Evidence-based practice: a practice manual

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<th>Report</th>
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<tbody>
<tr>
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Evidence-Based Practice Group South East

Compiled by Brendan Leen, Miriam Bell, Patricia McQuillan on behalf of the EBP Group South East
Evidence-Based Practice: A Practice Manual
Compiled by Brendan Leen, Miriam Bell, Patricia McQuillan
2014
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BACKGROUND

The Evidence-Based Practice (EBP) Group South East is a multidisciplinary group of healthcare professionals with a common interest in teaching and promoting the skills involved in evidence-based practice. We began working together in 2007 and two years later hosted a three-day workshop which took place in Waterford Regional Hospital in November 2009, co-facilitated by the Centre for Evidence-Based Medicine, Oxford University, and healthcare professionals from the South East and the wider healthcare community in Ireland. More than 60 nurses, midwives, physicians, surgeons, health and social care professionals and medical librarians contributed to an enormously successful and positive workshop. Afterward, EBP education continued through clinically-based EBP journal clubs and local skills workshops, and the South East Library Service launched its Clinical Queries service.

By 2011, we had identified a need to provide a simple start-up manual for other healthcare professionals interested in implementing the principles of EBP in clinical practice. Evidence-Based Practice: A Practice Manual is our response to that need. We have compiled the Practice Manual with one guiding principle in place: provide only as much information as is necessary to get you started, but enough information that the Practice Manual will be a useful resource in your clinical setting. Our aim is simply to outline the basic steps of EBP and to provide signposts where more detailed information and assistance may be obtained. Look out for the READ MORE signposts as you read through the Practice Manual.

In compiling our Practice Manual, we acknowledge the Centre for Evidence-Based Medicine, Oxford University, and the Evidence-Based Practice Workbook by Paul Glasziou,
Chris Del Mar and Janet Salisbury\textsuperscript{3} as core reference sources. We are grateful for their permission to reproduce sections of the workbook in this Practice Manual.

The Practice Manual is set out in five colour-coded chapters with each chapter corresponding to one of the five basic steps of EBP. Use the colour-coded tabs to quickly refer to the section of the Practice Manual you need.

We hope that you find the guide useful and informative and that it can help improve the quality of patient care in your ward, unit or other clinical setting.

EBP Group South East

\textsuperscript{3} Glasziou, P., Del Mar, C. and Salisbury, J., Evidence-Based Practice Workbook, 2\textsuperscript{nd} edition (Oxford: Blackwell Publishing, 2007).
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INTRODUCTION
WHAT IS EVIDENCE-BASED PRACTICE?

Many definitions exist, but one of the most commonly accepted is contained in the Sicily Statement on Evidence-Based Practice:

“Evidence-Based Practice requires that decisions about health care are based on the best available, current, valid and relevant evidence. These decisions should be made by those receiving care, informed by the tacit and explicit knowledge of those providing care, within the context of available resources. All health care professionals need to understand the principles of Evidence Based Practice (EBP), recognise it in action, implement evidence-based policies, and have a critical attitude to their own practice and to evidence. Without these skills professionals will find it difficult to provide best practice.”

READ MORE. The Sicily Statement is available in full here: http://www.biomedcentral.com/1472-6920/5/1.

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WHAT ARE THE FIVE STEPS OF EBP?

The five steps of EBP – or 5 A’s – begin and end with the patient

1. **Ask** patient-centred, focused questions about the care of individuals, communities or populations.
2. **Acquire** the best available evidence relevant to your question.
3. **Appraise** the evidence for validity and applicability to the problem at hand.
4. **Apply** the evidence by engaging in collaborative decision-making with individual patients and/or groups. Appropriate decision-making integrates the context, values and preferences of the care recipient, as well as available resources, including professional expertise.
5. **Assess** the outcomes and disseminate results.

Because the evidence-based process informs future questions and practice, it is useful to imagine it as a continuous cycle:5

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STEP 1

*Ask patient-centred, focused questions*
HOW DO I ASK WELL-FORMULATED, ANSWERABLE QUESTIONS?

Questions are often only partly formulated, which makes finding answers in the literature a challenge. Breaking down the question into its component parts and restructuring it so that it is easier to find answers is an important first step in EBP.

Most clinical questions can be divided into four components, often abbreviated as PICO:

- **Patient, Population or Problem (P):** What person or group of people are you interested in? What is the specific clinical problem that you have in mind?

- **Intervention or Indicator (I):** What is the treatment strategy, exposure or test that you want to find out about in relation to the clinical problem? This might be:
  - an intervention: a procedure, such as a drug treatment, surgery or diet
  - an indicator: exposure to an environmental hazard, a physical feature such as being overweight, or a factor that might influence a health outcome
  - an index test: a diagnostic test, such as a blood test or brain scan

- **Comparator or Control (C):** an alternative control strategy, exposure or test.

- **Outcome (O):** What are you or the patient most concerned about happening, or preventing happening?

A timeframe is often implicit in the clinical question, but it is sometimes useful to add the timeframe explicitly, giving us PICO(T):

- **Time (T):** What is the timeframe of the clinical question?
Once you have your clinical question in PICO(T) format, there are two additional facets that you should consider:

1. What type of question are you asking?
2. What type of study will best answer your question?

There are several different types of clinical question:

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>▪ how to determine whether a person has a condition or problem&lt;br&gt;▪ how to select and interpret appropriate diagnostic tests</td>
</tr>
<tr>
<td>Therapy/Intervention</td>
<td>▪ how to select interventions that will help a patient and that are worth the time and costs involved</td>
</tr>
<tr>
<td>Aetiology/Risk Factors</td>
<td>▪ how to identify the cause of a disease&lt;br&gt;▪ how to determine whether people with a given risk factor are more vulnerable to a condition or problem</td>
</tr>
<tr>
<td>Prognosis/Prediction</td>
<td>▪ how to predict a patient’s clinical course into the future&lt;br&gt;▪ how to anticipate potential complications</td>
</tr>
<tr>
<td>Frequency/Rate</td>
<td>▪ how to ascertain what percentage of the population has a condition or problem</td>
</tr>
<tr>
<td>Phenomena</td>
<td>▪ how to identify the outcomes most important to a patient or population</td>
</tr>
</tbody>
</table>

Table 1: Question Types.

