Evidence-Based Practice during Clinical Placement: Impact of the Fresno Test

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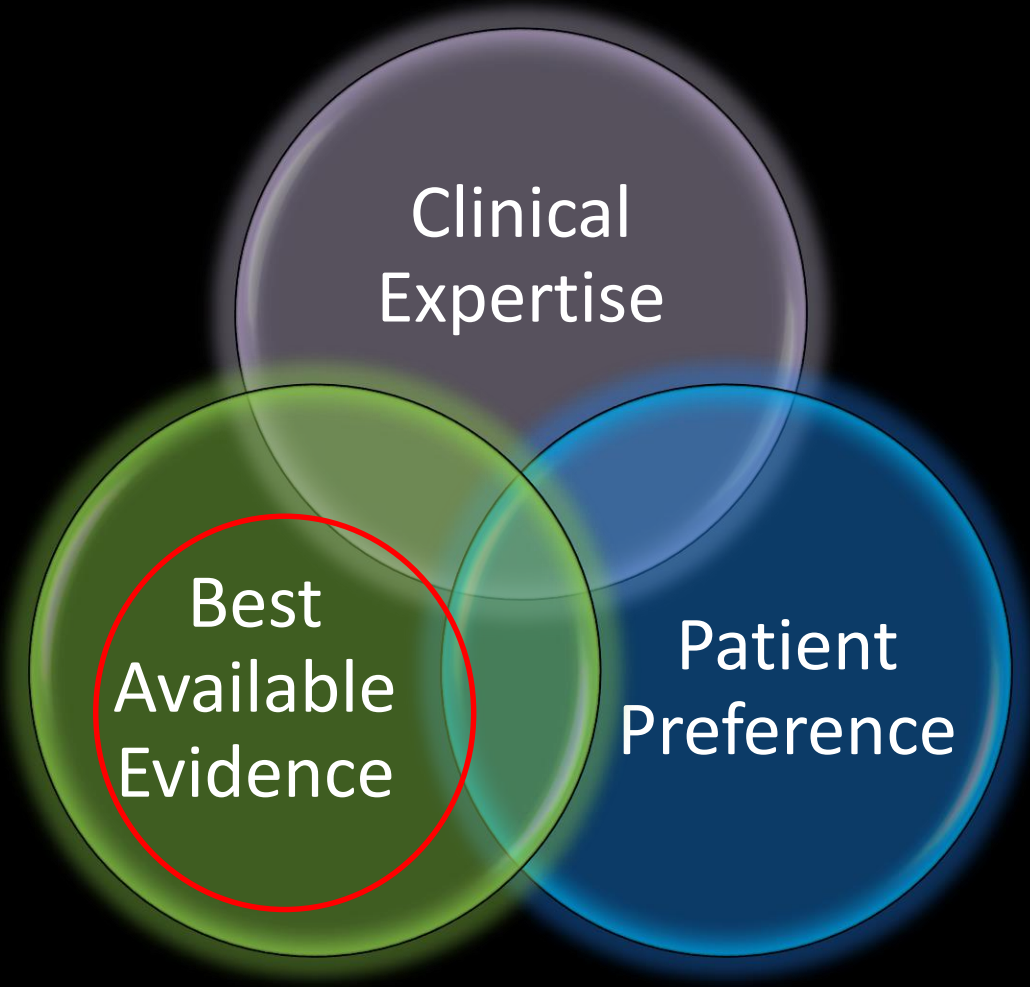
Clinical
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Debate

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Sicily statement on evidence-based practice

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Abstract

Background: A variety of definitions of evidence-based practice (EBP) exist. However, definitions are in themselves insufficient to explain the underlying processes of EBP and to differentiate between

Assessment on placement

- 2012/3
- 3rd year Undergraduate students on their first non-observational placement (N=58)
- Submit CR form and quote BAE
- Marked by 2 authors and compared

CLINICAL REASONING FORM

Student name:

Clinical Education number:

PATIENT SUMMARY

Age	HPC and relevant PMHx / SHx

PART A. SUBJECTIVE EXAMINATION

1. After reviewing the patient's chart, or at the end of the subjective examination, complete the table below (refer to clinical reasoning form guidelines):

Symptom *(as reported by patient/nurse etc)*	**Differential diagnosis**	**How this can be confirmed or discounted**

2. Were your findings after the subjective assessment as expected? Explain.

3. List the factors that may be contributing to the patient's condition (e.g psychosocial, cognitive, co-morbidities, yellow flags….)

