Assessment Of Interprofessional Training Methodology In Professional Education As A Potential Tool To Improve Patient Safety And Quality Of Care

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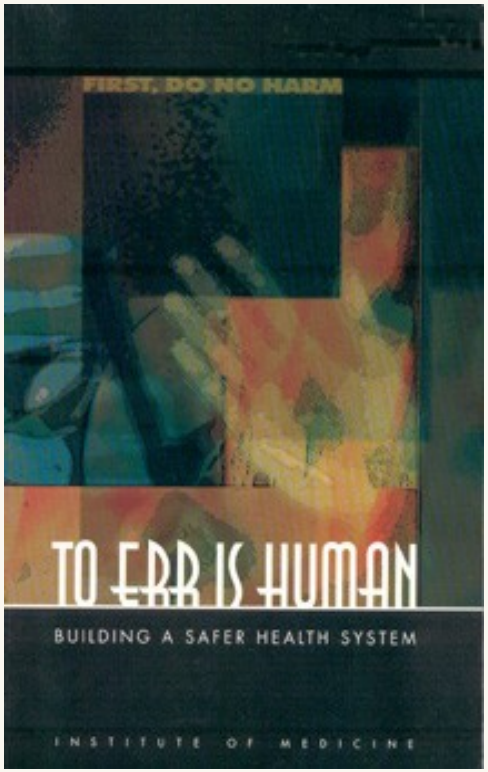
Why?