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intervention: an intervention can include a wide range of activities from drug therapy or another clinical therapy to lifestyle changes such as diet or exercise. Ask yourself: what is the effect of the intervention on the clinical problem? Will the intervention help a patient with a specific clinical problem?

aetiology: the cause of a disease

prognosis: the probable course of a disease

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Different types of questions require different study designs. Once you have identified your question type, you will be better able to target the specific studies that best answer your clinical question.

In each case, a systematic review of all relevant studies is preferable to an individual study.

<table>
<thead>
<tr>
<th>Question</th>
<th>Best Study Designs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapy/Intervention</td>
<td>Randomised Controlled Trial</td>
<td>Subjects are randomly allocated to treatment or control groups and outcomes assessed.</td>
</tr>
<tr>
<td>Aetiology/Risk Factors</td>
<td>Randomised Controlled Trial</td>
<td>As aetiology questions are similar to intervention questions, the ideal study type is an RCT. However, it is usually not ethical or practical to conduct such a trial to assess harmful outcomes.</td>
</tr>
<tr>
<td>Frequency and Rate</td>
<td>Cohort Study</td>
<td>Outcomes are compared for groups with and without an exposure or risk factor: prospective study.</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Cross-Sectional Study</td>
<td>Subjects with and without an outcome of interest are compared for previous exposure or risk factor: retrospective study.</td>
</tr>
<tr>
<td></td>
<td>Cross-Sectional Study with Random or Consecutive Sample</td>
<td>Preferably an independent, blind comparison with a gold standard test.</td>
</tr>
</tbody>
</table>

Table 2: Study Designs.7

If you’re unsure what the design of any given study might be, the following table may prove helpful:\(^8\)

<table>
<thead>
<tr>
<th>Are two or more people compared?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ YES</td>
</tr>
<tr>
<td>☑ NO</td>
</tr>
</tbody>
</table>

**Comparative Studies**

Are people randomly allocated to groups?

<table>
<thead>
<tr>
<th>☑ YES</th>
<th>☑ NO</th>
</tr>
</thead>
</table>

**Descriptive Studies**

Is there more than one person in the study?

<table>
<thead>
<tr>
<th>☑ YES</th>
<th>☑ NO</th>
</tr>
</thead>
</table>

**Non-Randomised Comparative Studies**

Do researchers allocate people to groups?

<table>
<thead>
<tr>
<th>☑ YES</th>
<th>☑ NO</th>
</tr>
</thead>
</table>

Are people selected to be in groups because they have a particular treatment, exposure or test?

<table>
<thead>
<tr>
<th>☑ YES</th>
<th>☑ NO</th>
</tr>
</thead>
</table>

Are people selected because they have a disease (case)? Or don’t have it (control)?

<table>
<thead>
<tr>
<th>☑ YES</th>
<th>☑ NO</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Randomised Controlled Trial (RCT)</th>
<th>Controlled Trial</th>
<th>Cohort Study</th>
<th>Case Control Study</th>
<th>Case Series</th>
<th>Case Study</th>
</tr>
</thead>
</table>

**Table 3: Algorithm of Study Designs.**

**controlled trial:** similar to a randomised controlled trial, but participants are not randomly allocated to intervention and control groups.

**cohort study:** a study reporting observations on a group or cohort of people who have been exposed to a risk factor and comparing them with another cohort or the general population who have not been exposed. In prospective studies, a cohort is identified at a point in time and followed into the future; in retrospective studies, a cohort is defined at a point in time in the past and subsequent outcomes collated.

**case study:** a study reporting observations on a single individual.

**case control study:** a study in which two existing groups with a different outcome are compared for previous exposure or risk factor.

**case series:** a study of a group of people receiving the same treatment or with the same condition or problem; this type of study can describe the characteristics or outcomes of the group in question, but cannot infer comparisons with another group receiving a different treatment or who don’t have the condition or problem.

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\(^8\) Adapted from: Centre for Clinical Effectiveness, Southern Health, Melbourne, Australia, *Evidence-Based Answers to Clinical Questions for Busy Clinicians* (Melbourne: Centre for Clinical Effectiveness), 25.
SAMPLE INTERVENTION QUESTION

You are presented with the following clinical problem: the parents of a severely autistic 6-year-old boy are unhappy that no interventions have significantly improved his lack of social communication. They were excited to learn from the parents of another autistic child that a new treatment – the use of intravenous secretin – has resulted in a dramatic benefit for many children. Could this treatment help their child?

What is the PICO(T) of this question?
- **Patient**: autistic child, 6 years of age
- **Problem**: social communication
- **Intervention**: intravenous secretin
- **Comparator**: no treatment
- **Outcome**: improved social communication
- **Time**: N/A

What is the clinical question?
Does the use of intravenous secretin improve social communication in severely autistic children?

What is the question type?
Therapy/Intervention ☑️ Aetiology/Risk Factors ☐ Diagnosis ☐ Prognosis/Prediction ☐ Frequency/Rate ☐ Phenomena ☐

What type of study will best answer an intervention question?
A randomised controlled trial (RCT).

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SAMPLE DIAGNOSIS QUESTION

Your hospital is exploring diagnostic test options in the case of a recent H1N1 flu epidemic in your area.

**What is the PICO(T) of this question?**
- **Population:** general population;
- **Problem:** H1N1 influenza
- **Index Test:** rapid antigen test
- **Control Test:** RT-PCR test
- **Outcome:** accurate diagnosis of H1N1
- **Time:** 24 hours

**What is the clinical question?**
Is the rapid antigen test for H1N1 influenza as accurate as the standard RT-PCR test?

**What is the question type?**
Therapy/Intervention ☐ Aetiology/Risk Factors ☐ Diagnosis ☑
Prognosis/Prediction ☐ Frequency/Rate ☐ Phenomena ☐

**What type of study will best answer a diagnosis question?**
A cross-sectional study with a random consecutive sample.

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STEP 2

Acquire: collect the best evidence relevant to your question

Ask patient-centred, focused questions
Now that you have formulated an answerable question, your next step is to acquire the best quality evidence available to answer your question.

