

Integrating *Outcomes Data Collection* with *Best Practice Guidelines* at the Point of Care



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Why is this Study Important?

- It is a challenge for nurses to regularly access information that is current and reliable.
- Information technology can help promote safe, high quality care and enhance the continuity of care through improved communication, provision of support and making knowledge more accessible (Bates and Gawande, 2003).
- The PDA can provide the opportunity to access current information at the moment the nurse meets the patient/client (Lewis and Sommers, 2003).

- MOHLTC is moving toward collection of nursing-sensitive outcomes data
- Outcomes collected as part of routine care and documented in health record
- Outcomes information available to nurses in real-time
- Seamless across the continuum of health care

High Quality Learning Environments

- Discovery of New Knowledge
- Sharing of Knowledge
- Accountability for Outcomes of Care

Uptake of Evidence Into Practice

Evidence

- Research
- Clinical experience
- Patient preferences

Context

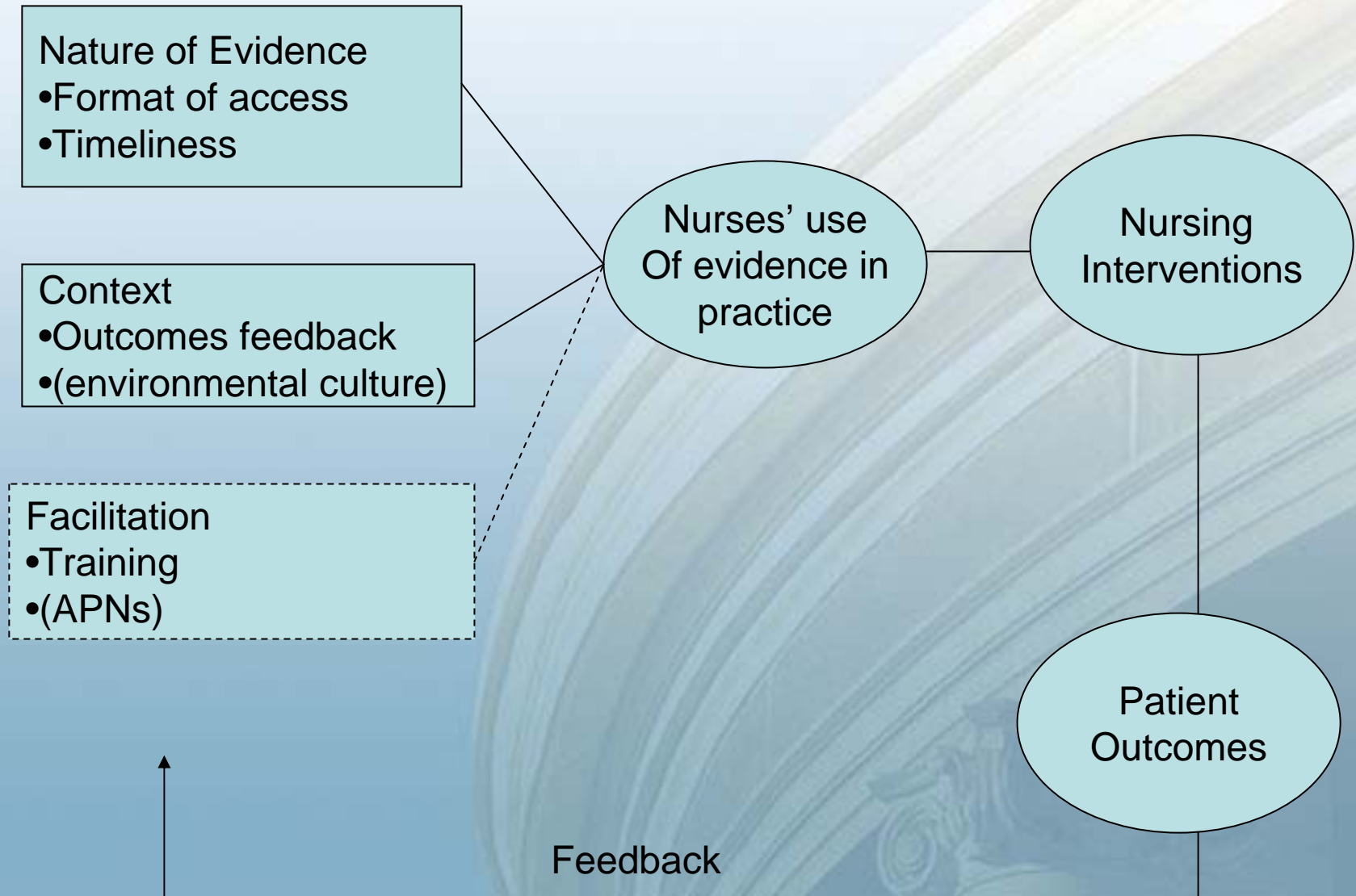
- Culture
- Leadership
- Measurement

Facilitation

- Characteristics
- Role
- Style

(Kitson et al. 1998)

Study Framework



- Guideline implementation strategies that provide patient specific advice automatically at the point of care are more likely to be effective (Elkin, Peleg, Lacson, Bernstam, Tu et al., 2000)
- New, relevant and useful findings may reach general practice more efficiently through computerized guidelines than printed articles, manuals or books (Morris, 2000)

