Evidence Based Practice - A Definition

- Evidence-based practice (EBP) “defines care that integrates best scientific evidence with clinical expertise, knowledge of pathophysiology, knowledge of psychosocial issues, and decision making preferences of patients”.
- Evidence can include research, integrative reviews, practice guidelines, quality improvement data, and case studies.

Barriers to Evidence Based Practice

- Time and resource limitations
- Technological limitations (knowledge, skills, tools)
- Individual and team attitudes and practice patterns
- Organizational constraints

Facilitators of Evidence Based Practice

- Information and training
- System supports and implementation infrastructure
- Time to critically appraise studies and implement findings
- Shared vision and mission
- Support and encouragement
- Organizational culture that focuses on outcomes and measurement of performance improvements

Evidence Based Practice - Steps in the Process

- Problem Identification: Converting information needs into a searchable and answerable question
- Evidence Search: Finding, with maximum efficiency, the best evidence with which to answer the question
- Critique: Determining the merit, feasibility and utility of evidence
- Synthesis: Combining findings from all evidence to make a practice recommendation
- Implementation: Incorporating the recommendation into a clinical setting or organization
- Evaluation: Determining the effectiveness of the practice change over time

Formulating the Question

Essential Components of a Question: PICO

- Patient or situation being addressed
- Intervention (or interest area)
- Comparison intervention or comparison group
- Outcome(s) of interest

Question Templates: PICO

- **Therapy:** In ______, what is the effect of ______ on _____ compared with _____?
- **Etiology:** Are ______ who have ______ at risk for ____ compared with ______ without ______? 
- **Diagnosis/Diagnostic Test:** Is ____ more accurate in diagnosing ____ compared with ____?
- **Prevention:** For ______ does the use of ______ reduce the future risk of ______ compared with ______? 
- **Prognosis:** Does ____ influence _____ in patients who have ____?
- **Meaning:** How do ____________ experiencing/diagnosed with ____ perceive ____?


Examination of a clinical situation from different vantage points may help to identify knowledge gaps.

**Prevention:** questions about screening and prevention methods to reduce the risk of disease or complications:

- At what intervals should patients at highest for treatment-induced osteoporosis undergo screening with DEXA scan?

**Diagnosis:** questions about the selection and interpretation of diagnostic tests/assessments.

- How does the cost-effectiveness of serial DEXA scan compare with a biochemical marker of bone turnover when evaluating patients at high risk for treatment induced osteoporosis?

**Outcomes:** questions about the anticipated clinical outcome or the selection of treatments for a specific outcome.

- Does a program that combines weight-bearing exercise with muscle strengthening improve bone density (as measured by T scores at femur and humerus) in men with prostate cancer receiving androgen ablation therapy?
- Are preventive use of bisphosphonates (weekly alendronate versus annual zoledronic acid) effective (considering short and longer term efficacy, cost, convenience, and side effects) in preventing treatment induced osteoporosis in allogeneic stem cell transplant recipients?

**Education:** questions about the best teaching strategies for colleagues, patients or family members.

- What is the most effective teaching strategy (standard education versus tailored education) to educate patients about their individual risk for treatment-induced osteoporosis and appropriate self management strategies such as bisphosphonate adherence, calcium supplementation, exercise and falls prevention?
- What level of knowledge do registered nurses practicing full time in oncology possess regarding the prevention, early detection and management of treatment-induced osteoporosis?
Finding and Appraising Literature

- Systematic reviews
- Meta-analyses
- Primary studies
- Consensus guidelines

Critically Appraising Clinical Guidelines

- Why was this guideline developed?
- What is the composition (expertise and disciplinary perspective) of the panel who developed the guideline?
- What entity provided financial sponsorship?
- What decision making process was used in developing the guideline?
- What clinical question was the guideline developed to address?
- How was the evidence used in the guideline gathered and evaluated?
- Were gaps in the evidence explicitly identified?
- How explicitly is the evidence linked to the recommendations in the guideline?
- If lower levels of evidence are incorporated (e.g., expert opinion) how explicitly is this stated, and are the reasons for the inclusion of expert opinion, the line of reasoning and the strength of extrapolation from other data clearly identified?
- How are patient preferences incorporated into the guideline?
- Is cost-effectiveness considered?
- What is the mechanism and interval for updating of the guideline?

