BC Pharmacy Residency Program

Evidence-Based Practice

Description

The principles of evidence-based practice (EBP, a.k.a. evidence-based medicine [EBM]) are an important component of the pharmaceutical care process. Clinical pharmacists regularly incorporate these principles into their thought processes in order to make evidence-informed therapeutic decisions with their patients. EBP is a core rotation in the BC Pharmacy Practice Residency Program. During this one-week rotation, the resident will use a case-based approach to further develop their understanding of pharmacoepidemiologic concepts and further enhance their evidence evaluation and interpretation skills in the assessment of randomized controlled trials (RCTs), observational studies, and systematic reviews with or without meta-analyses. Residents will also have an opportunity to further develop their literature search skills and will be exposed to current areas of controversy within EBP. This rotation will provide residents with a foundation of evidence evaluation and interpretation skills, which they can build on during their residency rotations and activities.

Rotation Leads

Dr. Ricky Turgeon BSc(Pharm), ACPR, PharmD (ricky.turgeon@ubc.ca)

Dr. Kieran Shah BSc(Pharm), ACPR, PharmD (kshah@alumni.ubc.ca)

Goals

The resident will become more familiar with the processes and procedures for evaluating and interpreting pharmacoepidemiologic studies using a variety of methodologies and will gain an appreciation for how the knowledge gained through the evaluation and interpretation process can be used to make evidence-informed decisions about pharmacotherapy with patients. Over the course of the rotation, the resident will also enhance their skills in searching the literature, critical thinking, and problem solving.

Objectives: By the end of this one-week rotation, the resident will be able to:

1. Understand EBP defined as the integration of the best research evidence with clinical expertise & patient's unique values & circumstances
2. Recognize the rationale for EBP
3. For each type of clinical question, identify the preferred order of study designs, including the pros and cons of the major study designs
4. Practice the 5 steps of EBP: ask, acquire, appraise, apply, and act
5. Understand the distinction between using research to inform clinical decision-making vs conducting research

<u>Ask</u>

6. Explain the difference between background & foreground questions
7. Identify different types of clinical questions (e.g. treatment, diagnosis, prognosis, etiology)
8. Convert clinical questions into structured, answerable clinical questions using PICO
    a. Recognize the importance of and strategies for identifying and prioritizing uncertainties or knowledge gaps in practice
    b. Understand the rationale for using structured clinical questions
    c. Identify the elements of PICO questions and use variations of it when appropriate (eg, PICOT, PO, PECO—Exposure) to structure answerable clinical questions

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Acquire

9. Outline the different major categories of sources of research information, including primary literature databases and databases of filtered or pre-appraised evidence
10. Outline the advantages of using filtered or pre-appraised evidence sources and recognize relevant resources
11. Indicate the differences between the hierarchy of evidence, level of processing of evidence, and types of evidence-based medicine resources
12. Construct and carry out an appropriate search strategy for clinical questions
    a. Know where to look first to address a clinical question
    b. When necessary, construct a search strategy that reflects the purpose of the search
    c. Apply a general search strategy including the use of search terms, and the role of Boolean operators; truncation; and search filters for more efficient searches
13. State the differences in broad topics covered by the major research databases

Appraise

14. Identify the major categories of bias and the impact of these biases on the results
15. Interpret commonly used measures of uncertainty, in particular, confidence intervals & p-values
16. Recognize the uses and limitations of subgroup analysis and how to interpret its results
17. Interpret different types of measures of association and effect, including key graphical presentations
    a. Identify the basic types of data such as categorical and continuous
    b. Recognize different types of outcome measures (surrogate vs composite endpoints measures)
    c. Recognize different measures of risk, including absolute risk increase/reduction, risk ratio/relative risk, hazard ratio, odds ratio, and number needed to treat/harm
    d. Recognize the meaning of some basic frequency measures
    e. Identify the difference between “statistical significance” and “clinical importance,” and between a lack of evidence of an effect and “evidence of no effect”
    f. Interpret the results including measures of effect (eg, Kaplan-Meier survival curves) and uncertainty
    g. Explain the importance of baseline risk of individual patients when estimating individual expected benefit
18. Identify and appraise key features of a randomized controlled trial (RCT)
19. Recognize the difference between systematic reviews, meta-analyses, & non-systematic reviews
20. Identify and critically appraise key elements of a systematic review +/- meta-analysis (SRMA)
21. Interpret presentations of the pooling of studies such as a forest plot and summary of findings table
22. Interpret the grading of the certainty in evidence and the strength of recommendations in health care using the GRADE approach
23. Identify the limitations of observational studies as treatment studies, and recognize the basics of adjustment methods and their limitations
24. Explain the use of harm and etiologies study for (rare) adverse effects of intervention

Apply

25. Explain the assessment of a literature review in patient-friendly terms [Application]

26. Engage patients in the decision-making process, using shared decision making, including explaining the evidence and integrating their preferences
27. Recognize the nature of the patient's dilemma, hopes, expectations, fears, and values and preferences
28. Recognize how decision support tools such as patient decision aids can assist in shared decision-making
29. Outline different strategies to manage uncertainty in clinical decision making in practice
30. Evaluate and interpret clinical practice guidelines

Rotation Format

A variety of instructional methods will be used, depending on the nature of the topic discussed, including case-based, didactic and observational methods.

Rotation Schedule

All sessions will take place on Zoom

Zoom link:

Password:

Day	Time	Topic	Facilitator
1 (July 12) **Intro** **Ask** **Acquire**	08:30-09:00	Pre-test	RT/KS
	09:00-12:00	Intro to EBP; clinical question; clinician's abbreviated literature search; cases	RT/KS
	13:00-16:00	Intro to RCT appraisal, how to present a journal club (JC)	KS/RT
Homework: Prepare 10-min JC for assigned RCT			
2 (July 13) **Appraise** **Apply**	09:00-12:00	RCT JC & case application	RT/KS
	13:00-16:00	Intro to SRMA appraisal	Jacky Siu
Homework: Prepare 10-min JC for assigned SRMA			
3 (July 14) **Appraise** **Apply**	09:00-12:00	SRMA JC & case application	RT/KS
	13:00-16:00	Intro to guideline appraisal; intro to non-inferiority trials	Aaron Tejani
4 (July 15) **Appraise**	09:00-12:00	Identifying bias/confounding in observational studies	Mahyar Etminan, Alt: Anish Mitra
	1300-16:00	Stats 101, Alt: Diagnostic tests	Samar Hejazi
5 (July 16) **Apply**	08:30-11:30	Diagnostic tests/clinical prediction tools or qualitative studies	TBD
	12:30-15:30	Talking to patients about evidence	Richard Slavik
	15:30-16:00	Post-test & rotation evaluation	RT

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Evaluation

Residents will be asked to complete a pre-test at the beginning of day 1 and a post-test at the end of day 5, which will be used to assess individual progress and evaluate the rotation. Residents will also be asked to complete a rotation evaluation/experience of learning questionnaire at the end of day 5.