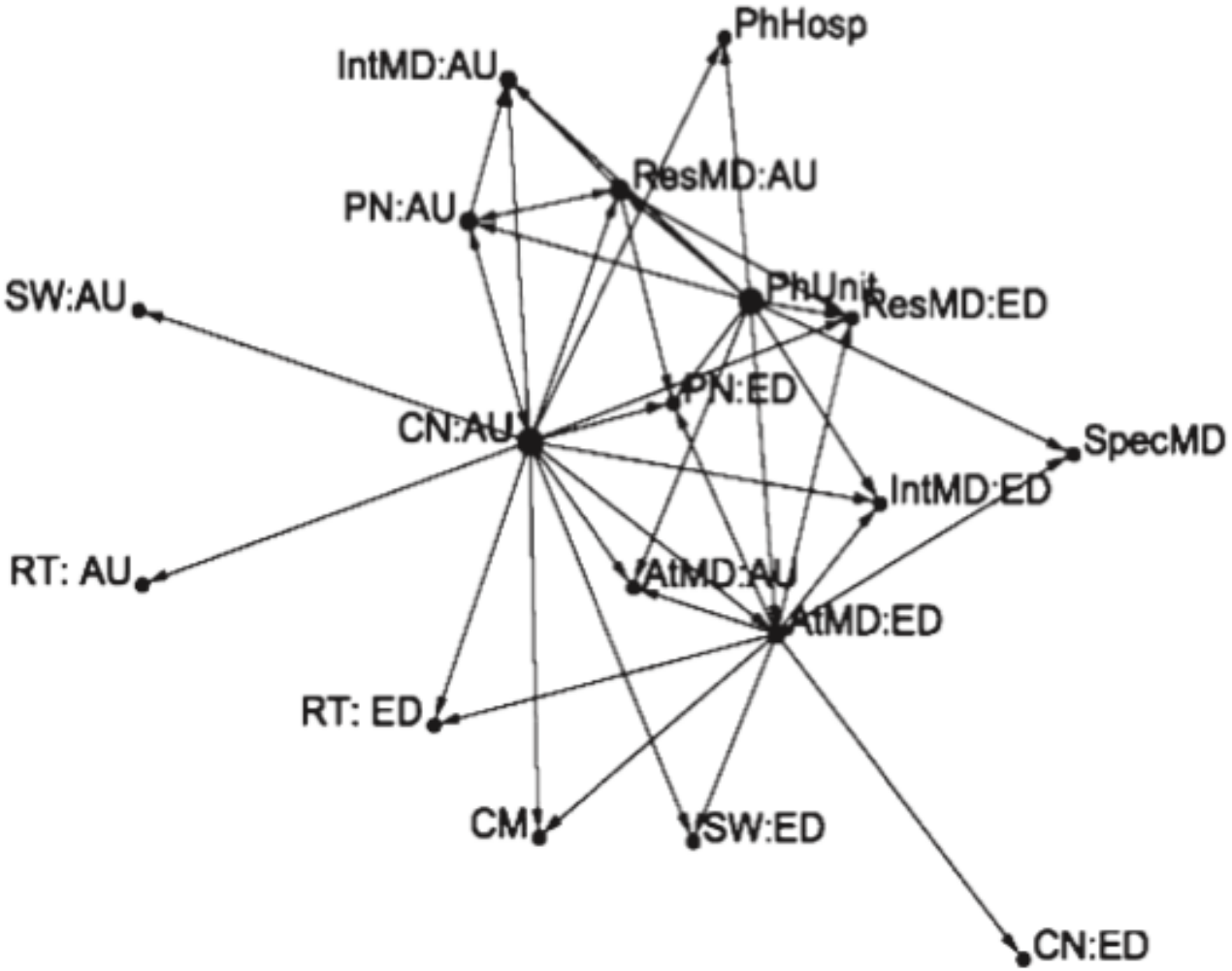
Errors in Healthcare

- Medical Errors kill 44,000-98,000 people yearly
- Errors result from a **faulty system**
- 8th Leading cause of death
- Annual cost $29billion

Complex issue



Communication in Healthcare:



Abbreviations	
Admitting Unit	AU
Emergency Department	ED
Attending MD	AtMD
Charge Nurse	CN
Intern MD	IntMD
Primary Nurse	PN
Pharmacist: Hospital	PhHosp
Resident MD	ResMD

Benham-Hutchins, M., & Clancy, T. R. J Nur Admin, 2010 *40*(9), 352-356.

Study Objectives:

Systematic current literature analysis:

- Does interprofessional training significantly improve the team communication?
  - Team member awareness (pre- and post- training survey scores)
    - Communication
- Does interprofessional training significantly improve healthcare safety?
  - Morbidity/mortality
  - Adverse events (nosocomial infections, serious safety events)
  - Hospital stay (in-patient setting)

What are interprofessional training methods currently available?

- Critical Resource Management (CRM)
- TeamSTEPPS
- Other

Communication in Healthcare:

Critical Resource Management

Crew Resource Management (CRM):

- Know your environment
- Anticipate, share, review the plan
- Ensure leadership and role clarity
- Communicate effectively
- Call for help early
- Allocate attention wisely
- Distribute work
- Monitor and support team members

Pratt SD, et al. Safety JMPEG 2008

Communication in Healthcare:

