FINNMARKSSYKEHUSET
FINNMÁRKKU BUOHCCIVIESSU

Vitenskap – Siste nytt om forskning innen simulering

Torben Wisborg, overlege og professor

Vitenskap – og siste nytt

- Først gamle nyheter
- Så litt om hvordan måle *effekt* av simulering
- -og så om nyhetene
- Endelig – konklusjon: hvordan gjør vi dette bedre?

Betydningen av «sleng-bemerkninger»

- Ariel Riskin og medarbeidere, Pediatrics 2015, 2017 & 2019
- Team av nyfødtsykepleiere & leger på simuleringssenter
- Før scenarier utsatt for bemerkninger
- Randomisert forsøk, halvparten fikk bemerkninger, halvparten fikk ikke
- Effektmål: Teamfunksjon (ikke-tekniske ferdigheter) og tekniske ferdigheter i pasientbehandling

Uhøflige bemerkninger

The Impact of Rudeness on Medical Team Performance: A Randomized Trial

Arieh Riskin, MD, MHA[a,b], Amir Erez, PhD[c], Trevor A. Foulk, BBA[c], Amir Kugelman, MD[b], Ayala Gover, MD[d], Irit Shoris, RN, BA[b], Kinneret S. Riskin[e], Peter A. Bamberger, PhD[a]

PEDIATRICS Volume 136, number 3, September 2015

Uhøflige bemerkninger

rudeness manipulation. Specifically, the expert told participants that he had already observed a number of groups from other hospitals in Israel, and compared with the participants observed elsewhere, he was "not impressed with the quality of medicine in Israel." This manipulation

Uhøflige bemerkninger

TABLE 3 Comparison of Mean Procedural Performance Variables ($N = 72$)

Variable	Control Group (n = 33)		Rudeness Group (n = 39)		*t* Test	*P* (One-Tailed)
	Mean	SD	Mean	SD		
Performed resuscitation well	3.05	0.84	2.49	0.73	3.00**	.002
Ventilated well	3.43	0.94	3.01	0.81	2.029**	.0023
Verified place of tube well	3.56	0.88	2.85	0.82	3.492**	.0005
Asked for right radiographs	3.29	1.23	2.96	1.50	0.994	.162
Asked for right laboratory tests	3.78	0.89	3.24	0.94	2.382*	.01
Gave right resuscitation medications	3.55	0.81	3.17	1.08	1.639	.053
Stopped percutaneous central line on time	2.95	1.35	2.36	1.44	1.764*	.041
Prepared and performed pericardiocentesis	2.71	1.55	2.24	1.39	1.301	.099
Good general technical skills	3.17	0.88	2.61	0.73	2.869**	.0025
Overall procedural	3.26	0.72	2.77	0.67	2.974**	.0002

*$P < .05$, **$P < .01$.

PEDIATRICS Volume 136, number 3, September 2015

Uhøflige pårørende – faglig profesjonalitet

Rudeness and Medical Team Performance

Arieh Riskin, MD, MHA,[a,b] Amir Erez, PhD,[c] Trevor A. Foulk, BBA,[c] Kinneret S. Riskin-Geuz, BSc,[d] Amitai Ziv, MD, MHA,[d,e] Rina Sela, CCRN, MA,[e] Liat Pessach-Gelblum, MBA,[e] Peter A. Bamberger, PhD[a]

abstract

OBJECTIVES: Rudeness is routinely experienced by medical teams. We sought to explore the impact of rudeness on medical teams' performance and test interventions that might mitigate its negative consequences.

METHODS: Thirty-nine NICU teams participated in a training workshop including simulations of acute care of term and preterm newborns. In each workshop, 2 teams were randomly assigned to either an exposure to rudeness (in which the comments of the patient's mother included rude statements completely unrelated to the teams' performance) or control (neutral comments) condition, and 2 additional teams were assigned to rudeness with either a preventative (cognitive bias modification [CBM]) or therapeutic (narrative) intervention. Simulation sessions were evaluated by 2 independent judges, blind to team exposure, who used structured questionnaires to assess team performance.

To cite: Riskin A, Erez A, Foulk TA, et al. Rudeness and Medical Team Performance. *Pediatrics*. 2017;139(2):e20162305

Uhøflige pårørende – faglig profesjonalitet

- 39 teams fra nyfødtintensiv
- Foreldre spillet av skuespillere
  - "I knew we should have gone to a better hospital where they don't practice Third World medicine!"
- - til halvdelen av teamene

To cite: Riskin A, Erez A, Foulk TA, et al. Rudeness and Medical Team Performance. *Pediatrics*. 2017;139(2):e20162305

Uhøflige pårørende – faglig profesjonalitet

TABLE 1 Team Performance Scores—Control Versus Rudeness

	Control ($n = 11$)		Rudeness ($n = 10$)		F	P	η^2
	Mean	SD	Mean	SD			
Diagnostic score	4.27	0.41	3.89	0.49	3.80	.07	0.17
Therapy plan	4.23	0.34	3.81	0.38	7.27*	.01	0.28
Intervention score	4.38	0.36	3.75	0.37	15.43**	.001	0.45
General therapeutic score	4.37	0.40	3.80	0.34	12.02**	.003	0.39
Information sharing	4.41	0.42	4.08	0.36	3.65	.07	0.16
Workload sharing	4.40	0.44	3.93	0.35	7.06*	.02	0.27
Helping	4.50	0.37	4.08	0.37	6.56*	.02	0.26
Communication	4.42	0.38	4.03	0.45	4.64*	.04	0.20
General teamwork score	4.43	0.39	4.06	0.34	5.62*	.03	0.23
Midday manipulation check	4.75	0.45	3.98	0.37	19.21**	<.001	—
End day manipulation check	4.66	0.56	4.07	0.31	8.60**	.009	—

—, not applicable.
* $P < .05$.
** $P < .01$.

To cite: Riskin A, Erez A, Foulk TA, et al. Rudeness and Medical Team Performance. *Pediatrics*. 2017;139(2):e20162305

Uhøflige pårørende – faglig profesjonalitet

TABLE 1 Team Performance Scores—Control Versus Rudeness

	Control ($n = 11$)		Rudeness ($n = 10$)		F	P	η^2
	Mean	SD	Mean	SD			
Diagnostic score	4.27	0.41	3.89	0.49	3.80	.07	0.17
Therapy plan	4.23	0.34	3.81	0.38	7.27*	.01	0.28
Intervention score	4.38	0.36	3.75	0.37	15.43**	.001	0.45
General therapeutic score	4.37	0.40	3.80	0.34	12.02**	.003	0.39
Information sharing	4.41	0.42	4.08	0.36	3.65	.07	0.16
Workload sharing	4.40	0.44	3.93	0.35	7.06*	.02	0.27
Helping	4.50	0.37	4.08	0.37	6.56*	.02	0.26
Communication	4.42	0.38	4.03	0.45	4.64*	.04	0.20
General teamwork score	4.43	0.39	4.06	0.34	5.62*	.03	0.23
Midday manipulation check	4.75	0.45	3.98	0.37	19.21**	<.001	—
End day manipulation check	4.66	0.56	4.07	0.31	8.60**	.009	—

—, not applicable.
* $P < .05$.
** $P < .01$.