Integration of Patient-Specific Information



- Computerized guidelines which are explicit, detailed and patient data driven, can simultaneously achieve standardization of clinical decision making and individualization of patient therapy
- Important feature with growing popularity of the “patient centred” care delivery model
- Avoidance of ‘cookbook’ care, which guidelines were once accused of promoting

Purpose of the Study

- To evaluate the feasibility of using PDAs to increase nurses' access to and utilization of electronically-accessible *best-practice information at the point of care*
- To evaluate the usability of handheld computers or Personal Digital Assistants (PDAs) for nurses collecting, utilizing and communicating *patient outcome information about nursing-sensitive outcomes*

Objectives

- To identify the type of information that nurses would like to access electronically to improve decision-making
- To identify patient/client information, in addition to the selected nursing-sensitive outcomes, that nurses would like to collect using a PDA
- To develop and pilot test a prototype information gathering and dissemination system for nurses
- To evaluate the effectiveness of providing nurses with real-time feedback about patient outcome achievement on utilization of evidence and patient outcome achievement

Setting and participants

Toronto, Ontario, Canada
population 4,682,897 (2001 census)

4 units at 2 tertiary care hospitals: focus of
this paper

2 community nursing agencies

35 nurses, mean age 38.7; 24 – 57, sd 10.4

91.4% female; 77.1% rotate shifts;

