

Supplemental digital content for Ma WY, Brindle ME, Ronksley PE, Lorenzetti DL, Sauve RS, and Ghali WA. Use of Simulation-Based Education to Improve Outcomes of Central Venous Catheterization: A Systematic Review and Meta-Analysis. Acad Med. 2011;86 (9).

### Supplemental Digital Form 1

Reviewer initials \_\_\_\_\_ Date of data abstraction \_\_\_\_\_ Study ID # \_\_\_\_\_ Last name \_\_\_\_\_

IRB Approval ☐ Y ☐ N ☐ Not described

#### Population studied (check all that apply):

☐ Medical student ☐ PGY-1 ☐ PGY-2 ☐ PGY-3 ☐ Fellow ☐

Attending/consulting physician

☐ Nurses ☐ Physician Assistants ☐ Other \_\_\_\_\_ ☐ Not described

#### Specialty of Learners (check all that apply): ☐ Critical Care ☐ Internal Medicine

☐ Surgery

☐ Emergency ☐ Not mentioned ☐ Other \_\_\_\_\_

**Baseline Experience of Trainees:** ☐ Not mentioned

#### Instructor level of training (check all that apply):

☐ Medical student ☐ PGY-1 ☐ PGY-2 ☐ PGY-3 ☐ Fellow ☐

Attending/consulting physician

☐ Nurses ☐ Physician Assistants ☐ Other \_\_\_\_\_ ☐ Not described

#### Specialty of Instructors (check all that apply): ☐ Critical Care ☐ Internal Medicine

☐ Surgery

☐ Emergency ☐ Not mentioned ☐ Other \_\_\_\_\_

#### Design of Study

☐ Case Control ☐ cross-sectional

☐ Single group (check one of the following: ☐ before / after study, ☐ time series)

☐ Cohort (check one of the following: ☐ Prospective ☐ Retrospective ☐ not mentioned)

☐ Trials (check one of the following: ☐ randomized ☐ pseudo/non-randomized),

#### Setting:

☐ Hospital ☐ Educational facility ☐ Not described ☐ Other \_\_\_\_\_

**Country/countries:** \_\_\_\_\_

☐ Single Centre ☐ Multiple Centres (how many \_\_\_\_\_)

#### Type of simulation used (check all that apply):

☐ partial task trainers      ☐ standardized patients      ☐ full body task trainers  
☐ high fidelity mannequins      ☐ virtual reality      ☐ computer software  
 Other: \_\_\_\_\_

### Description of educational program

Class/group size \_\_\_\_\_ ☐ not described  
 Instructor:learner ratio \_\_\_\_\_/\_\_\_\_\_ ☐ Not described  
 Learner:simulator ratio \_\_\_\_\_/\_\_\_\_\_ ☐ Not described  
 Didactic Portion ☐ Y ☐ N ☐ Not described Duration: \_\_\_\_\_  
 Content of didactic portion: \_\_\_\_\_

Format of didactic portion: \_\_\_\_\_

Mentioned *Demonstration of technique*: ☐ Y ☐ N ☐ Not described Duration: \_\_\_\_\_

Mentioned *Practice time* : ☐ Y ☐ N ☐ Not described Duration: \_\_\_\_\_

Mentioned *Feedback*: ☐ Y ☐ N ☐ Not described Duration: \_\_\_\_\_

Mentioned *Taught Ultrasound*: ☐ Y ☐ N ☐ Not described Duration: \_\_\_\_\_

Mentioned *Curriculum Integration*: ☐ Y ☐ N ☐ Implied ☐ Not described

Is there a range in *Difficulty Level*? ☐ Y ☐ N ☐ Not described

If Yes, please describe: \_\_\_\_\_

Are there multiple learning strategies? ☐ Y ☐ N ☐ Not described

If Yes, please describe: \_\_\_\_\_

Sites taught: ☐ IJ ☐ SC ☐ Fem ☐ Not mentioned ☐ Right ☐ Left

Sites tested: ☐ IJ ☐ SC ☐ Fem ☐ Not mentioned ☐ Right ☐ Left

Ultrasound tested: ☐ Y ☐ N

### Description of Control group Educational Strategy:

**Number of subjects** \_\_\_\_\_ Total invited to study \_\_\_\_\_ Total  
 participated \_\_\_\_\_  
    In intervention arm \_\_\_\_\_ In control arm  
    \_\_\_\_\_

### Co-intervention (if yes, please describe)

Co-intervention in Simulation Group ☐ Yes \_\_\_\_\_ ☐ No

Co-intervention in Control Group ☐ Yes \_\_\_\_\_ ☐ No

**Timeline of Educational curriculum:**

Over how long \_\_\_\_\_

Same time line for control group? ☐ Yes ☐ No If not, please describe timeline

Follow-up duration \_\_\_\_\_

**Outcome Domains Assessed:**☐

User Satisfaction

☐ Acquisition☐ Retention (if so, how long) \_\_\_\_\_

Scale used &amp; Results: \_\_\_\_\_

☐

Confidence

☐ Acquisition☐ Retention (if so, how long) \_\_\_\_\_

Scale used &amp; Results: \_\_\_\_\_

☐

Knowledge

☐ Acquisition☐ Retention (if so, how long) \_\_\_\_\_Scale used & Results: \_\_\_\_\_ Scale validated? ☐ Y ☐ N☐

Performance Measures

☐ On live patients ☐ On Simulators ☐ Both ☐ Other☐ Number of Evaluators: \_\_\_\_\_ Who are evaluators: \_\_\_\_\_Evaluators blinded ☐ Y ☐ N☐ Time:☐ Errors:☐ Success rates:☐ Other:

Scale(s) used (please list all): \_\_\_\_\_

Scale(s) validated? ☐ Y ☐ N

☐ Acquisition ☐ Retention (if so, how long) \_\_\_\_\_

☐ Transfer (if so, how is transfer tested?)

Results:

☐ Clinical Measures – how long are outcomes followed? \_\_\_\_\_

☐ Infection

☐ Pneumothorax

☐ Hemothorax

☐ Arterial puncture

☐ Bleeding

☐ Clot

☐ Other \_\_\_\_\_

Patients intubated ☐ Y ☐ N ☐ Not described Type of patients

How are outcomes captured?

Who captured outcomes?

# MERSQI

Reed DA. JAMA 298(9):1002-9; 2007

## Study Design

- ☐ Single group cross-sectional or single group posttest only
- ☐ Single group pretest and posttest
- ☐ Nonrandomized, 2 group
- ☐ Randomized controlled trial

## Sampling

Number of institutions studied

- ☐ 1
- ☐ 2
- ☐ >2

Response rate, %

- ☐ Not applicable
- ☐ < 50 or not reported
- ☐ 50-74
- ☐ ≥75

## Type of data

- ☐ Assessment by study participant
- ☐ Objective measurement

## Validity of evaluation instrument

Internal structure

- ☐ Not applicable
- ☐ Not reported
- ☐ Reported

Content

- ☐ Not applicable
- ☐ Not reported
- ☐ Reported

Relationship to other variables

- ☐ Not applicable
- ☐ Not reported
- ☐ Reported

## Data Analysis

Appropriateness of analysis

- ☐ Data analysis inappropriate for study design or type of data
- ☐ Data analysis appropriate for study design and type of data

Complexity of analysis

- ☐ Descriptive analysis only
- ☐ Beyond descriptive analysis

## Outcomes

- ☐ Satisfaction, attitudes, perceptions, opinions, general facts
- ☐ Knowledge, skills
- ☐ Behaviors
- ☐ Patient/health care outcome