WHAT DOES BEST QUALITY EVIDENCE MEAN?

Internet search engines – e.g., Google – accumulate vast quantities of results, the majority of which will be peripheral or irrelevant to your search.

Consider the intended audience of the website. Is it a commercial website (.com) whose purpose may be to sell you something? Or alternatively an organisation (.org) whose purpose is to disseminate quality information?

Consider the objectivity of the website. Sites sponsored by a pharmaceutical company, for example, may give a specific bias to the information provided.

How accurate and reliable is the information provided? Almost anyone can publish a website, and the majority of sites are not peer reviewed or externally evaluated. Double check important facts against other sources.

How current is the information provided? Regularly updated websites are generally more reliable sources of information.

TOO MUCH INFORMATION?

For clinical questions, it’s best to search custom search engines or databases as these will get you to your answer more quickly and you can be more confident of the quality of information provided.

The Cochrane Library is a unique source of reliable and up-to-date information about the effects of interventions. Similarly, UpToDate is an evidence-based, peer-reviewed source of information with which you can quickly answer clinical questions and improve patient care. Both are available via the South East Library Service at [http://www.hselibrary.ie/southeast/](http://www.hselibrary.ie/southeast/).
A database is a collection of peer-reviewed, high-quality literature on a specific subject or set of related subjects. There are 3 main databases available via the South East Library Service at http://www.hselibrary.ie/southeast/:

- **CINAHL** is an excellent source of literature in the disciplines of nursing and allied health. Use CINAHL when you want to search for: nursing and midwifery (primary subjects); allied health and social care (other subjects).
- **MEDLINE** is the most comprehensive source of literature in the medical sciences. Use MEDLINE when you want to search for: medicine and surgery (primary subjects); nursing, midwifery, allied health, psychiatry and psychology (other subjects).
- **PsycINFO** provides extensive coverage of the literature of psychiatry, psychology and related disciplines. Use PsycINFO when you want to search for: mental health, psychiatry and psychology (primary subjects).

**READ MORE.** Visit the South East Library Service website and click on the HELP tab to view a large selection of printed user guides, helpsheets and tutorials, as well as short (3- or 4-minute) online tutorials on various resources. See especially:

- Your 10-Step Guide to MEDLINE at http://www.hselibrary.ie/southeast/download/15
- Your 10-Step Guide to PsycINFO at http://www.hselibrary.ie/southeast/download/16
- the online tutorials An Introduction to CINAHL, CINAHL Advanced Search and MEDLINE at http://www.hselibrary.ie/southeast/help/#tutorials

**peer-reviewed:** the evaluation of studies done by one or more authors by people of similar professional competence. The peer review process is intended to maintain standards of quality and provide credibility.
Within the literature, studies are often categorised according to the “Pyramid of Evidence,” with the quality of evidence strengthening as you move from the base to the apex of the pyramid.

Begin your search at the top of the pyramid with systematic reviews from the Cochrane Library. Go to http://www.hselibrary.ie/southeast and click on the Cochrane Library resource link which appears centre screen.

READ MORE. There is a user guide on some of the basics of browsing and searching the Cochrane Library available at http://www.hselibrary.ie/southeast/download/28.

Cochrane and other systematic reviews can also be found in MEDLINE. Conduct your subject search as normal and at the end apply the following search options:

“EBM Reviews” to locate systematic reviews from the Cochrane Database of Systematic Reviews
“Publication Type = Meta-Analyses” to locate meta-analyses
“Subject Subset = Systematic Reviews” to locate all systematic reviews from Cochrane and elsewhere
“Review Articles” to locate both systematic reviews and meta-analyses

READ MORE. See Your 10-Step Guide to MEDLINE at http://www.hselibrary.ie/southeast/download/15. See especially “Step 8: Search Options” to apply the various search limits above.

UpToDate is an excellent source of evidence-based guidelines and summaries. Go to http://www.hselibrary.ie/southeast and click on the UpToDate resource link centre screen. UpToDate is extremely useful as it includes synopses and interpretation of the best available evidence on almost 10,000 clinical topics. Topics are continuously reviewed and updated to ensure that the most current evidence is included.

READ MORE. Visit the South East Library Service website and click on the HELP tab. See the online tutorial UpToDate at http://www.hselibrary.ie/southeast/help/#tutorials.

To locate randomised controlled trials, conduct a MEDLINE subject search as normal and at the end apply the search option “Publication Type = Randomised Controlled Trial.”


To locate cohort studies, conduct a MEDLINE subject search and at the end combine your results with the exploded subject “Cohort Studies.” Combine with AND.


The National Institute for Health and Clinical Excellence (NICE) in Britain and the National Guideline Clearinghouse in the United States are excellent sources of clinical guidelines. Go to http://www.hselibrary.ie/southeast and click on the relevant resource link centre screen.

Contact the library to source clinical reference books relevant to your subject or go to http://www.hselibrary.ie/southeast and enter your keywords in the Ebsco Discovery search box. Select the “Catalog Only” tick-box.

READ MORE. See the user guide Ebsco Discovery Service (EDS): Search Box at http://www.hselibrary.ie/southeast/download/29.
**CLINICAL QUERIES**

The South East Library Service provides a Clinical Queries service to all HSE employees in Carlow, Kilkenny, South Tipperary, Waterford and Wexford. The service is based on the first two steps in the EBP process:

- *Ask* an answerable question
- *Acquire* the best evidence appropriate to your question

Questions may be submitted by completing an easy-to-use online form at [http://www.hselibrary.ie/southeast](http://www.hselibrary.ie/southeast). Click on the Clinical Queries tab and complete your contact details together with the details of your question. Alternatively, a request may be made by phoning (056)7784174/4259 or by emailing Clinical.Queries@hse.ie.