To cite: Riskin A, Erez A, Foulk TA, et al. Rudeness and Medical Team Performance. *Pediatrics*. 2017;139(2):e20162305

Takknemlig pårørende – faglig kvalitet

Expressions of Gratitude and Medical Team Performance

Arieh Riskin, MD, MHA,[a,b,c] Peter Bamberger, PhD,[a] Amir Erez, PhD,[d] Kinneret Riskin-Guez, BSc,[e] Yarden Riskin,[f] Rina Sela, CCRN, MA,[g] Trevor Foulk, PhD,[h] Binyamin Cooper, MA,[d] Amitai Ziv, MD, MHA,[g,j] Liat Pessach-Gelblum, MBA,[g] Ellen Bamberger, MD[c,j]

abstract

BACKGROUND AND OBJECTIVES: Exposure to negative social interactions (such as rudeness) has robust adverse implications on medical team performance. However, little is known regarding the effects of positive social interactions. We hypothesized that expressions of gratitude, a prototype of positive social interaction, would enhance medical teams' effectiveness. Our objective was to study the performance of NICU teams after exposure to expressions of gratitude from alternative sources.

METHODS: Forty-three NICU teams (comprising 2 physicians and 2 nurses) participated in training workshops of acute care simulations. Teams were randomly assigned to 1 of 4 conditions: (1) maternal gratitude (in which the mother of a preterm infant expressed gratitude to NICU teams, such as the one that treated her child), (2) expert gratitude (in which a physician expert expressed gratitude to teams for participating in the training), (3) combined maternal and expert gratitude, or (4) control (same agents communicated neutral statements). The simulations were evaluated (5-point Likert scale: 1 = failed and 5 = excellent) by independent judges (blind to team exposure) using structured questionnaires.

RESULTS: Maternal gratitude positively affected teams' performances (3.9 ± 0.9 vs 3.6 ± 1.0; $P = .04$), with most of this effect explained by the positive impact of gratitude on team information sharing (4.3 ± 0.8 vs 4.0 ± 0.8; $P = .03$). Forty percent of the variance in team information sharing was explained by maternal gratitude. Information sharing predicted team performance outcomes, explaining 33% of the variance in diagnostic performance and 41% of the variance in therapeutic performance.

CONCLUSIONS: Patient-expressed gratitude significantly enhances medical team performance, with much of this effect explained by enhanced information sharing.

To cite: Riskin A, Bamberger P, Erez A, et al. Expressions of Gratitude and Medical Team Performance. *Pediatrics.* 2019;143(4):e20182043

Takknemlig pårørende – faglig kvalitet

"I cannot tell you how grateful I am to the NICU team. Within a day or 2, I realized that my baby was in good hands, and I was able to sleep knowing that my baby will be okay."

Takknemlig pårørende – faglig kvalitet

TABLE 2 Effects of Exposure to Expressions of Gratitude From the Mother of a Preterm Infant on Medical Team Performance

Evaluated Measure	No Gratitude From Mother[a]	Gratitude From Mother[b]	
	$N = 22$	$N = 21$	P (Versus Control)
Diagnostic score	3.6 ± 1.0 (4.0)	3.8 ± 1.0 (4.0)	.21
Therapy plan	3.6 ± 1.0 (4.0)	3.9 ± 0.9 (4.0)	.08
Procedural score	3.6 ± 1.0 (4.0)	3.9 ± 0.9 (4.0)	.008
General therapeutic score	3.6 ± 1.0 (4.0)	3.9 ± 0.9 (4.0)	.04
Confidence in diagnosis	3.7 ± 1.1 (4.0)	3.8 ± 1.1 (4.0)	.38
Information sharing	4.0 ± 0.8 (4.0)	4.3 ± 0.8 (4.2)	.03
Workload sharing	4.0 ± 0.9 (4.0)	4.3 ± 0.8 (4.5)	.02

Assessments of performance and analysis were all done at the team level, thus N is the number of teams and not of participants. Data are presented as mean ± SD (median). All comparisons were done by using the Mann–Whitney rank sum test because the distributions were not normal.

[a] This control group includes the neutral group and the expert's gratitude group.

[b] The gratitude condition includes the mother and the mother and expert.

Takknemlig pårørende – faglig kvalitet

TABLE 2 Effects of Exposure to Expressions of Gratitude From the Mother of a Preterm Infant on Medical Team Performance

Evaluated Measure	No Gratitude From Mother[a]	Gratitude From Mother[b]	
	N = 22	*N* = 21	*P* (Versus Control)
Diagnostic score	3.6 ± 1.0 (4.0)	3.8 ± 1.0 (4.0)	.21
Therapy plan	3.6 ± 1.0 (4.0)	3.9 ± 0.9 (4.0)	.08
Procedural score	3.6 ± 1.0 (4.0)	3.9 ± 0.9 (4.0)	.008
General therapeutic score	3.6 ± 1.0 (4.0)	3.9 ± 0.9 (4.0)	.04
Confidence in diagnosis	3.7 ± 1.1 (4.0)	3.8 ± 1.1 (4.0)	.38
Information sharing	4.0 ± 0.8 (4.0)	4.3 ± 0.8 (4.2)	.03
Workload sharing	4.0 ± 0.9 (4.0)	4.3 ± 0.8 (4.5)	.02

Assessments of performance and analysis were all done at the team level, thus *N* is the number of teams and not of participants. Data are presented as mean ± SD (median). All comparisons were done by using the Mann–Whitney rank sum test because the distributions were not normal.

[a] This control group includes the neutral group and the expert's gratitude group.

[b] The gratitude condition includes the mother and the mother and expert.