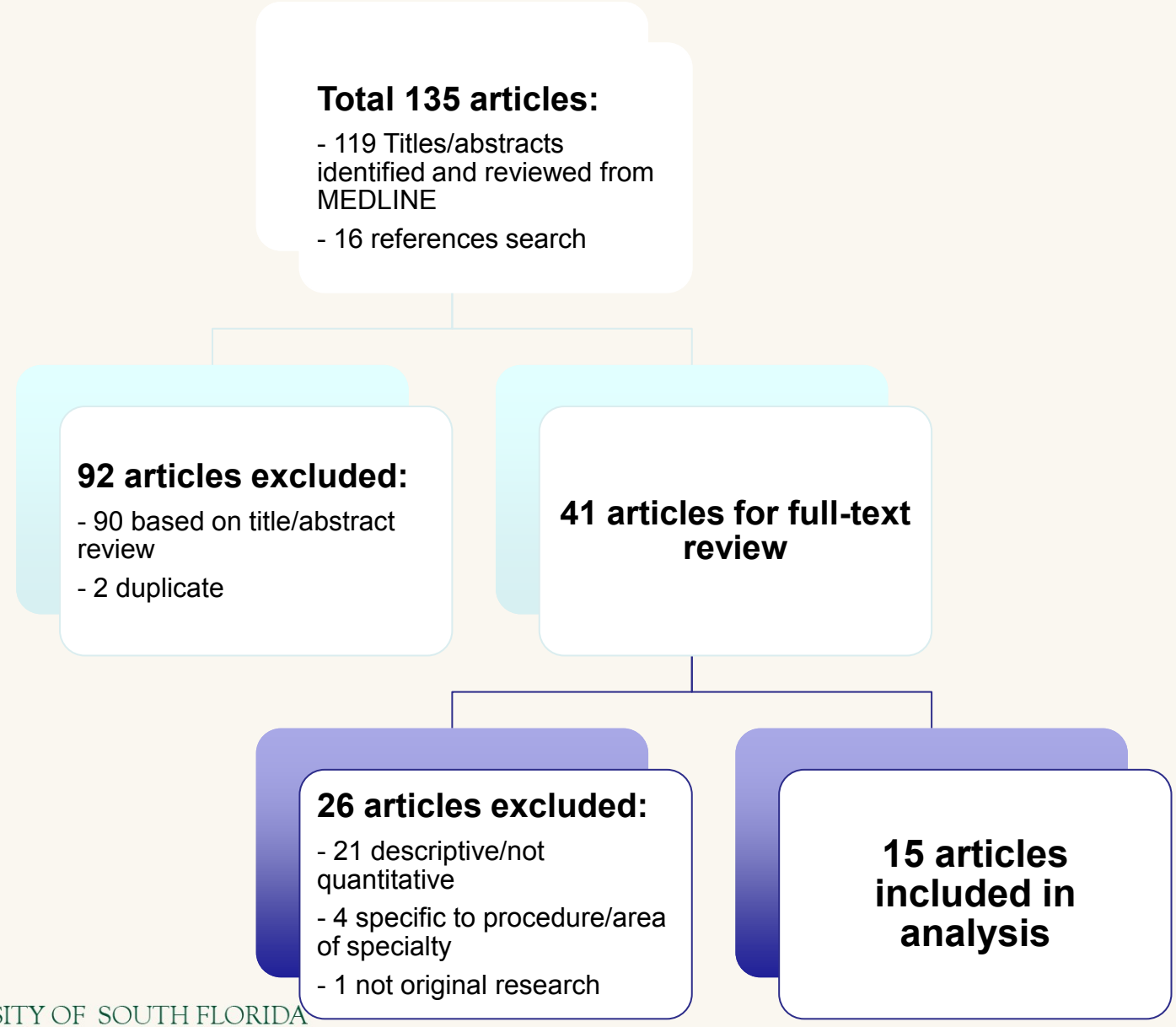
TeamSTEPPs

Leadership
Brief
Huddle
Debrief
Situation Monitoring
STEP (*Status of patient, Team members, Environment, Progress toward goal*)
Cross-monitoring
Mutual Support
Feedback
Advocacy and assertion
Two-challenge rule
CUS (*I'm Concerned, I'm Uncomfortable, this is a Safety issue*)
DESC script (*Describe situation, Express concerns, Suggest alternatives, Consequences*)
Collaboration
Communication
SBAR (*Situation, Background, Assessment, Recommendation*)
Call-out
Check-back
Handoff

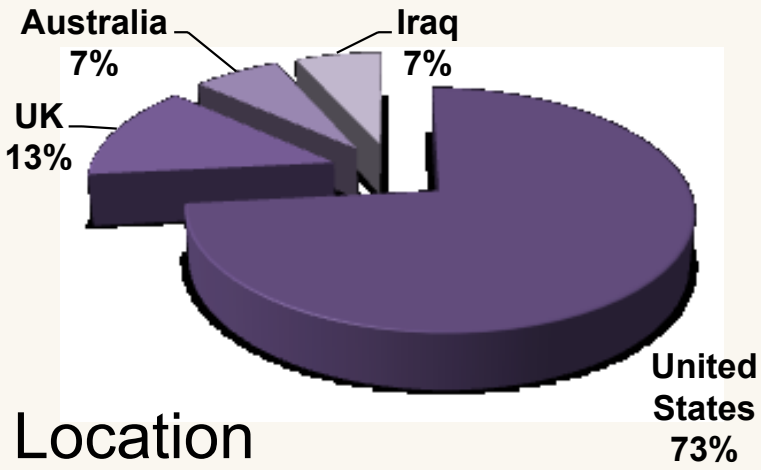
Sawyer, et. al. J Neo Nur. 2013 *32*(1), 26-33.