Once your question has been received, the library service will:

- Analyse your question into PICO(T) components
- Assign a question type: Intervention, Aetiology, Diagnosis, etc.
- Conduct a detailed subject search of the most relevant primary database: MEDLINE for medical questions; CINAHL for questions related to nursing or allied health; PsycINFO for questions related to mental health
- Conduct secondary keyword searches of other relevant resources
- Collate a selection of results and return to you with details of the search strategy used and resources searched

“This initiative is a most welcome tool now available for busy clinicians trying to arm themselves with the latest developments and evidence for quality clinical decision making.”

Professor J.F. Jackson, Waterford Regional Hospital
What is your clinical question?
Are women with asthma at increased risk of pregnancy complications?

What is the PICO(T) of this question?
- Population: pregnant women
- Indicator: asthma
- Comparator: N/A
- Outcome: pregnancy complications
- Time: gestation and – potentially – ongoing

What is the question type?
Aetiology/Risk Factors ☑

What type of study will best answer an aetiology/risk factor question?
A randomised control trial, a cohort study or a case-control study

In order to build a search strategy from your clinical question, use subject headings and synonyms to pinpoint two or three of your PICO(T) components. Combine these components to retrieve more accurate and relevant results. You wish to investigate whether women with asthma are at increased risk of pregnancy complications. Use PICO(T) to divide your search into key concepts. It is important to remember that you will seldom need to enter all four components into your search. There may be no comparator (C) or the outcome (O) may be contained in your search results.

Search for the subject heading “Asthma.” Subject headings provide a consistent way to retrieve search results where different authors may have used different terminology for the same concept. It is usually a good idea to select EXPLODE (see screenshot on p18) to retrieve results including your subject term and all of its more specific sub-headings.

Search for any synonyms or keywords associated with your subject heading: eg wheeze, shortness of breath, etc. Use

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12 This sample search is compiled using the MEDLINE database.
Step 2

Subject Searching
nouns as keywords in your search. Verbs are often ignored or discarded by search engines. Combine synonyms of your keywords with OR: *asthma OR wheezing OR shortness of breath*. The inclusion of synonyms can increase the number of relevant results by 50%.

Use the truncation symbol * to retrieve different word endings: *asthma*, *wheez*. Truncation saves you having to list all possible variants of a keyword: eg *wheez* will retrieve results including wheeze, wheezing, wheeziness, etc.

Where possible, enclose phrases with quotation marks. Quotation marks limit results to exact matches of the phrase and target more relevant information: eg *“shortness of breath”* searches for the exact phrase and not simply pages with the words shortness and breath.

Search for the subject heading “Pregnancy” and once again choose EXPLODE to include more specific sub-headings.

Search for any synonyms or keywords associated with the subject heading “Pregnancy.”

Arrange different keywords or phrases into concept groups using brackets. Many search engines interpret your question from left to right, so place the most important concept groups on the left-hand side of your sentence, followed by the next most important, etc.: (*asthma* OR *wheez* OR *“shortness of breath”* OR *breathless*) AND (pregnant OR pregnancy).

Use the SEARCH HISTORY panel to combine your searches.

Always combine searches with AND if you wish to retrieve journal articles that contain both of your keywords. Combine searches with OR to retrieve journal articles that contain either of your keywords.

In the search history below, search 1 (S1: the subject heading “Asthma”) and search 2 (S2: all of the synonyms associated with the subject heading) are combined with OR. The pooled results are listed as search 3 (S3).
### Search History

<table>
<thead>
<tr>
<th>Search Term Description</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S10:</strong> Search results are further limited to systematic reviews and meta-analyses.</td>
<td>View Results (18)</td>
</tr>
<tr>
<td><strong>S9:</strong> Search results are further limited by age group.</td>
<td>View Results (501)</td>
</tr>
<tr>
<td><strong>S8:</strong> Search results are limited by date range (2007 - present).</td>
<td>View Results (1,453)</td>
</tr>
<tr>
<td><strong>S7:</strong> Both sets of pooled results are combined with AND.</td>
<td>View Results (3,307)</td>
</tr>
<tr>
<td><strong>S6 OR S5:</strong></td>
<td>View Results (770,609)</td>
</tr>
<tr>
<td><strong>S5:</strong> The results of S4 and S5 are pooled to give S6.</td>
<td>View Results (755,791)</td>
</tr>
<tr>
<td><strong>S4 OR S5:</strong></td>
<td>View Results (893,094)</td>
</tr>
<tr>
<td><strong>S4:</strong> The results of S1 and S2 are pooled to give S3.</td>
<td>View Results (148,790)</td>
</tr>
<tr>
<td><strong>S3 OR S2:</strong></td>
<td>View Results (148,790)</td>
</tr>
<tr>
<td><strong>S1:</strong></td>
<td>View Results (102,451)</td>
</tr>
</tbody>
</table>

**Search Options:**
- Limiters: Subject Subset, Systematic Reviews, Publication Type: Meta-Analysis
- Limiters: Date of Publication: 2007/01/01-2013/12/31
  - Narrow by Subject Age: Adolescent: 19-44 years
Similarly, search 4 (S4: the subject heading “Pregnancy”) and search 5 (S5: the keywords pregnant and pregnancy) are combined with OR. The pooled results are listed as search 6.

Here, you wish to retrieve journal articles that discuss both asthma and pregnancy. Select both sets of pooled results and click SEARCH WITH AND.

Use SEARCH OPTIONS on the left-hand panel to limit your results. In search 8 - S8 on the SEARCH HISTORY graphic on page 20 - results are limited by date range: 2007 – present. In search 9 (S9), results are further limited by age group. In search 10 (S10), results are further limited to systematic reviews or meta-analyses to target studies at the apex of the pyramid of evidence.