13.6 years in nursing; 0.2-32.0, sd 10.7

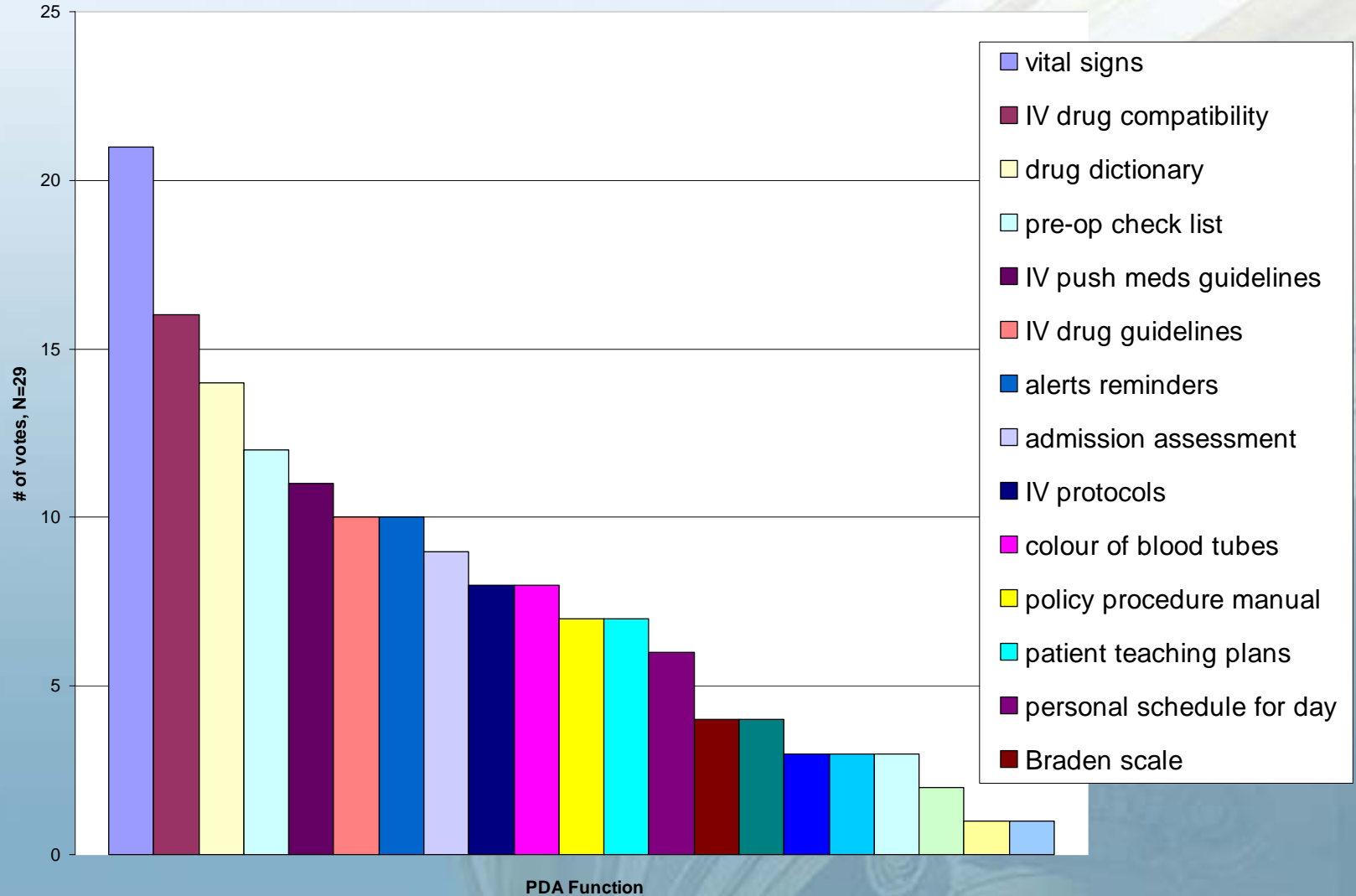
5.2 years on unit; 0.1-18.0; sd 4.7

6.1% had previous experience with a PDA, used
less than weekly