Brock D, et al. Postgrad Med J 2013;89:642–651

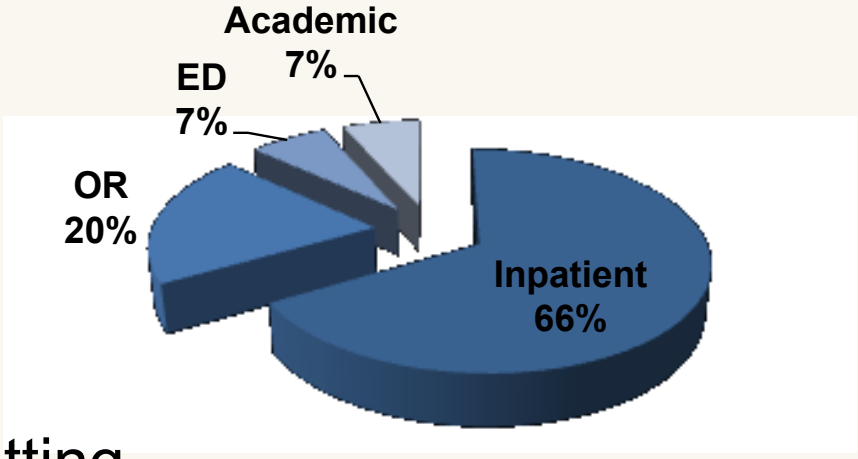
Methods:


Total 135 articles:
- 119 Titles/abstracts identified and reviewed from MEDLINE
- 16 references search
92 articles excluded:
- 90 based on title/abstract review
- 2 duplicate
41 articles for full-text review
26 articles excluded:
- 21 descriptive/not quantitative
- 4 specific to procedure/area of specialty
- 1 not original research
15 articles included in analysis