READ MORE. Visit the South East Library Service website and click on the HELP tab to view a large selection of printed user guides, helpsheets and tutorials, as well as short (3- or 4-minute) online tutorials on various resources.
STEP 3

Appraise the evidence for validity and applicability

Ask patient-centred, focused questions

Acquire: collect the best evidence relevant to your questions

Appraise the evidence for validity and applicability
HOW DO I CRITICALLY APPRAISE THE EVIDENCE?

Now that you have acquired evidence relevant to your question, it is necessary to assess the quality, design and applicability of that evidence. Critical appraisal is the process of carefully and systematically examining research to judge its trustworthiness, its value and its relevance in a particular context.

Critical appraisal of the evidence involves three components. Ask yourself:

- What is the PICO(T) of the study and is it close enough to the PICO(T) of your clinical question?
- How well was the study done? Is the quality of the study good enough to produce results that can be used to inform clinical decisions?
- What are the results and are they applicable to your patients and your clinical setting?

WHAT IS THE PICO OF THE STUDY, AND IS IT CLOSE ENOUGH TO YOUR PICO?

A study will rarely correspond exactly to your clinical question. You must decide whether it is close enough to help answer your question: is the PICO of the study similar to the PICO of your clinical question? Consider each element of your PICO in relation to the study you have retrieved. For example, is the population in the study similar to your patient or population? What outcomes are measured in the study and do they correspond with the outcomes you are most concerned about achieving or preventing?

Once you have decided that the PICO of the study is close enough to the PICO of your clinical question, you may proceed to the next question in the critical appraisal process.

HOW WELL – OR HOW BADLY – WAS THE STUDY CONDUCTED?

The quality or internal validity of a study may be gauged by asking yourself to what extent the research methods used minimised bias or other confounding factors.

Bias may be defined as the systematic deviation of the results of a study from the truth because of the way it has been conducted, analysed or reported. Bias occurs when “systematic error is introduced into sampling or testing by selecting or encouraging one outcome or answer above others.”13 Bias can occur at any phase of a study from study design to data collection and interpretation. Some examples of bias are set out in the table on page 26.

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Bias cannot be limited to a simple question: “Is bias present or not?” Instead, you must consider the degree to which bias was prevented by proper study design and implementation. There is no perfect study. As some degree of bias is nearly always present in a published study, you must consider to what extent bias may have influenced the results of a study.

To determine how well bias and confounding factors have been avoided, each aspect of the study should be carefully scrutinised. Ask yourself:

- How were the subjects recruited?
- How were the subjects allocated to groups?
- How were the study groups maintained? Was there equal management and follow-up of subjects?
- How were outcomes measured?

**Table 4: Types of Bias**

<table>
<thead>
<tr>
<th>Bias Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection or Sampling Bias</td>
<td>Systematic differences between those selected to participate in a study and those not selected.</td>
</tr>
<tr>
<td>Allocation Bias</td>
<td>Systematic differences in the allocation of participants to intervention and control groups.</td>
</tr>
<tr>
<td>Attrition Bias</td>
<td>Participants withdrawing from a study may differ systematically between intervention and control groups.</td>
</tr>
<tr>
<td>Measurement Bias</td>
<td>Systematic differences in the measurement of an exposure or outcome between intervention and control groups.</td>
</tr>
</tbody>
</table>

READ MORE. For a more detailed analysis of bias and other confounding factors, see Hoffmann, T., Bennett, S. and Del Mar, C., *Evidence-Based Practice across the Health Professions* (Edinburgh: Churchill Livingstone, 2013).

---

14 Adapted from Hoffmann, T., Bennett, S. and Del Mar, C., *Evidence-Based Practice across the Health Professions* (Edinburgh: Churchill Livingstone, 2013), 31.
WHAT ARE THE RESULTS AND ARE THEY APPLICABLE TO MY PATIENTS AND MY CLINICAL SETTING?

When you decide that the internal validity of a study is adequate and that bias and other confounding factors have been avoided, you need to closely examine the results of the study.

Ask yourself:
- Are your patients similar enough to those in the study population that the results are applicable to your clinical setting?
- Did the intervention have a large enough effect on the clinical outcome(s) of interest that you would consider altering your practice and using the new intervention?
- What resources – human, financial, time – are needed to implement a change in clinical practice?

CRITICAL APPRAISAL CHECKLIST

On the following pages you will find sample critical appraisal guides for randomised controlled trials and systematic reviews.
### Critical Appraisal of Randomised Controlled Trials

**Preliminary Details**

**Author(s)**  
Title  
Source

Is the trial relevant to my clinical question? Yes ❑ No ❑ Can’t Tell ❑
Does the trial address a clearly focused question? Yes ❑ No ❑ Can’t Tell ❑

**Was the assignment of patients to study and control groups randomised?**

<table>
<thead>
<tr>
<th>What’s best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralised computer randomisation is the gold standard and often used in multi-centre trials. Smaller studies may use an independent person to monitor randomisation.</td>
<td>The METHODS section should describe how patients were allocated to groups and whether or not randomisation was concealed.</td>
<td>Yes ❑ No ❑ Can’t Tell ❑</td>
</tr>
</tbody>
</table>

**Were study and control groups similar at the start of the trial?**

<table>
<thead>
<tr>
<th>What’s best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>If randomisation is successful both groups should be similar. The trial should state whether differences are statistically significant: ie p-values.</td>
<td>The RESULTS section should include baseline characteristics comparing groups against a number of variables: age, risk factors, etc.</td>
<td>Yes ❑ No ❑ Can’t Tell ❑</td>
</tr>
</tbody>
</table>

**Apart from the intervention under investigation, were both groups treated equally?**

<table>
<thead>
<tr>
<th>What’s best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apart from the intervention, both groups should be treated equally.</td>
<td>Look in the METHODS section for a follow-up schedule and permitted additional treatments.</td>
<td>Yes ❑ No ❑ Can’t Tell ❑</td>
</tr>
</tbody>
</table>

**Were all patients accounted for and analysed in the groups to which they were originally allocated?**

<table>
<thead>
<tr>
<th>What’s best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Losses to follow-up should be minimal (&lt;20%). Patients should be analysed in the groups to which they were randomised: ie intention to treat analysis.</td>
<td>The RESULTS section should state how many patients were randomised and how many were included in the analysis.</td>
<td>Yes ❑ No ❑ Can’t Tell ❑</td>
</tr>
</tbody>
</table>

---

### How large is the treatment effect?

Consider a study in which 15% (0.15) of the control group and 10% (0.1) of the treatment group died after 2 years of an intervention. Results may be expressed in many ways, including: relative risk, absolute risk reduction, relative risk reduction and number needed to treat.