Methods

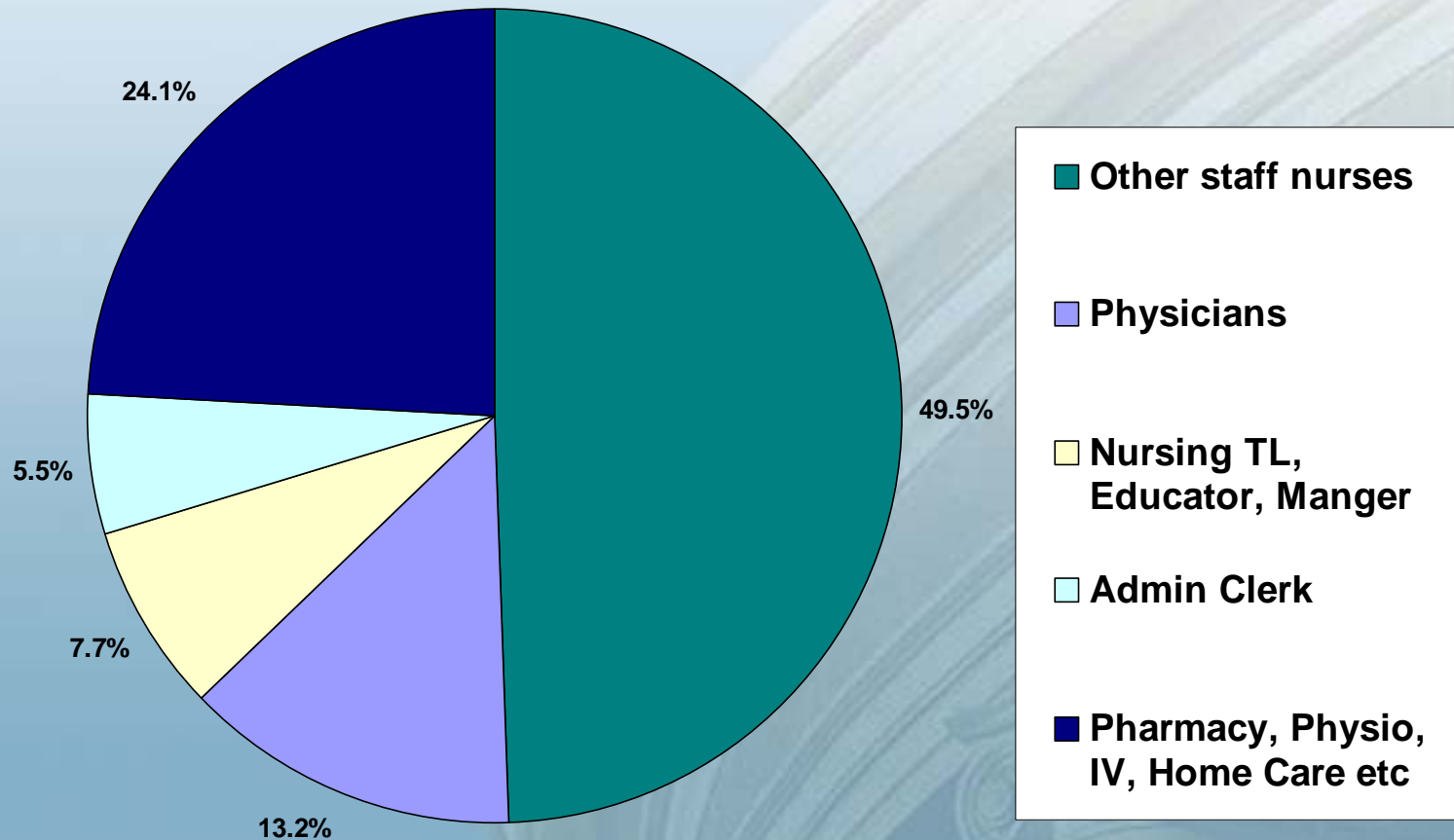
- Group interviews: transcription, thematic analysis
- Work Sampling re information flow
- Prototype Development
- Field Test, Evaluate

