Teaching Evidence Based Laboratory Medicine: How to spread the word?

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There is a changing paradigm in clinical and laboratory medicine that has been driven by the easy availability and rapid access to information. This paradigm is coined evidence-based laboratory medicine (EBLM); stated simply, EBLM involves the process for use of best quality information on which patient decisions are made. The EBLM process involves the A5 cycle: Ask a well-formulated question; Acquire the evidence to address the question; Assess the evidence critically; Apply the evidence in practice; Assess (or Audit) the impact of change. The purpose of this lecture will be to address how the specific skill set needed for EBLM should be presented to effectively spread the word on this new paradigm.

Be prepared to discuss the context of EBLM. When EBLM is first introduced to experienced individuals, they may find it difficult to accept that former methods of practice are no longer sufficient for keeping up with the best the information available for care of patients. Teachers must emphasize that EBLM does not substitute or replace skills acquired through practice; rather, EBLM complements and supplements previous knowledge and skill with valid information. Positive reinforcement must focus on the confidence gained from being able to answer one's own clinical and technical questions with best available evidence through systematic use of the EBLM process.

Address any anxiety about acquiring the skills needed to use EBLM. Experts and teachers in evidence-based practice often have advanced training in research methodology or statistics. Learners often find these areas esoteric, and can be difficult to see how these specialized skills can be relevant to routine practice. Teachers must demonstrate that EBLM skills can be acquired within a reasonably short time frame and used in everyday practice. Teachers must try to build on the knowledge and experience that learners already have in these areas by using examples.

Learning needs to be connected to how EBLM will be used in practice. Teaching is most effective when it is clearly connected with how it will be used in a practical sense; teaching must be oriented toward real situations that will be familiar to the learners. Teaching must focus on how to use the EBLM steps to improve practice. Again, practical examples of how EBLM can be used in practice are a powerful way to connect with learners. Answering questions from clinicians and laboratorians about the interpretation of diagnostic and monitoring tests or how to decide which tests and assay formats are appropriate for local practice helps learners realize the value of EBLM. Effective teaching connects new knowledge with old, and facilitates how learners can build on their current expertise.

Learning needs to balance passive versus active methods. Passive methods of learning (such as lectures) should be balanced with active methods (such as small group work and practical exercises). Active learning through exercises and discussion build confidence and are necessary for developing practice skills. Small group work is an excellent way for providing peer and facilitator feedback for formulating clinical questions, developing searching strategies, and critical appraisal of the evidence for use in decisions and in applying the evidence in practice.

Make EBLM education fun. Humor facilitates learning by reducing tension, holding the learners' attention, and increasing enthusiasm for the topic. Humor can promote a positive image of EBLM, however teachers must remember that "humor is serious business" and they must be cautious to avoid being viewed as comedians. Carefully selected cartoons and pictures can rapidly get a message across and invigorate the learning environment.

Teaching must be focused on learners' needs. The teaching materials presented and the technique used must match the learners' stage of training and learning needs. Teaching postgraduate practitioners versus individuals early in training can be complicated because of differences in learners' aptitudes, previously acquired skills and enthusiasm for the subject. Small group facilitation skills are necessary to ma-

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nage the different skill levels. Identification of more confident and experienced members of a group can provide assistance in group learning. There must be balance, however, and teachers must be careful to avoid having any member of a group dominate the opinions and participation of other members.

Seek feedback and evaluation of your performance as a teacher. Clearly individuals have different styles and natural aptitudes for lecturing and small group interaction. Individual skill can benefit from evaluation and feedback on what worked well and what needs improvement during a session. Teachers should always seek written feedback on their educational activities.

Use EBLM skill is becoming essential for routine practice at all levels. This is because laboratory professionals must provide reliable and valid information on the application and interpretation of diagnostic, monitoring and prognostic laboratory procedures and communicate this information effectively. Objective evidence is critical for optimizing medical decisions and patient outcomes at all stages. For laboratory medicine, this includes the entire pre-analytical, analytical and post-analytical testing phases. Effective teaching of EBLM can help clinicians choose the right test, for the right patient at the right time, and to interpret the results in meaningful way that benefits patients.