**Relative Risk (RR):** The risk or probability of an event in the intervention group divided by that in the control group. A relative risk of 1 means that there is no difference between the groups. A relative risk <1 indicates benefit from the intervention.

In our example, the RR = 0.1 ÷ 0.15 = 0.67. Since the RR <1 the intervention reduces the risk of death.

**Absolute Risk Reduction (ARR):** The absolute arithmetic difference between the intervention and control groups. An absolute risk reduction of 0 means that there is no difference between the groups and that the treatment had no effect.

In our example, the ARR = 0.15 – 0.1 = 0.05 or 5%. The absolute benefit of treatment is a 5% reduction in the death rate.

**Relative Risk Reduction (RRR):** The proportional reduction of an event in the treatment group compared to the control group. The easiest way to calculate relative risk reduction is to subtract the relative risk from 1. In our example, the RRR = 1 – 0.67 = 0.33.

---

Were measures objective or were participants and clinicians kept “blind” to which treatment was being received.

<table>
<thead>
<tr>
<th>What’s best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideally, the study should be double blinded: ie both patients and researchers do not know the treatment allocation. If the outcome is objective - eg death - blinding is less important; if the outcome is subjective - eg symptoms - blinding is critical.</td>
<td>Look in the METHODS section to see if there is mention of masking of treatments. The METHODS section should describe how the outcome was assessed and whether or not the researchers are aware of the patients’ treatment.</td>
<td>Yes ☑ No ☐ Can’t Tell ☐</td>
</tr>
</tbody>
</table>

How large is the treatment effect?

Results may be expressed in many ways, including: relative risk, absolute risk reduction, relative risk reduction and number needed to treat.

How large is the treatment effect?

How precise is the estimate of treatment effect?

We can gauge how close the estimate of treatment effect is to the true value by looking at confidence intervals.

What are the confidence intervals?

Are the results applicable in my clinical setting?

Are my patients similar enough to those in the study?

Is the treatment feasible/affordable?

Are the potential benefits worth the potential risks to the patient and/or costs involved in implementing a change in practice?

---

number needed to treat (NNT): the number of people that need to be treated in order to achieve an event once. An intervention with a smaller NNT is more effective. Clinical significance may be determined by considering the NNT and weighing against potential adverse effects of treatment. The number needed to treat is calculated as the inverse of ARR or 1 ÷ ARR. In our example, the NNT = 1 ÷ 0.05 = 20. It would be necessary to treat 20 people for 2 years to prevent 1 death.

confidence interval: an estimate of the range of values that will include the real value. A confidence interval of 95% means that there is a 95% chance that the real value is included in the study results.

p-values: a measure of the probability that a result is purely due to chance. A low p-value suggests that the result was not simply a chance occurrence.
## Critical Appraisal of Systematic Reviews

### Preliminary Details

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Is the review relevant to my clinical question?**

- Yes [ ]
- No [ ]
- Can't Tell [ ]

**Does the review address a clearly focused question?**

- Yes [ ]
- No [ ]
- Can't Tell [ ]

### What question - PICO(T) - did the systematic review address?

<table>
<thead>
<tr>
<th>What's best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
</table>
| The question should be clearly stated. The exposure - eg a therapy or diagnostic test - and outcomes of interest are often expressed as a simple relationship. | The title, abstract or last paragraph of the introduction should clearly state the question. | Yes [ ]
- No [ ]
- Can't Tell [ ] |

### Is it safe to say that important, relevant studies were not missed?

<table>
<thead>
<tr>
<th>What's best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
</table>
| A comprehensive search strategy should include subject searching of all relevant databases, manual searching of reference lists and contact with experts. Searches should not be limited to English language only. A combination of subject headings and keywords should be used. | The METHODS section should describe the search strategy. The RESULTS section should indicate the number of studies reviewed and excluded - with reasons for exclusion. | Yes [ ]
- No [ ]
- Can't Tell [ ] |

### Were the criteria used to select articles for inclusion appropriate?

<table>
<thead>
<tr>
<th>What's best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
</table>
| The inclusion or exclusion of studies should be clearly predefined. Eligibility criteria should be formulated on the basis of the patients, interventions and outcomes of interest. In many cases, study design will also be a key component. | The METHODS section should describe in detail inclusion and exclusion criteria. | Yes [ ]
- No [ ]
- Can't Tell [ ] |

---

### Were included studies sufficiently valid?

<table>
<thead>
<tr>
<th>What's best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The article should describe how the quality of each study was assessed using predetermined criteria appropriate to the type of clinical question: eg randomisation, blinding and completeness of follow-up.</td>
<td>The METHODS section should describe the assessment of quality and criteria used. The RESULTS section should provide information on the quality of the individual studies.</td>
<td>Yes [ ] No [ ] Can't Tell [ ]</td>
</tr>
</tbody>
</table>

### Were the results similar from study to study?

<table>
<thead>
<tr>
<th>What's best?</th>
<th>Where do I find the information?</th>
<th>In this study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideally, the results of included studies should be similar or homogenous. If heterogeneity is present, statistical significance should be estimated and possible reasons explored.</td>
<td>The RESULTS section should state whether or not the results are heterogeneous. To identify heterogeneity, you may visually assess the forest plot or perform a statistical test: the chi-squared test.</td>
<td>Yes [ ] No [ ] Can't Tell [ ]</td>
</tr>
</tbody>
</table>

### What are the results?

A systematic review provides a summary of data from a number of individual studies. If individual studies are similar, a statistical method called meta-analysis is used to combine results. The meta-analysis gives weighted values to each study according to its size. The results of individual studies should be expressed in a common way - eg relative risk, odds ratio or mean difference between groups - and are normally displayed in a figure called a forest plot.

