

Evidence-Based Ophthalmic Practice Curriculum Standard

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Purpose

Evidence-based medicine shapes the day-to-day practice of ophthalmology. It directs practice patterns, research hypotheses and health policy decisions. Clinicians need to keep up-to-date, and be well informed in the debate over health care delivery and the distribution of increasingly scarce health resources. Thus it is a responsibility for all current and future ophthalmologists to understand the basics of reading and interpreting the health care literature.

It is not necessary to become a clinical epidemiologist or statistician to practice evidence-based ophthalmology, however an understanding of the principals and application of the research literature is helpful.

The Standard comprises three elements:

- EB1 Critical Appraisal Skills
- EB2 Global Eye Health
- EB3 Research

References¹

Core reading

1. Guyatt, G.H., Rennie, D., Meade, M., & Cook, D. 2015, *Users' guides to the medical literature: essentials of evidence-based clinical practice*, 3rd edn, McGraw-Hill Education, London.
2. Riegelman, R.K. 2013, *Studying a study & testing a test: reading evidence-based health research*, 6th edn, Wolters Kluwer/Lippincott Williams & Wilkins Health, Philadelphia, PA.

This reference is also recommended, if available (no longer the latest edition)
3. Sackett, D.L., Tugwell, P. & Haynes, R.B. 1991, *Clinical epidemiology: a basic science for clinical medicine*, 2nd edn, Little, Brown, Boston, MA.

Global Eye Health

1. Bourne, R.R.A. et al. 2013, "Causes of vision loss worldwide, 1990-2010: a systematic analysis", *The Lancet Global Health*, vol. 1, no. 6, pp. e339-49.
2. RANZCO 2015, *Development policies*, viewed 4 November 2015, <<http://www.ranzco.edu/index.php/policy-and-advocacy/policy>>.
3. World Health Organization 2012, *Global data on visual impairments 2010*.
4. World Health Organization 2013, *Universal eye health: a global action plan 2014-2019*.

¹ Some resources in this list may be found on the College's Moodle learning management system.

Additional reading

1. Straus, S.E., Glasziou, P., Richardson, W.S., & Haynes, R.B. 2011, *Evidence-based medicine: how to practice and teach it*, 4th edn, Churchill Livingstone, Edinburgh.
2. Haynes, R.B., Sackett, D.L., Guyatt, G.H., & Tugwell, P. 2006, *Clinical epidemiology: how to do clinical practice research*, 3rd edn, Lippincott Williams & Wilkins, Philadelphia, PA.
3. Straus, S. E., Tetroe, J., & Graham, I. D. 2013, *Knowledge translation in health care moving from evidence to practice*, 2nd edn, John Wiley & Sons, Chichester, West Sussex.

Journal club

1. Deenadayalan, Y., Grimmer-Somers, K., Prior, M, & Kumar, S. 2008, 'How to run an effective journal club: a systematic review', *Journal of Evaluation in Clinical Practice* vol. 14, no. 5, pp. 898-911.
2. Schwartz, M.D., Dowell, D. Aperi, J. & Kalet, A. 2007, 'Improving journal club presentations, or, can I present that paper in under 10 minutes', *Evidence Based Medicine*, vol. 12, no. 3, pp. 66-68.

Additional Resources

1. Centre for Evidence-based Medicine 2014, *Critically appraising the evidence*, viewed 21 August 2015, <<http://www.cebm.net/category/ebm-resources/tools/critically-appraising-the-evidence/>>
2. Cochrane Eyes and Vision group <http://eyes.cochrane.org>. The CEVG is an international network of individuals working to prepare, maintain and promote access to systematic reviews of interventions to treat or prevent eye diseases or visual impairment.

Teaching and Learning

Preparing students for lifelong learning necessarily involves preparing them for the tasks of making complex judgements about their own work and that of others and for making decisions in the uncertain and unpredictable circumstances in which they will find themselves in the future².

The role of Journal Club in teaching and learning

A successful journal club is an effective tool for teaching evidence-based practice. It requires an accomplished journal club leader and commitment from all participants. The philosophy of a journal club is to share current knowledge and translate it into evidence-based patient care. It helps participants keep up to date with current literature, and contributes to the teaching and learning of research methodology, clinical epidemiology and statistics. A journal club can improve critical appraisal skills and inform clinical decision-making. Selection of appropriate articles and clear presentation is essential to make the process interesting and educational. It is an expectation that the Trainee will participate regularly and constructively in journal club activities over the course of his or her training.

² Boud, D. & Falchikov, N. 2006, 'Aligning assessment with long-term learning', *Assessment & Evaluation in Higher Education*, vol. 31, no. 4, pp. 399–413.

Research requirement of the RANZCO Vocational Training Program

Prior to applying for Fellowship of the College, a Trainee must meet the research requirement in evidence-based ophthalmic practice. This can be achieved through:

- a publication in a peer-reviewed journal as first author;
- being first author and a significant contributor to a paper presented at a meeting for which abstracts are subject to peer review and selection, for example: The College's Scientific Congress, the Australian Visual and Ophthalmic Science Conference, or a State or New Zealand College meeting;
- an approved period of full-time research (confirmed by a written report from a College Fellow); or,
- a higher degree gained by research or thesis. A higher degree by coursework alone is not sufficient.