En siste (ny) studie om bemerkninger

BJA

British Journal of Anaesthesia, 126 (4): 854–861 (2021)

doi: 10.1016/j.bja.2020.12.011
Advance Access Publication Date: 7 January 2021
Quality and Patient Safety

QUALITY AND PATIENT SAFETY

Positive communication behaviour during handover and team-based clinical performance in critical situations: a simulation randomised controlled trial

Barthélémy Bertrand[1,2,3], Jean-Noël Evain[1,2,3,*], Juliette Piot[1,2], Rémi Wolf[1,2], Pierre-Marie Bertrand[4], Vincent Louys[2], Hugo Terrisse[3,5], Jean-Luc Bosson[3,5], Pierre Albaladejo[1,2,3] and Julien Picard[1,2,3]

[1]Department of Anaesthesia and Intensive Care, Grenoble Alpes University Hospital, Grenoble, France, [2]Alps Research Assessment and Simulation Centre, Grenoble Alpes University Hospital, Grenoble, France, [3]TIMC-IMAG Laboratory, UMR, CNRS 5525, Grenoble Alpes University, Grenoble, France, [4]Department of Intensive Care, Cannes Hospital, Cannes, France and [5]Department of Biostatistics, Grenoble Alpes University Hospital, Grenoble, France

*Corresponding author. E-mail: jnevain@chu-grenoble.fr

This article is accompanied by an editorial: Normalising good communication in hospital teams by Weller & Webster, Br J Anaesth 2021:126:758–760, doi: 10.1016/j.bja.2020.12.036

Prior presentation: Annual Conference of the French Society of Anaesthesia and Intensive Care, September 2019, Paris, France.

Bertrand B Br J Anaesth 2021; 126: 854-61

En siste (ny) studie om bemerkninger

Table 1 Handover delivered by the senior anaesthetist to the participants.

	Control group	Intervention group
	Control communication behaviour	Positive communication behaviour
Duration of handover	1 min	
Information provided	7-yr-old boy with no medical history Planned circumcision Surgical safety checklist completed General anaesthesia induced with sevoflurane Airway controlled with a supraglottic device Bilateral pudendal block + sufentanil 0.1 μg kg^{-1} i.v. Surgeon about to make the incision	
Non-verbal communication		
Clothing	Coffee stained and poorly fitting	Clean and tight
Facial expression	Stressed and tired face	Calm, relaxed, and smiling face
Gaze orientation	Looking at the floor	Looking into the eyes
Posture	Closed, distant, crossed arms	Open, close, accompanying gestures
Voice	Fast, jerky, and sighing	Slow, regular, and grave
Verbal communication		
Phrases	Usual, with some negative turns	Avoidance of negative turns
Vocabulary	Usual, with some negative words	Positive words favoured
For example:	'struggling boy' 'complicated' 'delay time'	'cute, dynamic little boy' 'easily', 'comfort' 'security'
Additional comments	Made of non-positive suggestions	Made of positive suggestions
For example:	'Oh, it's you … ' 'I hope everything goes well.'	'Nice to see you!' 'It's all right. You have my full trust'.
Reaction when the telephone rings	Picks up the telephone, says he has no time to talk, and then hang up.	Turns off the ringing telephone and does not answer.

Bertrand B Br J Anaesth 2021; 126: 854-61

En siste (ny) studie om bemerkninger

Non-verbal communication		
Clothing	Coffee stained and poorly fitting	Clean and tight
Facial expression	Stressed and tired face	Calm, relaxed, and smiling face
Gaze orientation	Looking at the floor	Looking into the eyes
Posture	Closed, distant, crossed arms	Open, close, accompanying gestures
Voice	Fast, jerky, and sighing	Slow, regular, and grave
Verbal communication		
Phrases	Usual, with some negative turns	Avoidance of negative turns
Vocabulary	Usual, with some negative words	Positive words favoured
For example:	'struggling boy'	'cute, dynamic little boy'
	'complicated'	'easily', 'comfort'
	'delay time'	'security'
Additional comments	Made of non-positive suggestions	Made of positive suggestions
For example:	'Oh, it's you … '	'Nice to see you!'
	'I hope everything goes well.'	'It's all right. You have my full trust'.
Reaction when the telephone rings	Picks up the telephone, says he has no time to talk, and then hang up.	Turns off the ringing telephone and does not answer.

Bertrand B Br J Anaesth 2021; 126: 854-61

En siste (ny) studie om bemerkninger

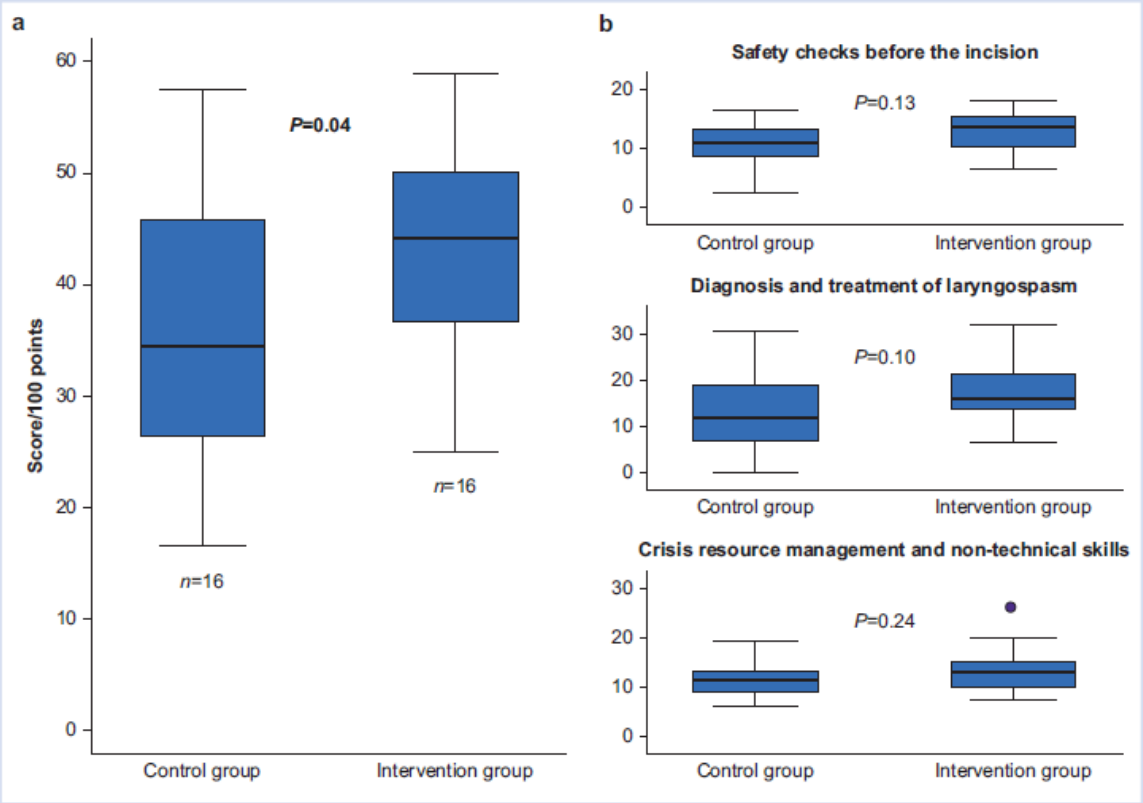
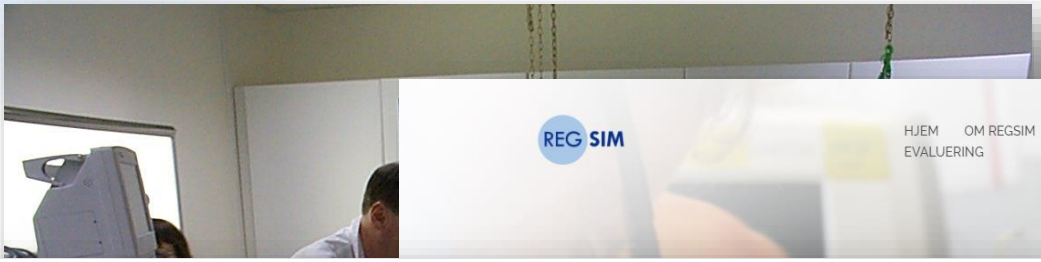