![Forest Plot](image.png)

**How do I interpret a forest plot?**

Individual studies are represented by a square and a horizontal line. The horizontal line represents the confidence interval (CI) of the study, with a longer horizontal line indicating a wider margin of error. The black square is an estimate of the intervention effect measured against the x-axis scale at the base of the forest plot. The size of the black square corresponds to the weight of the study in the meta-analysis.

The central vertical line is the line of no effect: ie the point at which there is no difference between the intervention and the control. When the horizontal line of any individual study intersects the central vertical line, the result is not statistically significant and may be discounted.

The diamond at the base of the forest plot represents the aggregate results of all studies included in the meta-analysis. When the diamond does not intersect the line of no effect, the results are statistically significant and the benefit of the intervention may be measured against the x-axis scale at the base of the forest plot.
**STEP 4**

*Apply* the evidence through collaborative decision-making

- *Apply* the evidence through collaborative decision-making
- *Ask* patient-centred, focused questions
- *Acquire:* collect the best evidence relevant to your questions
- *Appraise* the evidence for validity and applicability
WHY IMPLEMENT EVIDENCE-BASED PRACTICE?

To achieve a measurable improvement in:

- quality of patient care
- consistency of patient care
- patient outcomes
- cost containment

EBP is the accepted standard in modern healthcare systems and increasingly recognised as a core clinical competency. Internationally, several regulatory agencies have emphasised the importance of using scientific evidence to guide clinical decisions as a means of improving patient outcomes.

To improve patient outcomes, healthcare professionals need to do more than acquire and appraise best evidence: implementing evidence into practice is also required. Implementing the evidence is a complex and active process involving individuals, teams, systems and organisations, and requires careful planning.

READ MORE. Hoffmann, T., Bennett, S. and Del Mar, C., Evidence-Based Practice across the Health Professions (Edinburgh: Churchill Livingstone, 2013).
**HOW TO FACILITATE THE IMPLEMENTATION OF EVIDENCE-BASED PRACTICE**

Several models have been developed to guide healthcare professionals in the successful implementation of evidence into practice.

<table>
<thead>
<tr>
<th>Selected Models</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Johns Hopkins Model (2005)</strong></td>
<td>A change model which progresses from identification of an EBP question to recruiting and assembling a team; from acquiring, appraising and summarising the evidence to framing practice recommendations; from implementing and evaluating change to communication of findings.</td>
</tr>
<tr>
<td><strong>Stetler Model (2001)</strong></td>
<td>A focused model in 5 phases: preparation of research evidence; validation of findings; synthesis of cumulative findings and decision on whether or not to implement a change in practice; translation and practical application of findings; and evaluation as part of routine practice.</td>
</tr>
<tr>
<td><strong>Iowa Model (2001)</strong></td>
<td>An organisational model which includes: evaluation of knowledge- and problem-focused triggers; gathering and critique of evidence; decision on whether or not a change in practice is appropriate; and evaluation of structures, processes and outcomes.</td>
</tr>
</tbody>
</table>

**Common Elements**
- identify a clinical problem
- acquire best evidence
- critically appraise the evidence
- DECISION: should a change in practice be implemented?
- plan and implement practice change
- assess outcomes and adjust practice as necessary

Table 5: Models for Implementation of EBP

17 Adapted from Schub, E., “Evidence-Based Nursing Practice: Implementing,” CINAHL Nursing Guides (Glendale, CA: CINAHL Information Systems, 2012).
Another common theme among implementation models is the challenge of realising change within the social or organisational constraints of a given clinical setting. Strategies that have been successfully applied in healthcare organisations include the involvement of EBP mentors, the use of clinical library services and journal clubs, and the provision of education and promotion through in-service training, email bulletins, newsletters, etc. Muir Gray also identifies the support of a librarian or information scientist and access to electronic resources as necessary support structures to the implementation of EBP.18

Hospital or health service administrators must agree that best evidence should at each stage inform and underpin patient care, and provide financial and other resources to support EBP, such as:

- access to ICT and adequately resourced library services for the purposes of acquiring reliable evidence
- allocation of healthcare professionals to provide in-service education sessions and mentoring programmes
- time allocated to release clinicians to work with a librarian in accumulating and synthesising the evidence and/or attend education sessions
- funding to permit all of the above points.

Strong clinical leadership is essential to encourage and sustain a culture of enquiry, collegiality and evidence-based practice.

## FACILITATORS AND BARRIERS TO THE IMPLEMENTATION OF EBP

<table>
<thead>
<tr>
<th>Identified Facilitators of the Implementation of EBP</th>
<th>Identified Barriers to the Implementation of EBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>• organisational culture which demonstrates active support for EBP</td>
<td>• absence of organisational support for EBP</td>
</tr>
<tr>
<td>• provision of EBP education for clinicians and managers</td>
<td>• knowledge deficits relating to EBP</td>
</tr>
<tr>
<td>• availability of EBP mentors</td>
<td>• absence of EBP mentors</td>
</tr>
<tr>
<td>• availability of clinical library services</td>
<td>• negative or apathetic attitude toward EBP</td>
</tr>
<tr>
<td>• presence within the organisation of EBP champions who will support clinical teams</td>
<td>• inadequate access to ICT and/or clinical library services</td>
</tr>
</tbody>
</table>

Table 6: Facilitators and Barriers to the Implementation of EBP

[READ MORE. Schub, E., “Evidence-Based Nursing Practice: Implementing,” *CINAHL Nursing Guides* (Glendale, CA: CINAHL Information Systems, 2012).]
The template on page 39 sets out a series of steps – based on the five steps of EBP – that may be used to successfully implement an evidence-based practice change. Not all of the steps are required for each change in practice.

