The NES Numeracy Benchmarking Project

Royal College of Nursing
Joint Education Forums’ International Education Conference
Thistle Hotel Glasgow
11 -13 June 2009
Background

Nursing numeracy manifestly matters: to patients, to nurses themselves, to their employers, to the public and to nurse educators (Coben 2008)

...........Yet there remains no consensus with regard to the level or assessment of this critical area of nursing.

This is the case nationally in the UK and globally.
How can a benchmark assessment support students and teachers?

Students in nursing must be:
• prepared effectively
• supported most effectively by their lecturers and;
• employable

Variation in outcome measures for numeracy mean students learn to succeed by numbers, playing 'dot to dot' but may struggle to see a whole picture.
Working with Numbers

If students, lecturers, practitioners and employers are allowed to know what numeracy to expect of registrants at the end of nursing programmes - the whole picture is clear to see.

Lecturers can facilitate working with numbers to help students to gain the skills to meet their knowledge needs as well as to achieve the final outcome.
Benchmark assessment study aims

To determine the numeracy skills needed for successful calculation of medicine dosages in clinical practice and the valid assessment of these

1. Development of an evidence-based benchmark of skills required for medicines calculation

2. Comparison of assessment mechanisms for validity and reality
Study Outline

• Pilot study in England – sample frame of 50 students from 1 University, of which up to 20 will complete full assessment

• Main study in Scotland - sample frame of 500 students from 6 Universities, of which up to 100 will undertake full assessment

Today’s presentation will discuss pilot outcomes and the potential implications of preliminary findings
The pilot study

• 50 English student nurses at beginning of 3rd year undertook a computer based numeracy assessment including 28 medication calculation task activities

• 9 students undertook a further computer assessment and also a practical activity

• 9 Students were asked to evaluate both methods of assessment for authenticity and ease of use
Main Study

• 54 students from across 6 Universities in Scotland participated in the main study and completed the practical and the computer analysis

• Students also evaluate the usefulness and reality of the packages appraised

• Full analysis is ongoing and will report in September 2009
The computer activity
The computer activity
**SECTION 2: HOW CLOSELY THE ASSESSMENT TASKS REPRESENT MEDICATION DOSAGE AND IVI CALCULATION REQUIREMENTS IN CLINICAL PRACTICE.**

2a: The assessment tasks represent an accurate method for measuring the medication dosage calculation requirements experienced in clinical practice.

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2b: The assessment tasks represent an accurate method for measuring the IVI calculation requirements experienced in clinical practice.

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2c: The time taken to interpret, calculate and complete the medication dosage and IVI calculation problems in the assessment is representative of the time taken in clinical practice.

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Please make any additional comments here:

Additional Comments:
Pilot Findings

• A high level of congruence (81% mean) was identified between the participants responses in the computer and practice - but sample very small

• Issues noted in both the pilot study and observed in the main study, relating to the technical measurement of medicines – this has changed thinking about numeric competence and associated thinking around what competence might mean
Summary of Pilot Data Results

Congruence Between Authentic Computer Assessment & Simulated Practice Assessment (mean 81%)

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<th>Maximum Congruence</th>
<th>Mean Congruence</th>
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<td>Tablets &amp; Capsules</td>
<td>89%</td>
<td>100%</td>
<td>98%</td>
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<td>Liquid Medicines</td>
<td>44%</td>
<td>89%</td>
<td>74%</td>
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<td>Injections</td>
<td>56%</td>
<td>89%</td>
<td>73%</td>
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<td>IV Infusions</td>
<td>67%</td>
<td>100%</td>
<td>80%</td>
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CONCEPTUAL COMPETENCE
Possession of an accurate schemata for interpreting a medication dosage problem & accurately setting up a dosage and/or rate calculation equation using an appropriate methodology.

ARITHMETICAL OPERATION & COMPUTATION COMPETENCE
Possession & application of appropriate arithmetical operation and computation schemata for calculating an accurate numerical value for the dose or rate to be administered.

TECHNICAL MEASUREMENT COMPETENCE
Possession of an accurate schemata for selecting an appropriate measurement & administration vehicle & for accurately & safely measuring the dose or rate to be administered.
Next Steps

• Data Analysis is ongoing on main study and results should be with NES by the end of July

• A new web page for the project will be launched in September, directly linked to the NES web pages

• This will allow other Educators to use the exemplar benchmark assessment for comparison in assessing programmes and methods of assessment and to comment and add to current knowledge
What about the benchmark?
The final content and level of any benchmark for the profession must be agreed by the profession itself. However, this project evaluated the use of 2 assessment techniques using parameters of level, depth and breadth identified by experts in the field, it also used authentic clinically based problems from practice. Evaluation of the exemplar by the profession via the new website will refine and confirm assessment methods and content and thus establish and further validate a benchmark for the future.