Fig 3. (a) Overall and (b) category-specific team-based clinical performance scores. Box plots show, from bottom to top, minimum, 25th percentile (Q1), median, 75th percentile (Q3), and maximum values. Outliers (shown as points) are defined by values below Q1−1.5*[Q1−Q3] or above Q3+1.5*[Q1−Q3].

Bertrand B Br J Anaesth 2021; 126: 854-61

Simulering – fra entusiaster til institusjonalisering



REG SIM

HJEM OM REGSIM VERKTØY FAGSTOFF AKTIVITETER SAFER SIMULERING EVALUERING

eringstrening

UNIVERSITETSSYKEHUSET NORD-NORGE
DAVVI-NORGGA UNIVERSITEHTABUOHCCEVIESSU

SØK MENY

Forside > Avdelinger > Forskning- og utdanningssenteret > Klinisk utdanningsavdeling > Regionalt utdanningssenter (RegUt) >
Regional koordinerende enhet for helsefaglig simulering

Regional koordinerende enhet for helsefaglig simulering

Regional koordinerende enhet for helsefaglig simulering i Helse Nord (RegSim) skal arbeide for at alle helseforetak i nord, skal ha velfungerende enheter for simulerings- og ferdighetstrening.

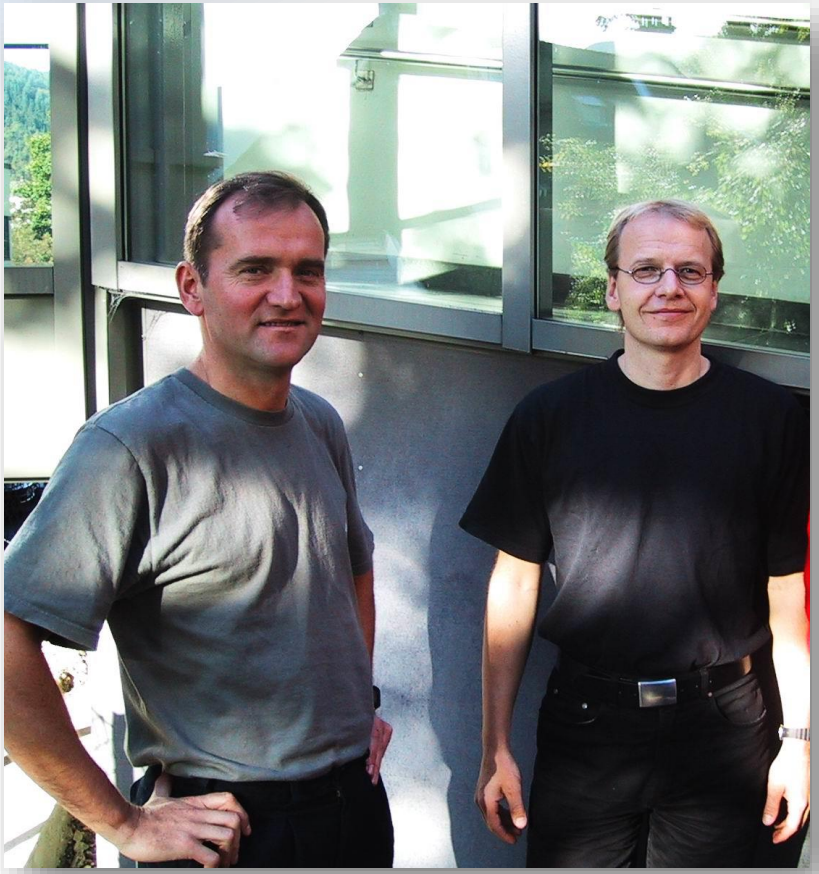
- Om avdelingen
- Kontaktinformasjon

Les mer om enheten og de ansatte

Bilde: Nathalie Isabell Blomstereng

FINNMARKSSYKEHUSET
FINNMÁRKKU BUOHCCIVIESSU

Hvordan måle effekt?



September 2001

Spørreskjema om traumekurs

Kjære kursdeltaker. Før vi setter i gang med kurset vil vi be deg om å svare på dette spørreskjemaet for at vi skal kunne danne oss et visst bilde av hvordan utgangspunktet ditt der. Spørsmålene kan kanskje virke litt merkelige og kanskje er ikke svarene de du helst ville ha valgt. Forsøk likevel å svare på den måte som i størst grad samsvarer med det du mener passer. For at vi skal ha en sjanse til å se om kurset påvirker deg vil vi be om at du oppgir din mors fornavn og din egen fødselsdag og -måned. På den måte kan vi koble sammen svar på dette skjema med de svar du vil gi etter kurset, uten at vi ber deg om å oppgi din egen identitet.

mors fornavn: **din fødselsdag:** **din fødselsmåned:**

1. Hvilken bakgrunn har du? lege spl annen

2. Hvor mange år har du arbeidet i faget ditt? - 4 5 - 9 10 -

3. Har du vært med på mottak og stabilisering av en eller flere multitraumepasienter siste 6 mndr? ja nei ***Dersom ja, hvor mange:***

4. Dersom du tenker tilbake på sist du var med på mottak og stabilisering av en eller flere multitraumepasienter, i hvilken grad synes du da at det hele fungerte godt og planmessig?

liten grad ◄——————————► stor grad

5. Dersom du kan huske noen situasjoner i forbindelse med mottak og stabilisering av en eller flere multitraumepasienter hvor det har oppstått problemer, hva var det da som ikke fungerte optimalt?

ledelse prioritering kommunikasjon dokumentasjon

annet :

6. I hvilken grad føler du deg sikker på rekkefølgen av det som skal gjøres i forbindelse med mottak og stabilisering av multitraumepasienter?

liten grad ◄——————————► stor grad

7. I hvilken grad føler du deg sikker på hva du skal gjøre (hva som er din rolle) i forbindelse med mottak og stabilisering av multitraumepasienter?

liten grad ◄——————————► stor grad

8. Hvor nyttig tror du at dette kurset vil være for deg?

lite nyttig ◄——————————► svært nyttig

Andre kommentarer:

Vend!

