**EVIDENCE BASED MEDICINE IN ORTHOPAEDICS**

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The traditional approach to solving clinical problems involves a great emphasis on professional authority with approach being dictated exclusively by the experience and rationale of the clinician. This approach was dictated largely by the opinion of the practitioners which is problematic because there are wide varieties of opinions and it is reasonable to suggest that not all of these opinions can be correct. Evidence-based medicine is a contrast to this paradigm and has arisen from a need of effectively solving clinical problems.

 Evidence-based medicine is the process of systematically reviewing, appraising and using clinical research findings to aid the delivery of optimum clinical care to patients.

The British Medical Journal compiled a list in 2007, the 15 most important medical milestones since the journal’s inception in 1840. Included were the discovery of DNA, the development of vaccinations and of antibiotics, the use of anesthetics for surgery and the emergence of evidence-based medicine. Evidence-based medicine (EBM) is an approach to the practice of medicine, whose name was coined by Gordan Guyatt in 1991 and which was described by the Evidence-Based Medicine Working Group at McMaster University in 1992.3 It was a new paradigm that placed less emphasis on expert opinion and unsystematic clinical observations, instead stressing the impact of evidence derived from clinical research, such as randomized-controlled trials and the need for physicians to make themselves aware of published results before blindly accepting dogma. Subsequently, there has been an explosion of research papers expanding the boundaries of EBM into many specialties of medicine, even including traditional Chinese medicine.

Evidence-based medicine is defined as “…the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.” (Sackett et al, BMJ 1996) Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values.

Top four questions to be asked.

1. What are the most important principles of EBM?
2. How do you apply these principles to a Clinical approach?
3. What is an example of applying these principles to a Clinical approach?
4. What are the common misconceptions about EBM?

**Principles of Evidence Based Medicine**

1. Patient Values – key goal of good clinical practice is to deliver the highest quality to patients and this can be done if there is thorough understanding of patient and his problems. Also the patient involvement and understanding is important.
2. Need for evidence – once the clinician has thorough understanding of patient, can begin to seek evidence to supplement his judgment.
3. Evidence is unequal – large amount of available data is beneficial to the clinician, but it is to be inundated with such large amount of information. So it is important to emphasise on evidence published in the literature and careful assessment of this evidence.
4. Integrating evidence and clinical expertise – clinician must appropriately apply the relevant evaluated evidence to the clinical problem.

**Applying Principles to Clinical approach**

General clinical approach of employing principles of EBM is called “Evidence Cycle” which includes

(1) Assess - Thoroughly understanding patient and his problems

 (2) Ask - Formulating research question that seeks solution and lays foundation for search of

 Literature.

 (3) Acquire - Obtaining evidence from Training / past experience, Colleagues / Experts, Text

 books, Practice guidelines, Systematic overviews – Cochrane database, Literature

 (4) Appraise - Clinician must critically appraise the evidence

 (5) Apply

In addressing Clinical Questions a useful acronym is PICO

 Patients – Which patients are of concern?

 Intervention- What treatment proposed?

 Comparison – What are the alternatives?

 Outcome – What are the outcomes?

70 year lady with displaced subcapital fracture of femur (Patient), Is hemiarthroplasty (Intervention) better than reduction & internal fixation ( Comparison) for long term function (Outcome)

**Definitions:**

RCTs – Patients are allocated randomly to different arms of the study.

Observational Studies

Cohort study – Patients who are exposed to a risk factor or treatment are compared to unexposed Patients. Case-control Study – study design is reverse of Cohort. Group of Patients that have already developed outcome of interest are compared to similar group of Patients who have not developed the outcome

Case series and Case reports

Systematic Review is the overview of scientific literature on a specific problem. This will be thorough, defined literature search. Also includes appraisal of individual studies and summary of studies

Meta Analysis is a statistical technique with combination of data from similar studies. This includes quantitative summary and weighted average of individual study effects.

Evidence-based medicine is the integration of the best available research evidence, our clinical circumstances and patient’s values and preferences. It can be described as a partnership between two components the practice of medicine. One component represents the body of knowledge that includes all evidence, whether arrived at from physiological experimentation, individual observation and expert opinion, randomized controlled trials, systematic reviews or meta-analyses, as described by Sackett et al. in 1996, can be visualized as a pyramid of evidence. It is the objective and accumulated scientific and statistical wisdom derived over time that treats medicine as a scientific endeavor and demands that the user seek out the best available evidence that has been validated experimentally and statistically.

In conclusion, EBM involves

* Asking focused question
* Finding the evidence
* Appraising the evidence
* Making a decision
* Evaluating the performance