Contributing Factor	**Reason for your answer**

PART C. EVIDENCE-BASED TREATMENT PLANNING AND GOAL SETTING

1. Justify your management plan for this patient using best-available evidence

Please see http://www.cebm.net/mod_product/design/files/CEBM-Levels-of-Evidence-2.1.pdf

Treatment	Best available evidence	Classification (BPG, SR, RCT etc)

Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
How common is the problem?	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
Is this diagnostic or monitoring test accurate? (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
Does this intervention help? (Treatment Benefits)	Systematic review of randomized trials or *n*-of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, *n*-of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials or *n*-of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomized trials	Randomized trial	Non -randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

*** Level may be graded down on the basis of study quality, imprecision, indirectness (study PICO does not match questions PICO), because of inconsistency between studies, or because the absolute effect size is very small; Level may be graded up if there is a large or very large effect size.**

**** As always, a systematic review is generally better than an individual study.**

How to cite the Levels of Evidence Table

OCEBM Levels of Evidence Working Group*. "The Oxford 2011 Levels of Evidence".

Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=5653

** OCEBM Table of Evidence Working Group = Jeremy Howick, Iain Chalmers (James Lind Library), Paul Glasziou, Trish Greenhalgh, Carl Heneghan, Alessandro Liberati, Ivan Moschetti, Bob Phillips, Hazel Thornton, Olive Goddard and Mary Hodgkinson*

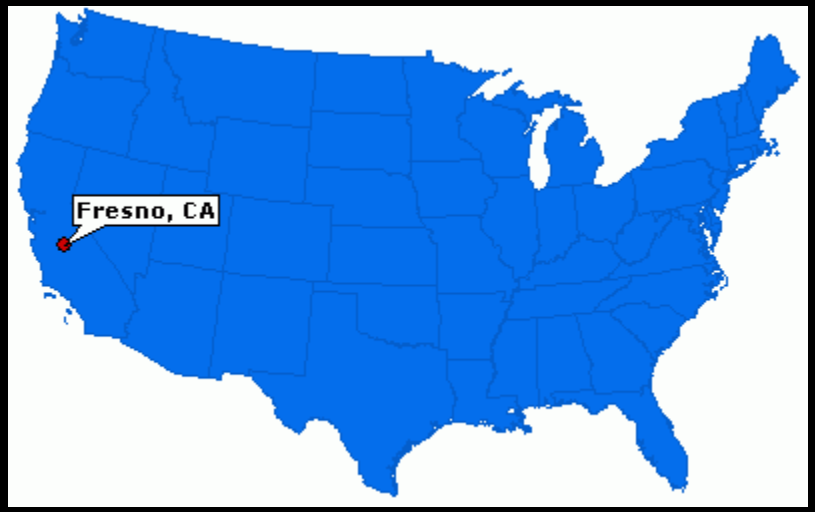
29% (n=58)

- 1 hour literature searching librarian stage 1
- 1 hour literature searching librarian stage 2
- 1 hour lecture on hierarchy of evidence and study design stage 1


FIRE USE
LAMP

2 hours discipline-specific literature searching

2 hours of Small Group work on medical statistics


Fresno, CA


UCI Medical Center
UNIVERSITY OF CALIFORNIA, IRVINE

Validation of the Fresno test of competence in evidence based medicine

Kathleen D Ramos, Sean Schafer, Susan M Tracz

Abstract

Objective To describe the development and validation of a test of knowledge and skills in evidence based medicine.

Design Cross sectional study.

Setting Family practice residency programme in California; a list server for those who teach evidence based medicine; and an evidence based medicine seminar series.

Participants Family practice residents and faculty members (n=43); volunteers self identified as experts in evidence based medicine (n=53); family practice teachers (19) beginning a seminar series on evidence based medicine.

Intervention The Fresno test is a performance based measure for use in medical education that assesses a wide range of evidence based medicine skills. Open ended questions are scored with standardised grading rubrics. Calculation skills are assessed by fill in the blank questions.

Main outcome measures Inter-rater reliability, internal reliability, item analyses, and construct validity.

Results Inter-rater correlations ranged from 0.76 to 0.98 for individual items. Cronbach's α was 0.88. Item difficulties ranged from moderate to difficult, all with positive and strong ability to discriminate between candidates. Experts scored consistently higher than novices. On the 212 point test, the novice mean was 95.6 and the expert mean was 147.5 ($P< 0.001$). On individual items, a higher proportion of experts than novices earned passing scores on 15 of the 17 items.

Conclusion The Fresno test is a reliable and valid test for detecting the effect of instruction in evidence based medicine. Its use in other settings requires further exploration.

Introduction

Medical educators need valid methods to assess instruction in evidence based medicine.[1] Existing tests assess subjective outcomes, such as attitude and self reported skill,[2] or only a single skill, such as critical appraisal.[3] The Fresno test of evidence based medicine was designed to assess the effectiveness of a comprehensive evidence based medicine curriculum in the University of California, San Francisco's Fresno family practice residency programme. The curriculum emphasises the process described by Sackett et al[4] with additional attention to the applicability or relevance of other recent discussions to your patient population.[5 6] The Fresno test assesses performance of each component of evidence based practice, rather than relying on self report. We describe the development, reliability, and validity of the test.