Resources Nurses Want at Point-of-Care



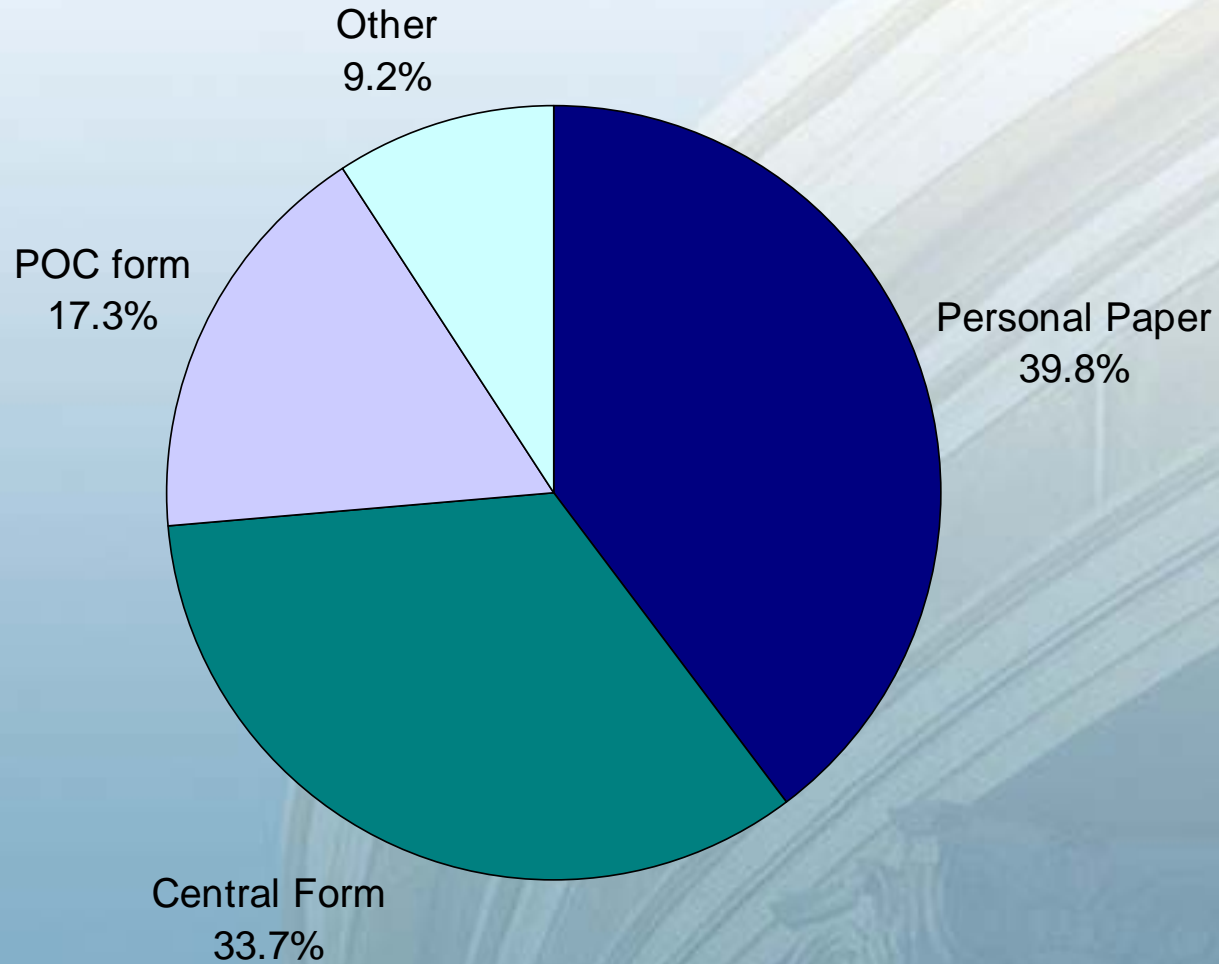
Results: Work Sampling

195 information transfer episodes, 18.5 hours, 10 nurses
Oral communication with colleagues (91 episodes)



Results: Work Sampling

Written Information (98 episodes)



Reviewed feasibility, created list of options, multivoting by nurses. Each nurse had 5 votes on paper ballot whose categories were developed from focus group input.