Hvordan måle effekt?

The Journal of TRAUMA® *Injury, Infection, and Critical Care*

Effects of Nationwide Training of Multiprofessional Trauma Teams in Norwegian Hospitals

Torben Wisborg, MD, DEAA, Guttorm Brattebø, MD, Åse Brinchmann-Hansen, Cand. Polit, Per Einar Uggen, MD, Kari Schrøder Hansen, MD, PhD, and the Norwegian BEST Foundation—BEST: Better and Systematic Trauma Care

Background: Norway has 50 trauma hospitals serving a geographically disperse population (4.6 million) and many have low trauma case loads. We showed that personnel find functioning as a team especially challenging, and developed a 1-day training course, arranged locally at each hospital, focused on team training in communication, leadership, and cooperation during simulated patient treatment. This study evaluates the effects of training on participants' knowledge, confidence, and perceived trauma team performance, controlling for hospital size and the participants' previous experience.

Methods: Anonymous, written questionnaires were answered by 4,203 participants (28% physicians, 55% nurses) in 44 hospitals before and immediately after training courses, and by 1,368 trauma team members in 26 of the hospitals 6 months after their last training course. Outcome measures were knowledge and confidence concerning the respondent's own role, and evaluation of trauma team performance in live trauma resuscitations.

Results: There was a significant increase in self-reported knowledge and confidence among all participants. Community hospitals and participants without recent trauma experience had the lowest preintervention scores, but reached levels comparable to participants at the other hospitals after training. The effects increased after 6 months, with trauma team performance evaluated as having improved, even by team members who had not participated in the training.

Conclusions: Practical team training in hospitals improved the participants' perceived knowledge and confidence, which continued to increase for 6 months after training independent of participants' experience level, suggesting that small hospitals may reach levels comparable to major hospitals.

Key Words: Education, Trauma, Simulation, Quality improvement, Team work, Rural trauma.

J Trauma. 2008;64:1613–1618.

Hvordan måle effekt?

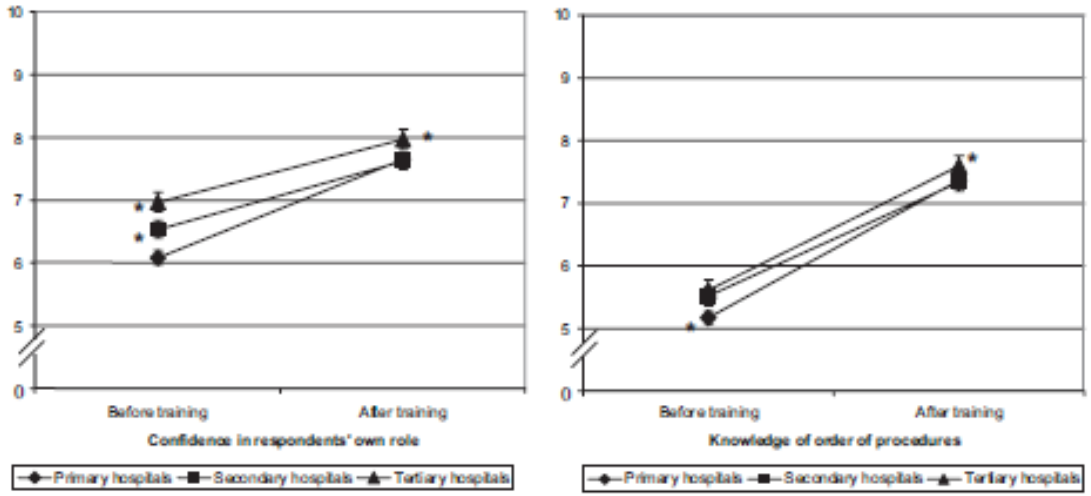


Fig. 1. *Trauma team members' self evaluation of the degree of confidence in their own role and their personal knowledge of the correct order of procedures during the resuscitation of trauma victims, based on a visual analog scale before, and after, a one-day training course. Team members are grouped after hospital level (primary, secondary, and tertiary hospitals). *Significant difference from other hospital categories. Values are expressed as the mean and 95% CI.*

Wisborg T et al. J Trauma 2008; 64: 1613-8

Hvordan måle effekt?