Assessment Methods

A Trainees' critical appraisal skills (EB1), and engagement with and understanding of matters addressed in element 2 (EB2) *Global Eye Health* are assessed in practice through the College's work-based assessment processes.

Element 3 (EB3) is assessed through the research requirement of the Vocational Training Program.

Learning outcomes and performance criteria

EB1 CRITICAL APPRAISAL SKILLS	
<p>Patients expect and deserve the best available care. Evidence-based practice is a way of applying the contributions of research to improve patient care. The ophthalmologist must learn how to access, interpret and apply the best current evidence to everyday patient care. Knowing how to formulate clear questions relating to patient management is fundamental to searching for evidence relevant to patient problems. It also helps in communicating the evidence to patients and colleagues.</p>	
LEARNING OUTCOMES	PERFORMANCE CRITERIA
<p>1.1 Access the literature or relevant databases to find current best evidence related to patient management</p>	<p>1.1.1 Know how to formulate clear questions relating to patient management</p> <p>1.1.2 Know how and where to search for and find evidence quickly</p> <p>1.1.3 Be able to use databases such as PubMed, TRIP, Clinical Evidence, Up to Date and the Cochrane Library, to search for evidence</p> <p>1.1.4 Know the hierarchy of research evidence</p>
<p>1.2 Know how to critically appraise different types of evidence sources</p>	<p>1.2.1 Understand and apply the principles of the 'diagnostic process' and 'diagnostic testing'. This includes prior probability, sensitivity and specificity, positive and negative predictive values, and likelihood ratios. These principals are applicable to all tests, however recent or sophisticated</p> <p>1.2.2 Understand how to interpret the validity and importance of evidence about treatment and apply it to patients. This includes randomization, masking, follow-up, intention-to-treat analysis, relative risk reduction, absolute risk reduction, number needed to treat and hazard ratios. Appreciate the differences between individual studies and systematic reviews</p> <p>1.2.3 Have a rational approach to prescribing and investigation that includes knowledge of risk, costs and benefits of treatment and tests</p>

LEARNING OUTCOMES	PERFORMANCE CRITERIA
<p>1.2 Know how to critically appraise different types of evidence sources (continued)</p>	<p>1.2.4 Appraise and interpret the results of a study. This requires a basic understanding of statistical concepts, in particular:</p> <ul style="list-style-type: none"> • p-value • confidence interval • the difference between statistical significance and clinical significance <p>1.2.5 Understand how to interpret the validity and importance of evidence about prognosis and apply it to patient care</p> <p>1.2.6 Understand how to interpret clinical practice guidelines and pre-appraised evidence</p> <p>1.2.7 Understand the basic principles of an economic analysis</p>

EB2 GLOBAL EYE HEALTH	
<p>It is incumbent upon ophthalmologists to know the causes of low vision and blindness worldwide, especially in our own Asia-Pacific region. This should encourage the Trainee to consider volunteering to provide services to areas or countries where help is welcome and needed.</p>	
LEARNING OUTCOMES	PERFORMANCE CRITERIA
<p>2.1 Know the major causes of visual impairment (low vision and blindness) worldwide, including in Australia and New Zealand</p>	<p>2.1.1 Understand the causes, prevention and treatment of visual impairment:</p> <ul style="list-style-type: none"> • in Aboriginal and Torres Strait Islander people • in Māori people • worldwide <p>2.1.2 Understand the socio-demographic and environmental factors that affect visual impairment:</p> <ul style="list-style-type: none"> • in Aboriginal and Torres Strait Islander people • in Māori people • worldwide <p>2.1.3 Present at, attend or view presentations regarding the causes of low vision or blindness:</p> <ul style="list-style-type: none"> • in Aboriginal and Torres Strait Islander people • in Māori people • worldwide

EB3 RESEARCH

An experience of research can help develop the enduring ability to solve problems, analyse data and update knowledge, and improve practice.

While not all will pursue an extended period of research activity, a Trainee’s practice will mature with knowledge of research methodology, competence in critical appraisal of the research literature and application of evidence when making clinical decisions.

LEARNING OUTCOMES	PERFORMANCE CRITERIA
<p>3.1 Develop an understanding of research processes including:</p> <ol style="list-style-type: none"> 1. developing hypotheses 2. creating study protocols 3. obtaining ethics approval 4. understanding funding streams 5. analysis of results 6. responsibilities of authorship 7. patient related outcomes 	<p>3.1.1 Participate actively and constructively in workplace-based journal clubs</p> <p>3.1.2 Meet the VTP Research Requirement:</p> <p>Prior to applying for Fellowship of the College, a Trainee must meet the research requirement in evidence-based ophthalmic practice. This can be achieved through:</p> <ul style="list-style-type: none"> • a publication in a peer-reviewed journal as first author; • being first author and a significant contributor to a paper presented at a meeting for which abstracts are subject to peer review and selection, for example: The College’s Scientific Congress, the Australian Visual and Ophthalmic Science Conference, or a State or New Zealand College meeting; • an approved period of full-time research (confirmed by a written report from a College Fellow); or, • a higher degree gained by research or thesis. A higher degree by coursework alone is not sufficient.

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