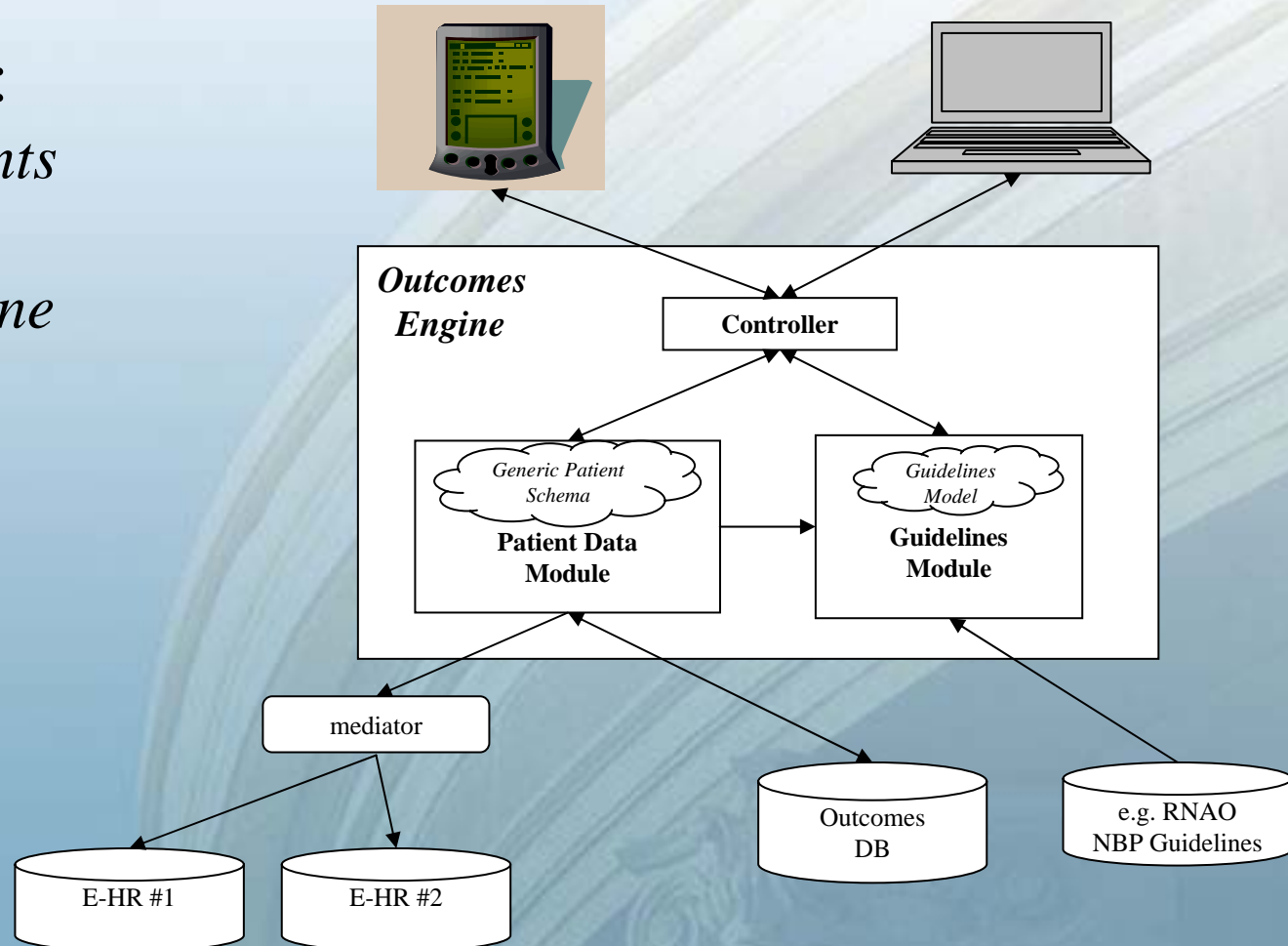
Decision:

- Drug handbook, including IV compatibility; chosen in consultation with site pharmacists
- Nursing sensitive outcomes
- RNAO best-practice guidelines
- Vital Signs module

Prototype System

- Network-based:
 - *PDA's are clients*
 - *Nursing Outcomes Engine is server*

- Java based



Outcomes Assessment Tool

- Functional status
- Symptoms: pain, nausea, dyspnea, fatigue
- Falls
- Pressure ulcers
- Therapeutic Self-Care

Nursing Best Practice Guidelines

- Developed by the Registered Nurses Association of Ontario
- Level and strength of evidence (meta-analysis or systematic review > expert opinion)
- 25 Guidelines available, 5 under development; 8 in French
- e.g. Assessment and Management of Pain, Nursing care of Dyspnea; Establishing Therapeutic Environments
- Paper and pdf format

Knowledge Management strategy: integrate in prototype to provide just the right amount of information, tailored to patient situation.

Guidelines interpreted in GLIF are represented as semantic networks (flowcharts) with four interrelated steps that can be used in any sequence

- Patient State
- Decision Step
- Action Step
- Branch Step

Do These Steps Apply to Nursing?

It is anticipated that nursing guidelines will translate easily into the GLIF format because nursing guidelines often incorporate patient states as a basis for recommendations.

