Using Simulation to Assess Nurse Competence

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Measuring Competency with Simulation Phase II

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Measuring Competency with Simulation Phase II

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Hinton, J. E., DeFalco, N. & Miller, K., employees of SCC: AZBN, Nursing Performance Evaluation

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Objective

Explore efficacy of simulation tests for board decision support and remediation
Background

- BONs need an independent and accurate assessment of a nurse’s competence

- During Phase I of “Measuring Competency with Simulation” our team developed a 41 item assessment tool and simulation process that resulted in a reliable and valid measure of nursing competence
Phase II focused on defining the relationship of competency to educational achievement, years of experience, experience with simulation, practice area, level of practice, nursing certification, supervisor assessment and self-assessment.
Phase II Method

- Currently employed RNs (N = 67) volunteered to be tested in three acute care simulation scenarios
- All 201 tests were video-recorded
- Nursing experts (N = 31) were trained to use the assessment tool to rate competence
- Each video was independently rated by three experts
- Consensus ratings were used to create a Nursing Performance Profile (NPP) for each nurse tested
Phase II Participants

- 9% males, 91% females
- Average age 49 (SD = 12)
- Experience ranged from 2 – 45 years
  - 77% had 10+ years
- Education ranged from Associate to Doctoral degree
  - 16% ADN, 37% BSN, 40% MSN, 6% DNP/PhD
- Experience with simulation varied
  - 31% None, 47% Occasional, 22% Frequent
Phase II Raters

* 10% males, 90% females
* Average age 52 (SD = 9)
* Experience ranged from 3 – 55 years
  * 93% had 10+ years
* Education: 29% BSN, 45% MSN, 23% DNP/PhD
* Experience with simulation varied
  * 23% None, 42% Occasional, 36% Frequent
Phase II Results 1

* **Education:** Nurses with BSN or MSN degrees had significantly better NPP than those with ADN degrees.
  * Groups effect in 3 x 9 ANOVA, $F(2,186) = 4.64, p = .01$

* **Sim Experience:** Nurses with frequent simulation experience had significantly better NPP than those with no or occasional simulation experience.
  * Groups effect in 3 x 9 ANOVA, $F(2,189) = 8.97, p < .001$
Phase II Conclusion 1

* Simulation experience was more clearly predictive of competence than years of experience in nursing, experience in advanced practice, or advanced education/certification

* 4 factors explain this finding
Phase II Results 2

* **Supervisor**: 19 participants provided supervisor assessment data. Nurses with a supervisor rating of 90% or higher had significantly better NPP than those with low or no supervisor assessment.

* Groups effect in $2 \times 9$ ANOVA, $F(1,199) = 5.04$, $p = .03$

* **Self**: 61 participants provided self-assessment data. Nurses with a self-rating of 90% or higher did not have significantly better NPP than those with low or no self assessment ($p > .05$).
Phase II Conclusion 2

* Nurses who were highly regarded by supervisors were highly competent in simulation testing
  * Supervisor assessments were not available for nurses who were less competent
* Self evaluation was unrelated to competency in simulation testing
Conflicting information prompted the Board to order a Nursing Performance Evaluation on 7 nurses—Here are the results of 2 representative cases

A Tale of 2 Cases

ARIZONA STATE BOARD OF NURSING
Joey Ridenour, Executive Director
Nurse A

* Nurse on probation pending completion of documentation course—asked BON to terminate probation because nurse could not find work
  * Documentation course (completed)
  * 12 months supervised practice (unable to complete)
Nurse A

Investigative Information

- Probation for
  - Medication errors
  - Documentation errors
    - Transcription errors
    - Failing to document assessments
  - Failing to assess
  - Terminated from 2 facilities
Nurse A
Simulation Performance

- Multiple errors relating to medication administration
  - Left a medication on the MAR that pt. was allergic to
  - Reported IV fluid incorrectly to oncoming nurse
  - Administered twice medication dose ordered
Multiple errors related to assessment

- Failure to assess affected limb and respiratory distress
- Did not re-check blood glucose after treating for hypoglycemia
- Reported lab value inaccurately to physician
Nurse A
Simulation Performance

- Multiple errors related to documentation
- Physician telephone order written with a dose different from prescribed
- Inadequate documentation of assessment
- Did not include time and signature on all entries
- Recorded medication doses different from doses administered
Nurse A Simulation Performance

* Other errors related to safety and communication
  * Did not do appropriate patient teaching
  * Did not use 2 patient identifiers
  * Lack of hand hygiene
Nurse B

* Reported for sub-standard care
* Denies all allegations—admits only to documentation errors
* Completed documentation class
Nurse B
Investigative Information

- Multiple instances of sub-standard care
- Failed to document administration of controlled substances
- Failed to obtain ordered CT for bowel obstruction in timely manner—Critical thinking
- Failure to assess groin catheter site post cardiac cath
- Discontinued heparin drip inappropriately—medication error
- Numerous other practice incidents in other settings
Nurse B
Simulation Performance

Assessment
- No initial pulse check, cap refill, or sensory check on post-op fractured extremity

Critical Thinking
- Did not request blood glucose on pt. treated for hypoglycemia
- Failed to note presence of physician orders
- Did not provide food to hypoglycemic pt. c/o hunger
- Lack of timely intervention on pt. with hypoxia.

Procedural
- Did not position ortho pt. correctly
**Nurse B**

**Simulation Performance**

**Communication errors**
- Inaccurate teaching
- Lack of conflict resolution

**Medication errors**
- Administered 3x ordered dose of medication
- Failed to resume IV infusion after administration of medications

**Documentation errors**
- Physician’s name wrong
- Wrong dose documented
- Inaccurate time time reported

**Safety**
- Did not read orders back to physician
- Did not identify client prior to medication administration
- Hand hygiene deficits
THE NPE EXAM REFLECTS A NURSE’S HABITS—YOU CANNOT HIDE HABITS!

.....So, how do you change habits?
Simulation: Competence & Remediation
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Simulation: Competence & Remediation
Memory systems and their anatomical loci.
(Modified from Squire and Knowlton, 1994)
Simulation: Competence & Remediation

SKILLS DECAY

& REACQUISITION
CPR requires ~50 separate psychomotor skills performed in a specific sequence (Flint et al., 1993)

Number of CPR re-certifications was a better predictor of performance than days trained prior to testing (Anderson, 2008)
Discussion

- It is unlikely the contribution of simulation experience to competence was solely due to familiarity with the testing modality.

- Findings suggested that simulation experience supported continued competence for nurses more fully than other conventional methods.

- The NPP used in conjunction with high-fidelity simulation showed promise for identifying unsafe nursing practice in a controlled environment that did not put patients at risk.
Limitations

- This project did not distinguish between simulation experience that occurred during formal education to obtain an RN or APRN license versus that which occurred during workplace settings for orientation, credentialing, or certification.

- Nor did this project assess what forms or amount of simulation experience best support continued competence.
Conclusions

* Nurses of substantially different levels of competence will volunteer for opportunities for high-fidelity simulation testing

* There is potential for simulation testing to further the science of assessing and promoting nursing competence
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References


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