Debriefing with Team Deliberate Practice: Maximising Delivery and Optimising Participant Learning in Simulation Based Education.

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International Nursing Association for Clinical Simulation & Learning is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation.
DISCLOSURES

Conflict of Interest

• Alan Platt (Associate Professor, Northumbria University) reports no conflict of interest
• Dr Peter McMeekin (Associate Professor, Northumbria University) reports no conflict of interest
• Dr Linda Prescott-Clements, (Lead Assessment and Intervention Adviser, NHSLA) reports no conflict of interest
• Julia Greenawalt (INACSL Conference Administrator & Nurse Planner) reports no conflict of interest
• Leann Horsley (INACSL Lead Nurse Planner) reports no conflict of interest

Successful Completion

• Attend 100% of session
• Complete online evaluation
LEARNING OUTCOMES

Upon completion of this educational activity, participants will be able to:

1. Discuss Debriefing with Team Deliberate Practice as an instructional design in simulation-based education
2. Describe the research methodology and data analysis techniques used in the study
3. Debate the results of the study and their application to both simulation practice and nurse education
NORTHUMBRIA UNIVERSITY, UNITED KINGDOM

- Leading provider
  - 36,000 students
  - 3,000 staff
- 3 campuses (2 in Newcastle, 1 in London)
- Faculty of Health and Life Sciences
  - Largest of 4 Faculties
  - 8,200 Healthcare students
Nursing & Midwifery Council

Up to 300 hours of simulated practice to support direct care in the practice setting. (NMC 2007)

NURSING CURRICULUM (ENGLAND)

SIMULATION?

Practice component 2300 hrs

Theoretical component 2300

3 years (4600 hrs)

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INTEGRATION INTO CURRICULUM

Year 3 facilitator / role player
High fidelity scenarios

Year 2 coach / mentor
Coached simulated scenarios

Year 1 Modelling (Instructor / demonstrator)
Focus on skills development
CHALLENGES

Logistics:
• Student numbers
• Resources
  • Staff
  • Facilities
• Curricula
  • Time
  • Scheduling

Evidence:
• Theoretical
  • Application of DP
    • Individual
    • Effect over time
• Research
  • Naturalistic settings (Labs)
  • Volunteers
  • Small scale
• Learning curves
DELIBERATE PRACTICE

Framework:
- Well defined goals
  - Appropriate level/challenge
- Motivated to improve
- Provided with feedback
- Opportunities for repetition

“Individual expert performance”

(Ericsson 2004)
DELIBERATE PRACTICE?

Team DP

Athletic Insight
Volume 5, Number 2

The road to excellence: deliberate practice and the development of expertise

Deliberate Practice: A Case Study of Elite Handball Team Training

On 'Deliberate Practice' and the Role of Coaching Expertise

The Deliberate Practice in Sports Science

Team DP
TEAM DP - PROMOTES

Situational awareness:

“up-to-date understanding of the world around them”
(Endsley 2006 pg. 633).

Deliberate Practice Using Simulation Improves Neonatal Resuscitation Performance

Taylor Sawyer, DO, MEd;
Agnes Storaci-Contrada, MD;
Dabrisa Chao, PharmD;
Benjamin Berg, MD;
Mike Lasky, MS;
Mark Thompson, MD.

Introduction: Simulation will soon become the standard method of training in the Neonatal Resuscitation Program (NRP). Deliberate practice (DP) using simulation has been shown to improve performance in other areas of medicine. The objective of this study was to evaluate the effectiveness of DP using simulation on improving NRP performance.

Methods: Using a pretest-posttest design, 15 teams of 2 residents participated in a series of 2 NRP simulations followed by 2 facilitated debriefings. Objective measures of NRP performance and time to complete critical tasks were evaluated on the first (pretest) and the third (posttest) simulations by blinded video review using a validated scoring instrument.

Results: Improvements were seen in scoring for overall NRP performance (pretest 81.5% vs. posttest 92.5%, mean difference 10%), intubation (pretest 10% vs. posttest 15%, mean difference 5%), ventilation (pretest 73.3% vs. posttest 95%, mean difference 21.7%), and positive-pressure ventilation (pretest 0% vs. posttest 9%, mean difference 9%). Time to the consultant increased by over 1 minute from baseline (pretest 40.4 seconds vs. posttest 34.2 seconds, mean difference 6.2 seconds [95% CI, −1.1 to 0.9]; F = 0.047) for the time to first IV medication (pretest 45.2 seconds vs. posttest 38.7 seconds, mean difference 6.5 seconds [95% CI, −12.4 to −3.6]; F = 0.013).

Conclusions: Our results suggest that DP using simulation is associated with improvements in NRP performance and support the use of DP using simulation in NRP training.

Keywords: Neonatal resuscitation, Deliberate practice, Simulation, Positive pressure ventilation, Evaluational facilitation.

Mastery Learning of Advanced Cardiac Life Support Skills by Internal Medicine Residents Using Simulation Technology and Deliberate Practice

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TEAM DELIBERATE PRACTICE

Individual Deliberate Practice

Team

Post graduate

Under graduate

DP
BRUNSWICKIAN THEORY

Probabilistic functionalism
Representative design

“…situations that represent the range and distribution of situations and cues in their natural environment.”