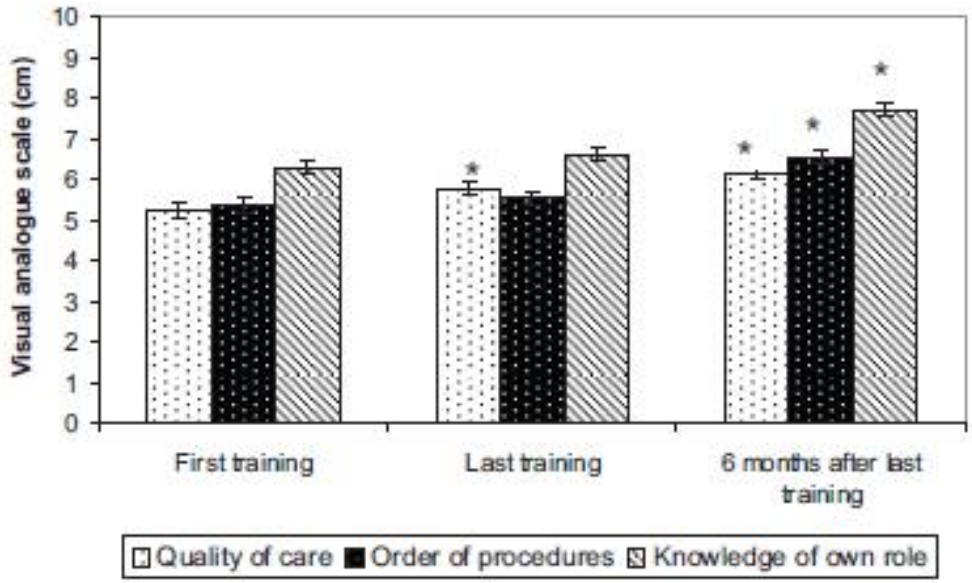
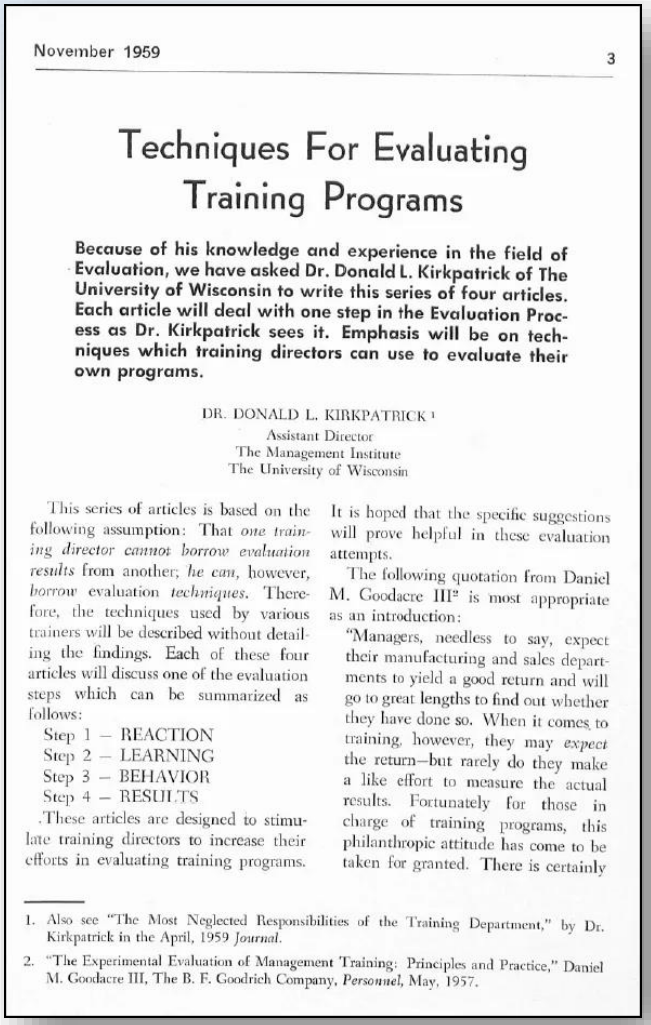


Fig. 2. *Trauma team members' evaluation of the last trauma resuscitation they participated in, and their perceived knowledge of the correct order of procedures and their own role during trauma victim resuscitation. Data are provided from hospitals that had more than one training course, and that delivered answers 6 months after the last training course. The number of valid answers varies between 279 and 761 to each variable. *Significant difference from first training course. Values are expressed as the mean and 95% CI.*

Wisborg T et al. J Trauma 2008; 64: 1613-8

Donald Kirkpatrick



November 1959 3

Techniques For Evaluating Training Programs

Because of his knowledge and experience in the field of Evaluation, we have asked Dr. Donald L. Kirkpatrick of The University of Wisconsin to write this series of four articles. Each article will deal with one step in the Evaluation Process as Dr. Kirkpatrick sees it. Emphasis will be on techniques which training directors can use to evaluate their own programs.

DR. DONALD L. KIRKPATRICK [1]
Assistant Director
The Management Institute
The University of Wisconsin

This series of articles is based on the following assumption: That *one training director cannot borrow evaluation results* from another; *he can*, however, *borrow* evaluation *techniques*. Therefore, the techniques used by various trainers will be described without detailing the findings. Each of these four articles will discuss one of the evaluation steps which can be summarized as follows:

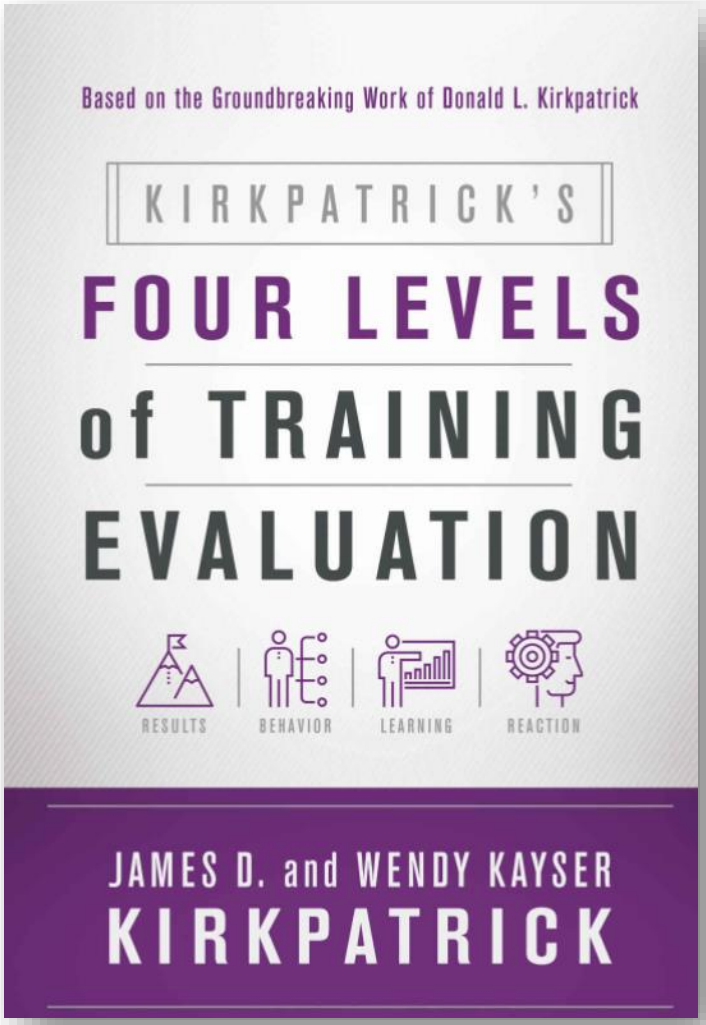
Step 1 — REACTION
Step 2 — LEARNING
Step 3 — BEHAVIOR
Step 4 — RESULTS

These articles are designed to stimulate training directors to increase their efforts in evaluating training programs. It is hoped that the specific suggestions will prove helpful in these evaluation attempts.