Keeping Abreast of New Knowledge

- E-Contents (e-mailed table of contents for key journals)
- Evidence based journals
  - Evidence Based Medicine
  - Evidence Based Nursing
  - World Views on Evidence Based Nursing
- Computer database searching
  - Master combine and limit
- Internet searching-Google Scholar
- System for cataloguing your search results
- Make the librarian your best friend!

A Systematic Approach to Finding Evidence

- Have a clearly defined topic (What specific question is being asked? What specific clinical problem is to be solved?).
- Review all existing agency policies/procedures for current practice standards.
- Determine if the recommended practice is being implemented.
- Check for external standards/policies on the topic (Are there existing clinical practice guidelines on the topic?).
- Find any systematic or integrative reviews on the topic or meta-analyses.
- Search primary research literature using one of the computerized bibliographic databases.

Selected Electronic Resources for Evidence Based Practice

- Agency for Healthcare Research and Quality (AHRQ) http://www.ahrq.gov/
- Oncology Nursing Society (ONS) Evidence Based Practice Resource Center http://onsopcontent.ons.org/toolkits/ebp/index.htm
- Cochrane Library http://www.cochrane.org/cochrane-library/about
- National Cancer Institute http://cancernet.nci.nih.gov/
- MD Consult  www.mdconsult.com
- EMBASE (European biomedical and pharmaceutical data base): http://www.embase.com
- Turning Research into Practice (TRIP) Database http://www.tripdatabase.com
- Evidence Based Medicine Toolkit: http://www.med.ualberta.ca/ebm/ebm.htm
- Joanna Briggs Institute for Evidence Based Practice: http://www.joannabriggs.edu.au/about/home.php

Critical Appraisal

- Goal is to evaluate the scientific merit and potential clinical applicability of each study’s findings, or of a group of studies, to determine what findings have a strong enough basis to be used in clinical practice.
- Scientific merit- design, measurement, sample, data collection procedures, data analyses
- Balanced, respectful- If contradictory evidence exists, consider the full scope of the controversy.
- Critical appraisal is like any other skill we learn it through practice and through dialogue with others.
- Journal club and colleague discussions are ideal ways to develop skills in critical appraisal.
Critical Appraisal- Gauging The Applicability of the Evidence to Your Patient Population

- Problem studied: Does study address the current clinical problem/concern for your project?
- Study setting: Similar or different from your clinical setting?
- Number & type of patients/study subjects: Similar or different from your clinical setting?
- Effects of intervention on patient outcomes: Any doubt that intervention (independent variable) led to outcomes?
- Issues of measurement reliability addressed sufficiently (reliability: if measurement was repeated on same patients, under same conditions, would same results occur?)
- Issues of measurement validity addressed sufficiently (validity: degree to which tools selected actually measure what they are intended to measure)?
- Conclusions of study are based on statistically significant findings?
- Results of comparable studies similar? Conflicting?
- Your interest in using the intervention in clinical practice? Why or why not?

Table of Evidence

- Tool to organize, synthesize, and present your findings
- Development of table of evidence may also help you read more systematically
- Table of evidence highlights what is known, where are the gaps, and gives direction to application of evidence in clinical practice

Example of Table of Evidence: Advanced Practice Nurse (APN) Interventions and Outcomes

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Study Design, Sample, Setting</th>
<th>APN Description</th>
<th>APN Intervention Provided</th>
<th>Outcome Variables Measured</th>
<th>Selected Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown et al., 1994</td>
<td>Randomized controlled trial (RCT), designed to evaluate early hospital discharge and home follow-up of women having unplanned cesarean births, subjects randomized for early discharge with CNS follow-up or standard control group care with no follow-up, data collected from delivery to eight weeks post-partum, urban university teaching hospital</td>
<td>Clinical Nurse Specialist</td>
<td>Transitional homecare services such as comprehensive discharge planning, instruction and counseling, daily “on-call” availability, home visit activities such as physical examination of mother and baby, assessment of wound healing, sleeping patterns, emotional status, coping ability to perform child care, home environment and confirmation of follow-up appointments, telephone contact</td>
<td>Maternal and infant length of stay (LOS), satisfaction with care, re-hospitalizations, acute care visits, anxiety and depression, functional status, costs (re-hospitalization, acute care visits)</td>
<td>Earlier D/C group sent home a mean of 30.3 hours sooner than control. Significantly greater satisfaction with care. More timely infant immunizations. No statistically significant differences in maternal or neonatal re-hospitalization or acute care visits, no differences between groups in maternal affect or functional status. Nurse-specialist transitional care is safe, feasible and cost-effective for both women undergoing unplanned C-section and their infants.</td>
</tr>
</tbody>
</table>