- A patient in pain
- A patient at risk of developing pressure ulcer

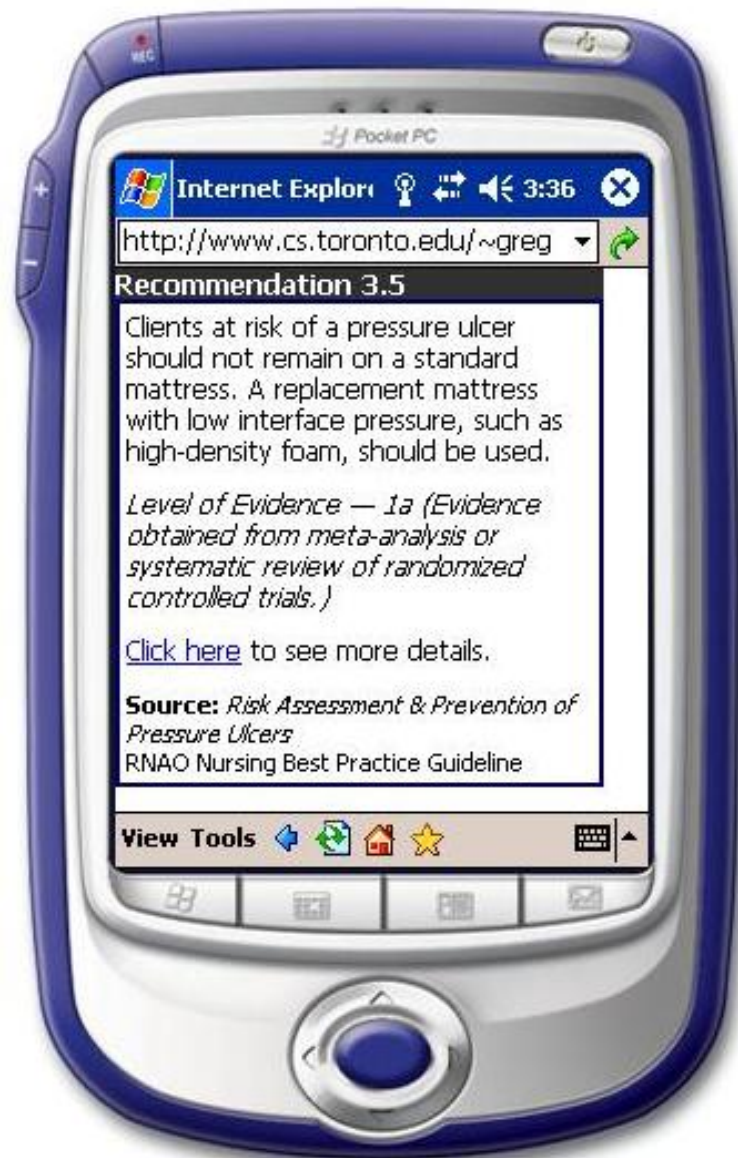
Braden Scale, Entering Data



Braden Scale, Scoring



Link to Practice Guidelines



Future: provide link to abstracts of review articles, option to specify journals

Introduction of Case-Based Reasoning

- Goal: Utilize past experience/cases to facilitate decision making.
- Case: A piece of knowledge representing an experience, and typically comprising **problem** and **solution** parts.

The **problem** part contains attributes which define the problem to be solved.

The **solution** part contains attributes which describe the solution to the problem.

Application of CBR in our project

Goal: Utilize experience knowledge of similar patients to facilitate a health-care related decision making process performed by nurses at the point of care.

Application of CBR in our project

1. **Discovery:** Discovering cases of *specific* patients who are *most like* current patient in terms of Age, Gender, Diagnosis, Co-Morbidity, etc. as a foundation of further analysis.
2. **Benchmark:** Measuring and comparing progress/symptom of similar patients against input patient to facilitate decision making.
3. **Perception:** Predicting patient progress and patterns of change in symptom experience based on historical data of similar patients.

Prototype Testing

Findings

- Hardware
- Software
- Network and system
- Learning and support needs

Next Steps

- ① Refine prototype, integrate feedback functionality
- ② Assess impact of the prototype on nurses' clinical reasoning, utilization of outcomes information and resources on care giving decisions; use actors as simulated patients to control variability
- ③ Usability evaluation
- ④ RCT



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