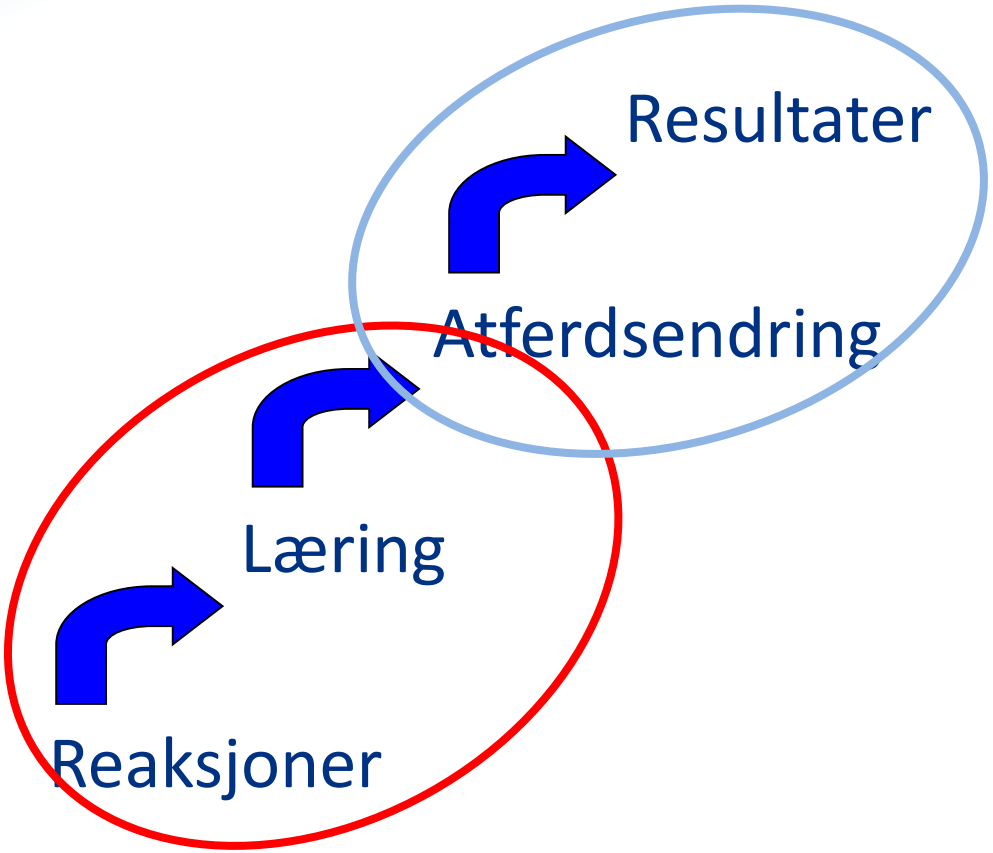
The following quotation from Daniel M. Goodacre III[2] is most appropriate as an introduction:

"Managers, needless to say, expect their manufacturing and sales departments to yield a good return and will go to great lengths to find out whether they have done so. When it comes to training, however, they may *expect* the return—but rarely do they make a like effort to measure the actual results. Fortunately for those in charge of training programs, this philanthropic attitude has come to be taken for granted. There is certainly

1. Also see "The Most Neglected Responsibilities of the Training Department," by Dr. Kirkpatrick in the April, 1959 *Journal*.
2. "The Experimental Evaluation of Management Training: Principles and Practice," Daniel M. Goodacre III, The B. F. Goodrich Company, *Personnel*, May, 1957.

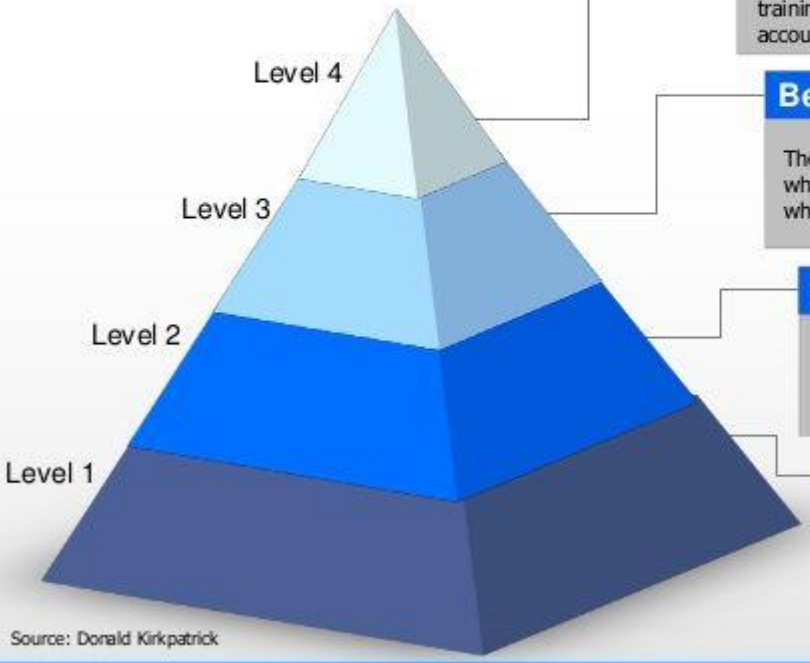


Læringsutbytte (individuelt eller team) – Kirkpatrick



Kirkpatrick's Four-level Training Evaluation Model

Overview of Kirkpatrick's Four-Level Training Evaluation Model



Results

The degree to which targeted outcomes occur as a result of the training and the support and accountability package

Behavior

The degree to which participants apply what they learned during training when they are back on the job

Learning

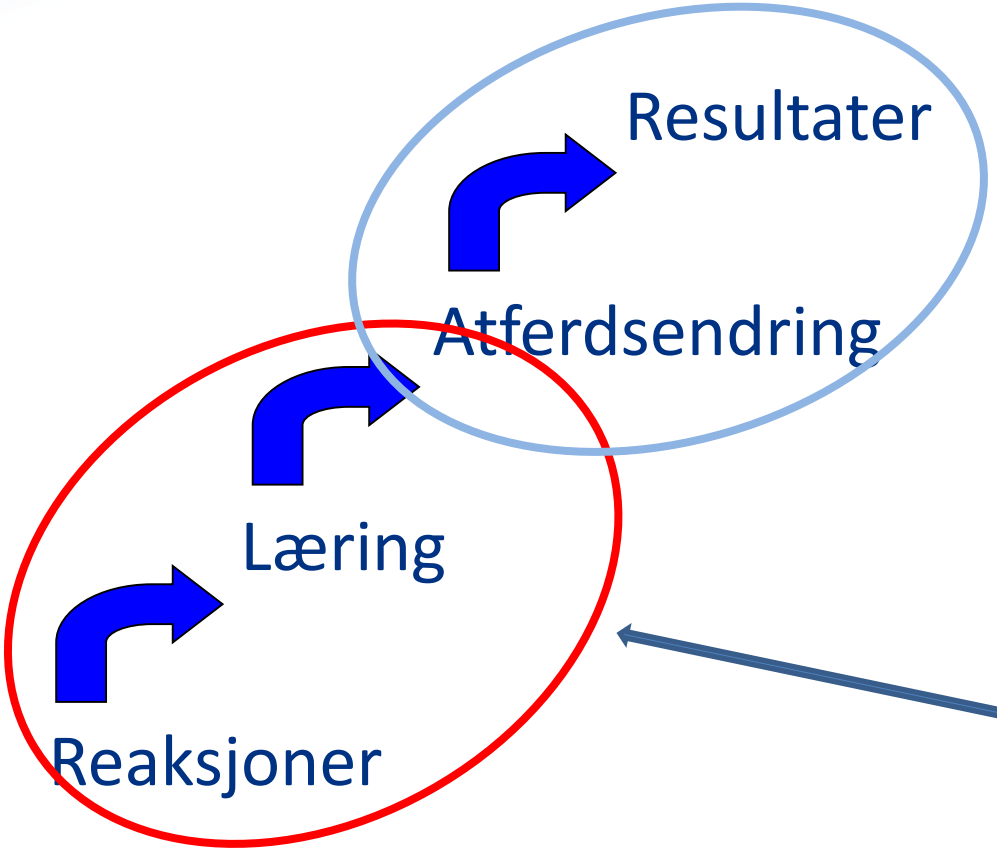
The degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training