Levels of Evidence

- **Research Based Evidence**
  - Meta-analysis of multiple controlled clinical trials
  - Experimental studies such as well controlled randomized clinical trials
  - Systematic reviews of all types of research
  - Multiple non-experimental studies, including descriptive, correlational, and qualitative research
  - Published evidence-based practice guidelines, for example, those developed by professional organizations

- **Non-Research Based Evidence**
  - Case studies
  - Program evaluation, quality improvement data, or case reports
  - Opinions of experts-standards of practice, practice guidelines

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Example of Table of Evidence: Fatigue Interventions

<table>
<thead>
<tr>
<th>Title, Author, Year</th>
<th>“Just go with the flow: A qualitative study of fatigue in biotherapy”, Porock &amp; Juenger, 2004</th>
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</table>

Study Design, Sample, and Setting

Patients with either malignant melanomas or renal cell carcinoma (N=11) who were undergoing or had completed biotherapy or biochemotherapy for their cancer. Ages ranged from 30 to 82 years, and the sample comprised eight men and three women. Six of seven participants were on treatment. The sample were receiving biotherapy only and three were receiving combination biochemotherapy.

Study Aims and Research Questions

Purpose of the study was to (1) describe and explore the experience of fatigue in patients undergoing biotherapy, and (2) to identify the informational needs of these patients.

Example of Table of Evidence: Fatigue Interventions-Energy Conservation and Activity Management

<table>
<thead>
<tr>
<th>Title, Author, Year</th>
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Characteristics of the Intervention

ECAM intervention is a multidimensional intervention consisting of information provision to form an accurate representation of fatigue, guidance in formulating and implementing a plan for energy conservation and activity management, and support in reappraising the effectiveness of symptom management efforts. The intervention includes completing a journal to monitor fatigue, sleep, rest, activity, and other symptoms, listing and prioritizing usual activities, and creating a tailored energy conservation plan. Intervention delivered by nurse counselors in three telephone sessions of 15-30 minutes in length.

Sample Characteristics

- 30 adults (ages 18-65), 85% were female, and most were Caucasian. Multiple disease sites although 71% of the participants had breast cancer. All participants were initiating treatment with initial chemotherapy (47%), radiotherapy (44%) or concurrent chemoradiotherapy (9%).

- Patients undergoing HSCT and those with anemia or depression during previous three weeks were excluded.

Example of Table of Evidence: Fatigue Interventions-Conservation and Activity Management

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Example of Table of Evidence: Fatigue Interventions-Qualitative Studies

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Purpose of the study was to (1) describe and explore the experience of fatigue in patients undergoing biotherapy, and (2) to identify the informational needs of these patients.
Examples of Synthesis Products
- Protocol
- Practice Standard
- Policy and Procedure
- Guidelines
- Patient/Family Education
- Integrated Review
- Publication/Presentation

Implementation and Evaluation
- **Implementation**: Incorporating the recommendation into a clinical setting or organization
  - How might you incorporate this information into your clinical practice and more broadly into your practice setting?
- **Evaluation**: Determining the effectiveness of the practice change over time
  - What kinds of outcome measures would you use?

Key Pad Question
- Armed with the knowledge that it takes an average of 17 years to move research findings into practice, which of the following represents an opportunity to apply EBP principles to improve patient outcomes?
  - After caring for a patient receiving chemotherapy who develops a DVT complicated by pulmonary embolus, you read two systematic reviews, and based on what you learn begin implementing preventive actions in your daily practice with patients who are at highest risk for this complication.
  - You contribute with others to developing a poster presentation sharing information your team has learned in caring for patients receiving EGFR inhibitors who experience cutaneous toxicities.
  - You contribute your opinion to the development of a practice or policy change on your unit.
  - You regularly read Oncology Nursing Forum and Clinical Journal of Oncology Nursing, and when you see a paper that is highly relevant to your patient population you post a copy of the article on the staff bulletin board.