(Nadler et al 2011)
BRUNSWIKIAN THEORY

Representative design
- Fidelity
- Realistic
- Research

Probabilistic functionalism
- Decision making
- Individual
- Environment cues

Team
- Effective communication
- Shared information
- Collective quality outcomes
THE STUDY
RESEARCH AIM

To investigate the effect of debriefing with team DP within a structured simulation strategy on students’ performance, knowledge and self-efficacy.
HYPOTHESES

• $H_1$ - Following the introduction of debriefing with team DP, the adult nursing programme students in the intervention group will have significantly different scores than the comparison group with respect to their performance, knowledge and confidence in the post-test.

• $H_2$ - The scores in respect to the performance, knowledge and confidence of the adult nursing programme students following each phase of the research study will differ significantly to those in the intervention group with respect to their performance, knowledge and confidence.

• $H_3$ - Following the introduction of debriefing with team DP the time on task of the adult nursing students in the intervention group will be significantly different from the times of the comparison group.
HOW? METHODOLOGY

- Quasi-experimental design
- Pre-registration adult nursing students
- Randomly selected groups (GT)
  - 4 groups
  - 16 Subgroups
  - (N = 98)

- 3 phases (3 months apart)
- Intervention Group
- Comparison Group
SCENARIOS

Scenario aims:

- Recognise the deteriorating patient.
- Assess the patient using ABCDE assessment
- Accurately record and report findings
- Handing over using SBAR tool.

Phase one (P1)

- A hypovolaemia scenario with a patient bleeding internally following abdominal surgery.
- A patient suffering an asthma attack.

Phase two (P2)

- A patient suffering from cardiac chest pain (Angina).
- A patient developing sepsis following a urinary tract infection.

Phase three (P3)

- A patient suffering a myocardial Infarction
- A patient who has developed an anaphylactic reaction following the administration of an antibiotic.
METHOD - SBE DELIVERY - COMPARISON GROUP

Introduction/Pre-brief → Scenario → Debrief
METHOD - DEBRIEFING WITH TEAM DELIBERATE PRACTICE (DWTDP) – INTERVENTION GROUP

Pre-brief - Scenario

DWTDP:
- Debrief (Facilitated / learning needs)
- "Walk through“ (Coached)
  - Repeated Scenario
  - Debrief
METHOD – DATA COLLECTION

• Demographic data (Age, gender, Trust etc)
• Pre and post
  • Knowledge questionnaire
    • MCQ
    • Short answers
  • Self efficacy questionnaire
    • Likert scale
    • Short answers
• Performance tool
  • Video captured
  • Proforma
  • Analysed
METHOD – PERFORMANCE DATA COLLECTION

Intervention → Intervention Performance Capture → Debriefing with deliberate practice → Intervention Performance Capture

Pre performance → Post-performance → Comparison Performance Capture
METHOD – KNOWLEDGE & SELF EFFICACY DATA COLLECTION

- **Pre-test Self-efficacy and Knowledge**
- **Intervention**
- **Intervention Performance capture**
- **Debriefing with deliberate practice**
- **Intervention Performance capture**
- **Comparison Performance capture**
- **Post-test Self-efficacy and Knowledge**
- **Comparison**

- **Pre-performance**
- **Post-performance**
PRE PERFORMANCE MIXED ANOVA

Mixed ANOVA:

\[ F_{(1, 6)} = 1.41, \ p = .281 \]

Effect size \( r^2 = .44 \),

Observed power of .17
Mixed ANOVA:

\[ F_{(1, 6)} = 19.12, \ p = .005, \]

Large effect size \( r^2 = .87, \)

Large observed power of .95
**KNOWLEDGE MIXED ANOVA**

Mixed ANOVA:

\[
\frac{3.68, 132.33}{1.83, 0.132}
\]

Small effect size \((r^2 = 0.17)\)

Observed power was 0.52.
SELF-EFFICACY MIXED ANOVA

Mixed ANOVA:

$$F_{(3.67, 146.72)} = 1.74, P = .151$$

Small effect size - $$r^2 = .11$$

Observed power was .50
PERFORMANCE DECAY

Estimated Marginal Means of Performance_all

CONDITION
- Control
- Experimental

Top gun
EXPERIENCE CURVES – OPTIMISING LEARNING

Distributed/Spaced practice


Performance curve

Learning curve

Competence level

“Maintenance dose”
# CONCLUSIONS

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<tr>
<th>PERFORMANCE</th>
<th>SELF EFFICACY &amp; KNOWLEDGE</th>
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<tr>
<td>• DwTDP optimises participant performance</td>
<td>• Insufficient evidence to support DwTDP enhancing self-efficacy</td>
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<td>• Accelerates learning curve</td>
<td>• Knowledge no statistically significant effect</td>
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<td>• Offers a potential solution to resourcing restrictions</td>
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Any Questions?
REFERENCES


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