**SAMPLE IMPLEMENTATION WORKFLOW**

**STEP 4**

**clinical audit**: a quality improvement process which measures patient care against explicitly predefined criteria and implements changes based on results; where indicated, changes are implemented at unit, hospital or system level and further monitored to confirm quality improvement.

**audit and feedback**: the process of audit and feedback is one method which may be used to demonstrate the benefit of an EBP intervention; it may be defined as "any summary of clinical performance over a specified period of time aimed at providing information to allow [healthcare professionals] assess and adjust their performance." An audit may focus on an intervention such as a drug prescription, diagnostic test or compliance with clinical guidelines; it provides necessary performance indicators on the intervention and, importantly, on patient outcomes. Ongoing audits are often required to verify that the intervention has been accepted into practice as the norm.

**READ MORE.** Flottorp, S.A. et al., *Using Audit and Feedback to Health Professionals to Improve the Quality and Safety of Health Care* (Copenhagen: World Health Organization, 2010).

## EBP Change: Implementation Checklist

<table>
<thead>
<tr>
<th>EBP Step</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask a clinical question relevant to the patient group, ward or unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divide your question into PICO(T) components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquire the best evidence from reliable sources.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critically appraise and synthesise the evidence.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECISION: Does the evidence imply a change in practice? If YES, continue. If NO, consider another</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At this point, it is anticipated that the group are working collaboratively with all relevant disciplines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess the specific area of clinical practice to get a baseline measure of current status.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree the scope of practice change to be implemented: how do you envisage the changed practice operating after a month? after 6 months? after 18 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree a simple audit plan to measure progress, assess patient outcomes and monitor compliance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree the duration of a test phase.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As part of the test phase, calculate the costs involved in the proposed change in practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree how the practice change will be communicated to all involved in implementation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide education to healthcare professionals on the rationale for the change in practice and how it will be achieved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On completion of the test phase, view the results of your audit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECISION: Do audit results imply a change in practice? If YES, continue. If NO, conclude project.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribute audit results to ward or unit colleagues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amend policies and procedures to account for the practice change.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribute email bulletins, flyers, etc., to publicise the practice change.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 7: Implementation Checklist

19 Adapted from Schub, E., “Evidence-Based Nursing Practice: Implementing,” *CINAHL Nursing Guides* (Glendale, CA: CINAHL Information Systems, 2012).
STEP 5

Assess outcomes and make changes to practice as necessary
After an evidence-based practice change has been implemented, the final step in the EBP cycle involves assessing outcomes, disseminating results and making further changes to practice as necessary or as prompted by new evidence.

Rengerink et al.: “Tools measuring EBP behaviour of healthcare professionals should assess the use of EBP steps in practice, the performance of evidence-based clinical [procedures] and/or the effect of EBP on patient outcomes.”\(^{20}\) All five steps in the EBP process should be considered as part of any assessment.\(^{21}\)


Disseminating the results of an EBP intervention may be accomplished in several ways:

- **JOURNAL ARTICLE** Publish an article in a recognised journal in a relevant discipline of the health sciences.
- **AUDIT AND FEEDBACK** Audit clinical performance and continue to adjust practice as necessary.
- **PATIENT EDUCATION** Develop accessible and engaging patient education materials.
- **CPD** Distribute educational materials: clinical guideline summaries, flyers, posters, etc.
- **PRESENTATIONS** Give formal podium or panel presentations and informal poster presentations.
- **MEETINGS** Organise group meetings and seminars.
- **“Get the message out there!”**


21 Tilson, J.K., Kaplan, S.L. and Harris, J.L., “Sicily Statement on Classification and Development of Evidence-Based Practice Learning and Assessment Tools,” BMC Medical Education, 11 (10), 78.
ASSESS YOUR OWN EBP PERFORMANCE

Self-assessment should be an integral part of the continuous cycle of EBP. The checklist below sets out some of the questions you might consider:

<table>
<thead>
<tr>
<th>EBP Self-Assessment Checklist²²</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EBP Step</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am I asking any clinical questions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am I actively locating evidence/practice gaps and articulating questions based on same?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are my questions analysed into PICO(T) components?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have I secured immediate access to best evidence via the South East Library Service?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I search the sources of best evidence in my clinical discipline?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I use subject headings, limiters and intelligent keywords when searching the main databases: CINAHL, MEDLINE and PsycINFO?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I use the Clinical Queries service?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I critically appraise the evidence?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I integrate critical appraisal measures – risk ratios, NNTs, etc. – into my own practice?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I adjust critical appraisal measures to the circumstances of my own clinical setting?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have I implemented an evidence-based practice change?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have I audited the practice change?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do I continue to assess the quality of patient care and emerging knowledge relevant to the practice change.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8: Self Assessment checklist

²² Adapted from Sackett, D.L. et al., Evidence-Based Medicine: How to Practice and Teach EBM (Edinburgh: Churchill Livingstone, 2000).
CONCLUSION

“A journey of a thousand miles begins with a single step.”

Lao Tse, ancient Chinese philosopher (604BC - 531BC)

The diagram below – an illustration of the five completed steps in the EBP cycle – is only that: a diagram. On its own, it doesn't accomplish anything and this Practice Manual will not accomplish anything unless you put it into practice. EBP needs to be implemented and the systematic approach described here will help you to identify evidence/practice gaps and implement changes in your clinical setting that result in improved patient outcomes. Look around your clinical setting. Have a word with colleagues. Give them a copy of this Practice Manual. Is there a specific area of your clinical practice that could be improved? Could you assemble an EBP team?

Take the first step.
REFERENCES


Tilson, J.K., Kaplan, S.L. and Harris, J.L. “Sicily Statement on Classification and Development of Evidence-Based Practice Learning and Assessment Tools.” *BMC Medical Education*, 11 (10), 2011.