Study Characteristics

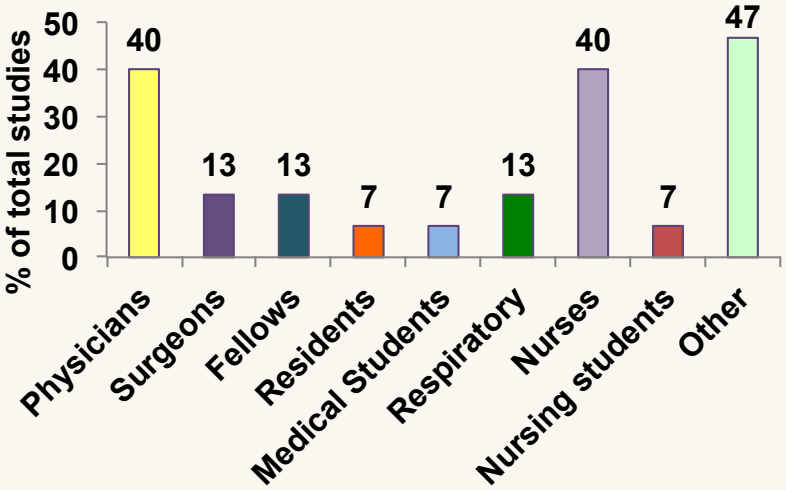


Location

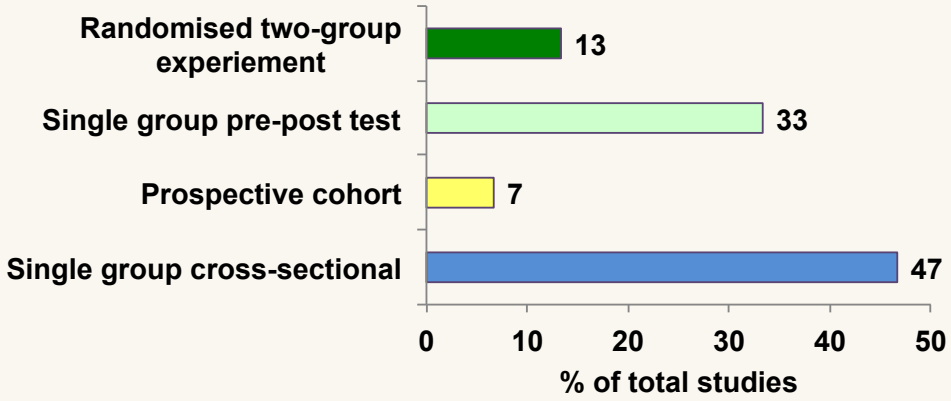


Setting

OR= operating room; ED= emergency department



Participants



Study Design

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Summary of Evidence: CRM

Study	Education method	Participants Outcomes (interdisciplinary team)	Communication	Patient Outcomes
Young-Xu et al, 2011	1 day training			**Morbidity: -17%**; 0.83 (p-value=0.01; CL: 0.79-0.88)
Awad et al, 2005	Didactic		Anesthesiologists: 125% improvement (p-value<0.0008) Surgeons: 24% improvement (p-value<0.0004) Nurses: no change (p-value=0.7)	Patient outcomes improved (prophylactic antibiotic and DVT prophylaxis)
McCulloch et al, 2009	9hours didactic training, followed by 3 months of coaching	+5% Teamwork climate improved from 64.1 to 69.2 (p-value=0.007) (assessed by Safety Attitudes Questionnaire Score)		**Operating technical errors: - 43%** from 1.73 to 0.98 (p-value=0.0009) non-operative procedure errors: -39.2%, from 1.73 to 0.98 (p=0.001) length of stay: - 9.41% (p-value=0.086)
Morey et al, 2002	Group training setting	+22.7% improvement in teamwork and function (p-value=0.012)		**Observed clinical errors errors: -26.5%** (p-value 0.14) decrease form 30.9% to 4.4%
Nielsen et al, 2007	Didactic			**Adverse outcomes score: -14.81%** (adjusted mean for control 7.2 and intervention group 8.3; CL for the difference between the groups: -5.6 to 3.2)

Crew Resource Management (CRM):

- Know your environment
- Anticipate, share, review the plan
- Ensure leadership and role clarity
- Communicate effectively
- Call for help early
- Allocate attention wisely
- Distribute work
- Monitor and support team members

Summary of Evidence: TeamSTEPPS

Study	Education method	Participants Outcomes (interdisciplinary team)	Communication	Patient Outcomes
Mahoney et al, 2012	1hr training session	+ 5.6% from 3.88±0.81 to 4.16±0.66 (pertaining mean, range 1-5)		
Sawyer et al, 2013	2 hours of simulation and 4 hours of didactic	33.5% (p-value<0.001) Improvement in team performance in structure, leadership, situation monitoring, mutual support, and communication significantly improved.	28% (p-value<0.001) The rate of challenging teammate (physician, fellow, attending, or nurse) in case of suspicion of erroneous medication dose also improved (for attending's from 0% to 75% and for fellows from 55% to 77%)	
Mayer et al, 2011	2.5 hour customized program	+27.4% Team performance improved (p-value<0.0001-0.0026)	Improved communication (p-value=0.0026)	-10% Decline in nosocomial infections
Riley et al, 2011	Didactic and simulation			Control: +42.7%; didactic only: -1%; didactic and **simulation: -37%** No significant difference of didactic vs control in number of adverse outcomes (perinatal morbidity). Full program (didactic and simulation) resulted in significant decrease of adverse outcomes.
Stead et al, 2009	2.5day workshop and 4 hours course	+7% improvement in team knowledge, skills, and attitudes (p-value=0.11)		Improvement in patient care as evidenced by decreased patient seclusion rates (p-value<0.001)
Deering et al, 2011	Web-based and 2.5-day training sessions			**Decrease in adverse incidents (medication/transfusion errors): -83%**

Summary of Evidence: Unnamed

Study	Education method	Participants Outcomes (interdisciplinary team)	Communication	Patient Outcomes
Muething et al, 2012	didactic training and simulation			**Serious safety events (SSEs): -66%,** from 0.9 to 0.3 SSEs/10000 adjusted patient-days (p-value<0.001); days between SSEs: 184.5%, from 19.4 to 55.2 (p-value<0.0001)
Plan-Smith et al, 2009	Simulation and training in two-challenge rule		Increased use of advocacy Attending anesthesiologist: from 2.3 to 3.6 mean score Attending surgeon: from 3.1 to 3.9 mean score Circulating nurse: from 2.7 to 2.8 mean score	
Stewart et al, 2010	Didactic and simulation	Knowledge and awareness improved (mean difference 15.9 and CL: 10.4-21.4) (p-value <0.0001); shared learning increased (mean difference 8.7 CL: 4.3-13.1)	Communication and teamwork improvement from 81.4 to 82.5 mean score (mean difference 1.1, CL -2.6 -4.9)	

Conclusions

- Interprofessional training methods improve interprofessional team function
  - Communication is one of the strongest and consistent factors in safety in current literature
- Training of interprofessional teams reduces morbidity/mortality and adverse outcomes
- Didactic training has a positive impact on interprofessional teamwork
- Combination of didactic and simulation training provides the strongest improvement in collaborations

Study limitations and Future Perspectives

- Study limitations:
  - Survey restricted to studies pertaining patient safety
  - Meta-analysis not possible, Publication bias
- Future perspectives include:
  - Expanding the number of studies of the interprofessional training, especially in academic/classroom setting
  - Determining sensitive measurement of success of programs in academic/classroom setting

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Thank you!

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