Methods

Description of test

The Fresno test begins with the presentation of two scenarios that suggest clinical uncertainty. Short answer questions about the clinical scenarios require the candidate to formulate a focused question, identify the most appropriate research design for answering the question, show knowledge of electronic database searching, identify issues important for determining the relevance and validity of a given research article, and discuss the magnitude and importance of research findings. These questions are scored by using a standardised grading system. A series of calculations and fill in the blank questions follow. The full questionnaire is available on bmj.com.

Development of test

We wrote open ended test questions to reflect objectives of our course on evidence based medicine, beginning with formulation of a clinical question and continuing through critical appraisal of an article. Unlike multiple choice or true-false questions, the open ended questions require examinees to show higher order thinking in response to an authentic task.[7] The test concludes with calculations and fill in the blank questions that assess ability to apply some of the principles discussed in the short answer questions. We also developed scoring criteria based on predicted responses and our expert opinion about the elements of an ideal answer. To establish the face validity of the test, we distributed early drafts and grading rubrics to teachers of evidence based medicine. We removed controversial elements and adopted others in response to their suggestions.

We published the test on the world wide web and linked it to a database to store responses. Fresno University family practice residents and faculty members (n=43) took the test before formal instruction in evidence based medicine. In addition, 53 self identified experts, recruited through an email list server for evidence based medicine teachers, volunteered to take the test. No further measures of this

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BMJ 2008;336:319–21

P+ *The test and further details of the validation process are available on bmj.com*

Fresno Test

- 1 hour SAQ
- Downloadable from full-text paper in BMJ 2003, 326, 319-321
- Comes with answers and grading rubric
- Advisable to request permission

Tilson *BMC Medical Education* 2010, **10**:38
http://www.biomedcentral.com/1472-6920/10/38

BMC Medical Education

RESEARCH ARTICLE Open Access

Validation of the modified Fresno Test: assessing physical therapists' evidence based practice knowledge and skills

Julie K Tilson

Abstract

Background: Health care educators need valid and reliable tools to assess evidence based practice (EBP) knowledge and skills. Such instruments have yet to be developed for use among physical therapists. The Fresno Test (FT) has been validated only among general practitioners and occupational therapists and does not assess integration of research evidence with patient perspectives and clinical expertise. The purpose of this study was to develop and validate a modified FT to assess EBP knowledge and skills relevant to physical therapist (PT) practice.

Methods: The FT was modified to include PT-specific content and two new questions to assess integration of patient perspectives and clinical expertise with research evidence. An expert panel reviewed the test for content validity. A cross-sectional cohort representing three training levels (EBP-novice students, EBP-trained students, EBP-expert faculty) completed the test. Two blinded raters, not involved in test development, independently scored each test. Construct validity was assessed through analysis of variance for linear trends among known groups. Inter and intra-rater reliability, internal consistency, item discrimination index, item total correlation, and difficulty were analyzed.

Results: Among 108 participants (31 EBP-novice students, 50 EBP-trained students, and 27 EBP-expert faculty), there was a statistically significant ($p < 0.0001$) difference in total score corresponding to training level. Total score reliability and psychometric properties of items modified for discipline-specific content were excellent [inter-rater (ICC (2,1)] = 0.91); intra-rater (ICC (2,1)] = 0.95, 0.96)]. Cronbach's α was 0.78. Of the two new items, only one had strong psychometric properties.

Conclusions: The 13-item modified FT presented here is a valid, reliable assessment of physical therapists' EBP knowledge and skills. One new item assesses integration of patient perspective as part of the EBP model. Educators

FRESNO

- Designed to assess EBP skills
- Recommended for inclusion in Healthcare Professional Curricula in Sicily Statement on EBP 2005
- Originated in Medicine. (2003)
- Modified and adapted for Physiotherapists (Tilson) and other AHPs Mc Cluskey et al 2009, Lizarondo et al 2014
- Has content validity, interrater reliability for all questions and excellent internal consistency.

MODIFIED FRESNO TEST

- Consists of 13 questions.
- Formulate a focused clinical question.
- Identify the most appropriate research design to answer the specific question.
- Show knowledge of electronic database searching
- Identify the important issues for determining reliability and validity of a research paper
- Discuss the magnitude and importance of research findings.
- Integrates patient perspective and clinical expertise

Methodology

- Audit 2012/13 – BAE to support practice on clinical placement
- Intervention 2016 – 4 hrs EBP Skills teaching + Fresno Test
- Audit 2016/17 – BAE to support practice on clinical placement

Fresno Test in UCD BSc Physiotherapy

- Introduced in 2016
- 2 hours of clinically-oriented discipline-specific literature searching in Computer Laboratory
- 2 hours of Small Group work on medical statistics

82% N=47

Chi square p<.0001

Summary

- 4 hours of EBP skills + Fresno Test introduced 2016 UCD BSc Physiotherapy prior to clinical placement.

- Excellent carry-over to clinical placement