Key Pad Question
- Based on the results of a recent study, your team implements a patient controlled analgesia (PCA) protocol for all adult patients undergoing hemicolectomy for colorectal cancer. Which of the following represent outcomes that may occur (and could be measured) as a result of this evidence-based practice change?
  - Length of stay
  - Postoperative complications such as pneumonia, falls, ileus
  - Functional status at the time of discharge
  - Satisfaction with care

Improving Patient Outcomes Through Evidence Based Practice: FATIGUE DURING AND FOLLOWING CANCER AND ITS TREATMENT

**Problem Identification:**
- You are caring for several patients in your practice who have developed fatigue:
  - Some report fatigue at the time of diagnosis
  - Others report fatigue while receiving treatment with chemotherapy, radiation therapy, or biotherapy
  - Some completed treatment more than a year ago, but still tell you that they are fatigued
Key Pad Question

Which of the following is the best example of a question answerable with research evidence:

- Why are each of these patients fatigued during and following treatment?
- What questions should be asked when assessing someone for fatigue?
- What anticipatory guidance concerning fatigue should I provide to my patient as they begin cancer treatment?
- What interventions are effective in managing fatigue during and following cancer treatment?

Examples of Answerable Questions

- What are the risk factors for the development of fatigue during and following cancer treatment?
- What are the signs and symptoms of fatigue?
- What is the optimal approach to evaluating patients who report fatigue?
- What are the best approaches to preventing, limiting and treating fatigue during and following cancer and its treatment?

Putting Evidence Into Practice: Improving Oncology Patient Outcomes

A Systematic Examination of the Evidence Base for Fatigue Interventions

Team Members:
- Susan Beck, APRN, PhD, AOCN®, FAAN (Researcher)
- Linda Hood, RN, MSN, AOCN®
- Sandra Mitchell, CRNP, MSnC, AOCN® (Team Leader)
- Katen Moore, MSN, APRN, AOCN®
- Krista Rowe, RN, BSN, OCN®
- Ellen Tanner, RN, BSN, OCN®

Fatigue- Definition

Fatigue is defined as a persistent and subjective sense of tiredness that interferes with usual functioning.

ICD-10 Criteria for Cancer-Related Fatigue

Six (or more) of the following symptoms have been present every day or nearly every day during the same two-week period in the past month, and at least one of the symptoms is (A1) significant fatigue:

A1. Significant fatigue, diminished energy, or increased need to rest, disproportionate to any recent change in activity level
A2. Complaints of generalised weakness or limb heaviness
A3. Complained of confusion or disorientation
A4. Decreased motivation or interest to engage in usual activities
A5. Diminished or dampened
A6. Experience of sleep as unsatisfying or non-restorative
A7. Perceived need for rest or to engage in non-strenuous activity
A8. Marked emotional reactivity (e.g., sadness, frustration, irritability) to feeling fatigued
A9. Difficulty in completing phisical activities attributed to feeling fatigued
A10. Perseverative problems with short-term memory
A11. Post-exertional malaise lasting several hours

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning
C. There is evidence from the history, physical examination, or laboratory findings that the symptoms are a consequence of cancer or cancer therapy
D. The symptoms are not primarily a consequence of comorbid psychiatric disorders such as major depression, somatoform disorder, somatisation disorder, or delirium

Intervention

An intervention is defined as a set of actions with a coherent objective to bring about a change or produce identifiable outcomes. These actions may include single strategy actions, or multi-component programs as well as policy, regulatory initiatives.


Our Question:
What interventions are effective in managing fatigue during and following cancer treatment?

Evidence Search:
- Categorize all fatigue interventions identified in the literature
- Develop definitions for all fatigue intervention categories

Fatigue Interventions Identified in the Literature

- Exercise
- Pharmacotherapy
- Methods to elevate hemoglobin
- Energy conservation and activity management
- Psychoeducational interventions
- Diet nutrition
- Complementary/integrative techniques
- Attentional restoration

Develop criteria for what evidence to include and what evidence to exclude:

- English language
- Report was an empirical study of a pharmacologic or non-pharmacologic intervention for fatigue
- Fatigue was:
  - a dependent variable, and
  - measured using either an instrument designed to measure the construct or measured using a fatigue subscale of a quality of life or other instrument, and
  - scores on the fatigue measure or the fatigue subscale were reported

Systematic Literature Searches to Identify Empirical Studies

- Database searches, internet, journals, textbooks
- Repeat literature searches using more specific search terms
- ONS Informationist
- Guidelines, meta-analyses, integrated reviews, randomized controlled trials, uncontrolled trials, case series, case reports, expert opinion

