A critical appraisal involves a careful and systematic assessment of a study's trustworthiness or methodological rigour and contributes to assess how confident people can be in the findings of a set of studies. The step by step identifying the study type of the individual paper, identifying appropriate criteria and checklist, selecting an appropriate set of criteria and checklist, performing the appraisal and summarizing and using the results, make the process easier and perfect[4].

Scientific research works are the main evidences that physicians use for EBP. Randomized trial is pioneer in analyses, establishing the clinical bases for diagnosis, prognosis, decision analyses and therapeutics. These are the gold standard for clinical research because they help establish the efficacy and safety of interventions by minimizing bias and ensuring high internal validity. The evidence sources are melded together in the real-time of clinical decision-making occurs through a form of professional artistry including critical appreciation, synchronicity, balance and interplay.

Artificial Intelligence (AI) approaches have emerged as excellent decision-making tools[5]. AI is a rapidly evolving and dynamic field with the potential to revolutionize various aspects of human life and reality. AI has become increasingly crucial in drug discovery and development, patient population selection and stratification, enhancing data accuracy and ensuring the quality care necessary for effective patient treatment. Despite legal and ethical challenges and obstacles related to cost and implementation, there is tremendous scope for incorporating AI into medical research in improving diagnostic accuracy and treatment outcomes, contribute to more efficient healthcare delivery, reducing costs and facilitating better patient experiences. Optimal health care delivery, both now and in the future, requires a continuous loop of knowledge generation, dissemination and ensuring rapid incorporation of such evidence in the practice. The researches actually act as link between science and practice.

A doctor, in addition to professional responsibility, conducts research in a scientific field is a Physician scientist. They are the vital component of the biomedical research workforce. Physician scientists face numerous challenges including extended training periods, financial burdens and struggles in balancing clinical work and research. Institutional commitment to the growth and professional development of Physician scientists is expected to augment and improve their own institutional models of physician-scientist training and career development. Establishing an independent, national council with a mandate to provide oversight of Physician scientist training programs with necessary support is essential.

## Reference


1. Danish Health and Medicines Authority. The seven roles of physicians. April 2014.
2. Claridge JA, Fabian TC. History and Development of Evidence-based Medicine. World J. Surg. 2005; 29: 547-553. https://doi.org/10.1007/s00268-005-7910-1
3. Tod D, Booth A, Smith B. Critical appraisal. International Review of Sport and Exercise Psychology; 2021, 15(1): 52–72. https://doi.org/10.1080/1750984X.2021.1952471
4. Pacheco RJP, Miranda LCB, Sanchez RAT, Caicedo-Quiroz R, Maqueira-Caraballo G, Barzola-Monteses J. PRISMA Guidelines: Methodological Adaptation for Systematic Reviews in Education. Data and Metadata [Internet]. 2025 Feb. 21; 4: 698. DOI: https://doi.org/10.56294/dm2025698
5. Carini C, Seyhan AA. Tribulations and future opportunities for artificial intelligence in precision medicine. J Transl Med. 2024; 22: 411. https://doi.org/10.1186/s12967-024-05067-0
6. Daye D, Patel CB, Ahn J, Nguyen FT. Challenges and opportunities for reinvigorating the physician-scientist pipeline. J Clin Invest. 2015 Mar 2; 125(3): 883-7. doi: 10.1172/JCI80933