

The importance of evidence in medical decision making

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Abstract

Background: imparting medical education is a challenge as much as it is a privilege. While traditional approaches of teaching medicine are absolutely essential and detrimental to the quality of medical professionals produced, the newer, evidence based approach is changing the way treatments are being planned in the healthcare sector.

Purpose: this short communication highlights the evolution of evidence based medicine and discusses the importance of incorporating evidence into modern medical decision making.

Keywords: Evidence; Evidence based medicine; Medical decision making; Medical education

Introduction

Science is the systematic study of the natural world through observation and experimentation. While 'observation' is akin to the traditional 'experience' that we talk about; 'experimentation' is the part of science which makes all the difference. Experimentation is the golden tool which gives legitimacy to scientific observations. Newton discovered gravity by observation and proved it with mathematical calculations. However, it was the experiments of Henry Cavendish, carried out almost 111 years after the publication of Newton's principia that gave Newton's law of gravity unquestioned legitimacy and proof. When experience is supported with proof, evidence is born.

Evolution of evidence based medicine (EBM)
EBM is the practice of using available proof for making medical decisions, which comes from a combination of experience and experimentation. Professionals who practice EBM have a solid body of literature to rely and derive inspiration from. Like in everyday life, decisions become easier to make if there is

freely available, established proof on what will or will not work. Before evidence was given importance, 'expert- based medicine' was practiced. It involved relying on the expertise of older, experienced clinicians for patient management based on the concepts they learned when in medical school and their own experiences during their years in practice. There was limited scope for newer ideas and innovation which generally emerged in young minds. This led to a sort of 'stagnation' in the field, which was eliminated once the evidence-based approach was adopted in medicine. David Sackett, known as the 'father of EBM' and who is credited with its spread in Europe, documented the evolution of this approach. He recalls that after the adoption of EBM in district general hospitals in the UK, "the young physicians realized that they could challenge their seniors in a way that was not possible with expert- based medicine. It was liberating and democratizing." (Smith & Rennie, 2014)

The importance of evidence during decision making

When making an important or expensive purchase, say, a new car, we tend do thorough research on the best models in the market, the safety of the car, its budget- friendliness etc. In such situations, we're not fully convinced by solely relying on the salesperson's opinion and therefore seek more information in order to

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make our decision. Knowing more information, or 'evidence', will help us be confident in whatever choice we make, leaving no room for regrets. Using evidence for medical decision making (MDM) is a similar exercise. It is commonly said, 'while it is wise to learn from experience, it is wiser to learn from the experience of others.' In medicine, planning the treatment of a patient is a critical step, and errors due to incomplete or faulty planning can lead to heavy consequences. Evidence plays a very important role in this aspect, since a quick study of the existing evidence in that particular area of treatment can eliminate the most commonly occurring errors.

Newer evidence has caused drastic changes in MDM today. For example, from 1940 to 1971, Diethylstilbestrol (DES) the synthetic form of estrogen, was commonly administered to pregnant women to prevent complications such as miscarriage or premature labor. In the 1950s, new research indicated that the drug was not as effective in preventing said complications as was claimed. Further research in 1971 showed that DES caused clear cell carcinoma of the cervix and vagina. Despite these findings, the drug continued to be prescribed to pregnant European women till as late as 1978. More recently in 2011, a meta-analysis on all the data published about DES showed that DES exposure was associated with risk of many adverse health outcomes in women, such as ectopic pregnancy, miscarriage, stillbirth, preeclampsia and infertility. (Hoover; 2011) In present times, drugs like DES and thalidomide are a reminder that research must never stop and newer evidence must always be promoted, since established data can also be misleading.

Two clinicians (Sackett & Strauss, 1998) made an 'evidence cart' which consisted of floppy discs and a notebook computer full of evidence from MEDLINE and Cochrane library and used it during their patient rounds. When consulting the evidence cart for patients, they found that while maximum cases (52%) confirmed their current or tentative diagnostic or treatment plans; few cases (25%) also led to a new decision for the patients' management. A classic example of such evidence based

decision making stems from the important 1972 research that showed that more premature babies survived and stayed healthy when their mothers were given steroids. Earlier, when premature neonates developed respiratory distress, all that could be done for their survival was render respiratory support and monitoring the blood chemistry. Later, solid evidence was published about the use of ante-natal steroids benefitting survival of premature neonates in early 1990s, which aided practitioners to make relevant, life altering changes in decision making for their patients (Royal college of pediatrics and child health; 2013).

In early 2000s, a panel put together a rigorous, high quality investigation for the use of anti-resorptive agents used to treat osteoporosis. Previously, several agents were known to reduce the risk of vertebral fractures. However, the investigation led to the knowledge that only alendronate and risedronate demonstrated convincing, high quality evidence. This type of important evidence can be used for clinical decision making when prescribing the correct drug for osteoporosis patients. Similarly, the decision for the best type of root canal medicament for a particular case, amongst the wide range that are mentioned in contemporary literature, can be made after consulting recent systematic reviews and meta analyses by the dentist.

Conclusion

Charles Darwin once said, 'it is not the strongest or the most intelligent who will survive, but those who can best manage change.' Change is inevitable, and the only way we can keep up with it is by constantly updating ourselves with the latest practices and techniques. An evidence based approach to decision making helps the practitioner remain in touch with the basic science of their profession, makes them aware of the popular techniques practiced in other geographic areas, reduces the margin of error during treatment and saves time, effort, and capital for the healthcare provider. In short, it is the best way to build a scientifically sound, efficient and successful medical practice.

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