Pediatric and adult oncology patients
- Anywhere in the post-diagnosis trajectory, including active treatment (surgical oncology, medical oncology, biotherapy, radiotherapy), active treatment follow-up and end of life.
- Where available, meta-analyses were reviewed and the evidence summarized.
- Only those papers published within the year prior to publication of the meta-analysis, and those published after the meta-analysis was in print, were selected for review.
Develop table of evidence to organize and summarize the evidence:

- Characteristics of the intervention (including delivery method, dose)
- Sample characteristics (N, age, gender, race, ethnicity, disease and treatment characteristics, phase of treatment [active, long term follow-up, end of life])
- Setting (inpatient, outpatient, community, number of sites)
- Study design

Schema for Evidence Rating Levels of Evidence

<table>
<thead>
<tr>
<th>Evidence Rating</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Meta-analysis or systematic reviews of multiple well designed, randomized controlled clinical trials.</td>
<td></td>
</tr>
<tr>
<td>2. Well-controlled, randomized clinical trials with adequate size</td>
<td></td>
</tr>
<tr>
<td>3. Well-designed trial without randomization (single group, pre-post, cohort, time series studies).</td>
<td></td>
</tr>
<tr>
<td>4. Well-conducted systematic review of non-experimental design studies.</td>
<td></td>
</tr>
<tr>
<td>5. Well-conducted case-control study.</td>
<td></td>
</tr>
<tr>
<td>6. Poorly controlled (flawed randomized studies) or uncontrolled studies (correlational descriptive studies).</td>
<td></td>
</tr>
<tr>
<td>7. Conflicting evidence or meta-analysis showing a trend that did not reach significance, National Institutes of Health Consensus Report, Published practice guidelines for example by professional organizations, health care organizations or federal agencies.</td>
<td></td>
</tr>
<tr>
<td>8. Case studies, opinions of expert authorities, agencies or committees.</td>
<td></td>
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Schema for Judging the Likelihood that Interventions Will Produce Beneficial Outcomes for Patients

- Beneficial
- Likely to be beneficial
- Trade off between benefits and harms
- Unknown effectiveness
- Unlikely to be beneficial

Schema for Assessing the Collective Weight of the Evidence

A Judgment About the Likelihood that Interventions Will Produce Beneficial Outcomes for Patients

- Recommended for practice
- Likely to be beneficial
- Benefits balanced with harms
- Effectiveness not yet established
- Least effective
- Not recommended for practice
Returning to the case of Lisa who has just completed 6 courses of cisplatin/etoposide chemotherapy for ovarian cancer, which of the following interventions would be most appropriate to consider for this patient, based on the level of evidential support, given her persistent fatigue 2 months after completing therapy?

- Exercise
- Paroxetine
- Correction of anemia
- Energy conservation and activity management

Studies of the use of education and information provision for the management of fatigue showed:
- Educational interventions have a limited role in supporting positive coping in patients with fatigue.
- Educational interventions for fatigue are most effective in younger patients
- Although educational interventions were evaluated positively, few patients actually applied what they learned in managing fatigue in their daily life
- Educational interventions are effective in managing fatigue during radiation or chemotherapy treatment.

Which of the following statements applies to energy conservation and activity management (ECAM) for cancer fatigue?
- A group of expert nurse researchers reports that ECAM is effective
- ECAM is an intervention approach where patients are encouraged to spend most of their day in bed or resting in a chair to conserve energy
- ECAM was shown to be an effective intervention for fatigue in a multi-site randomized clinical trial
- ECAM has been found to be an effective intervention for fatigue in patients at the end of life.

Which of the following statements applies to massage and healing touch for fatigue?
- It has been supported by both a meta-analysis and a systematic review.
- It is similar to relaxation
- Evidence regarding massage and healing touch for fatigue suggests it is likely to be effective.
- It is commonly classified as a psychoeducational technique.
Acknowledging A Team Effort

Fatigue Intervention Team Members:
Susan Beck, APRN, PhD, AOCN®, FAAN (Researcher)
Linda Hood, RN, MSN, AOCN®
Sandra Mitchell, CRNP, MSiN, AOCN® (Team Leader)
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Ellen Tanner, RN, BSN, OCN®

ONS Staff:
Linda Eaton, RN, MSN, AACN
Kelly Strohmeier, Staff, ONS Office
Gail Mallory, PhD, RN, CNAA
Mark Vrabel, MLS, AHIP

Leaders and researchers for nausea vomiting, prevention of infection and sleep outcomes project teams

We need your valuable input