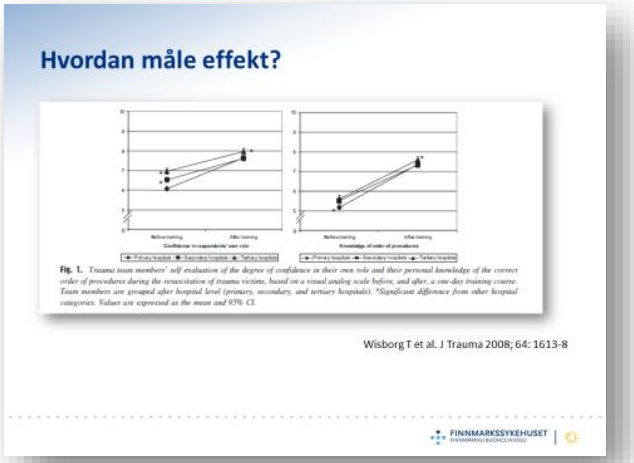
Reaction

The degree to which participants find the training favorable, engaging and relevant to their jobs

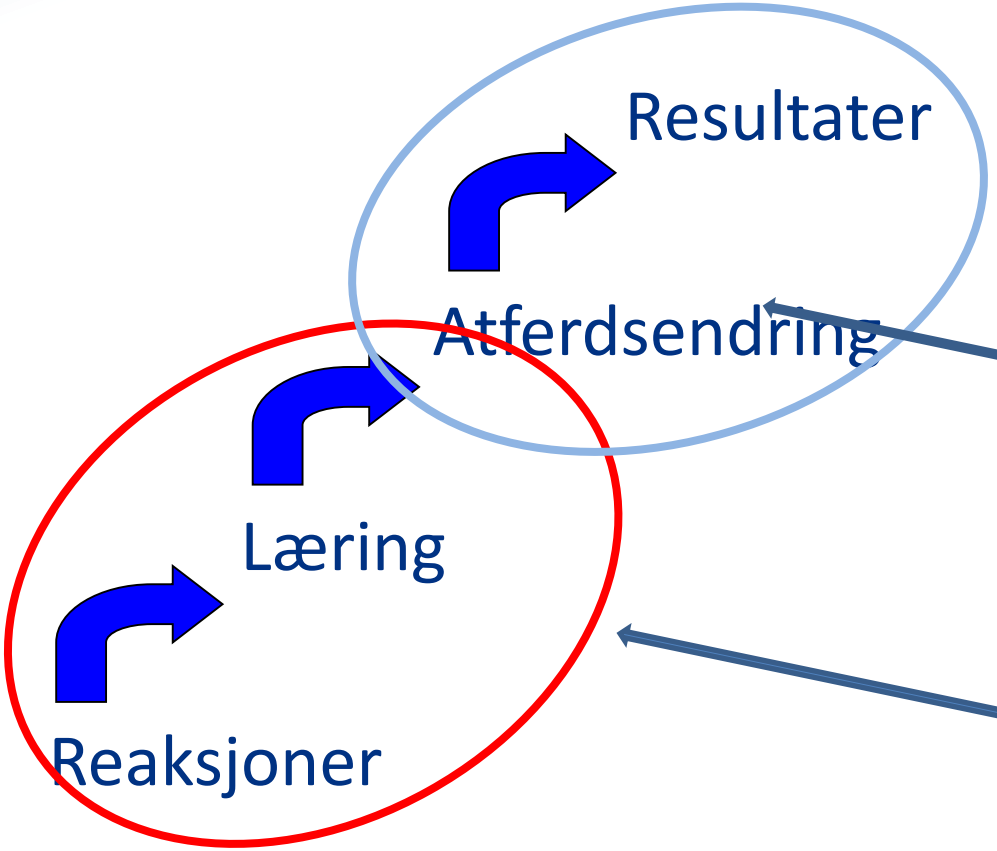
Source: Donald Kirkpatrick

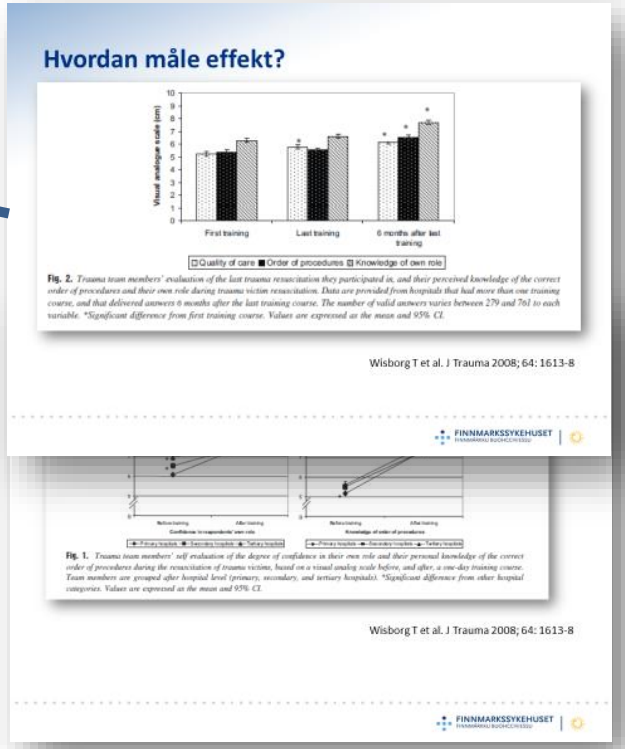
Læringsutbytte (individuelt eller team) – Kirkpatrick



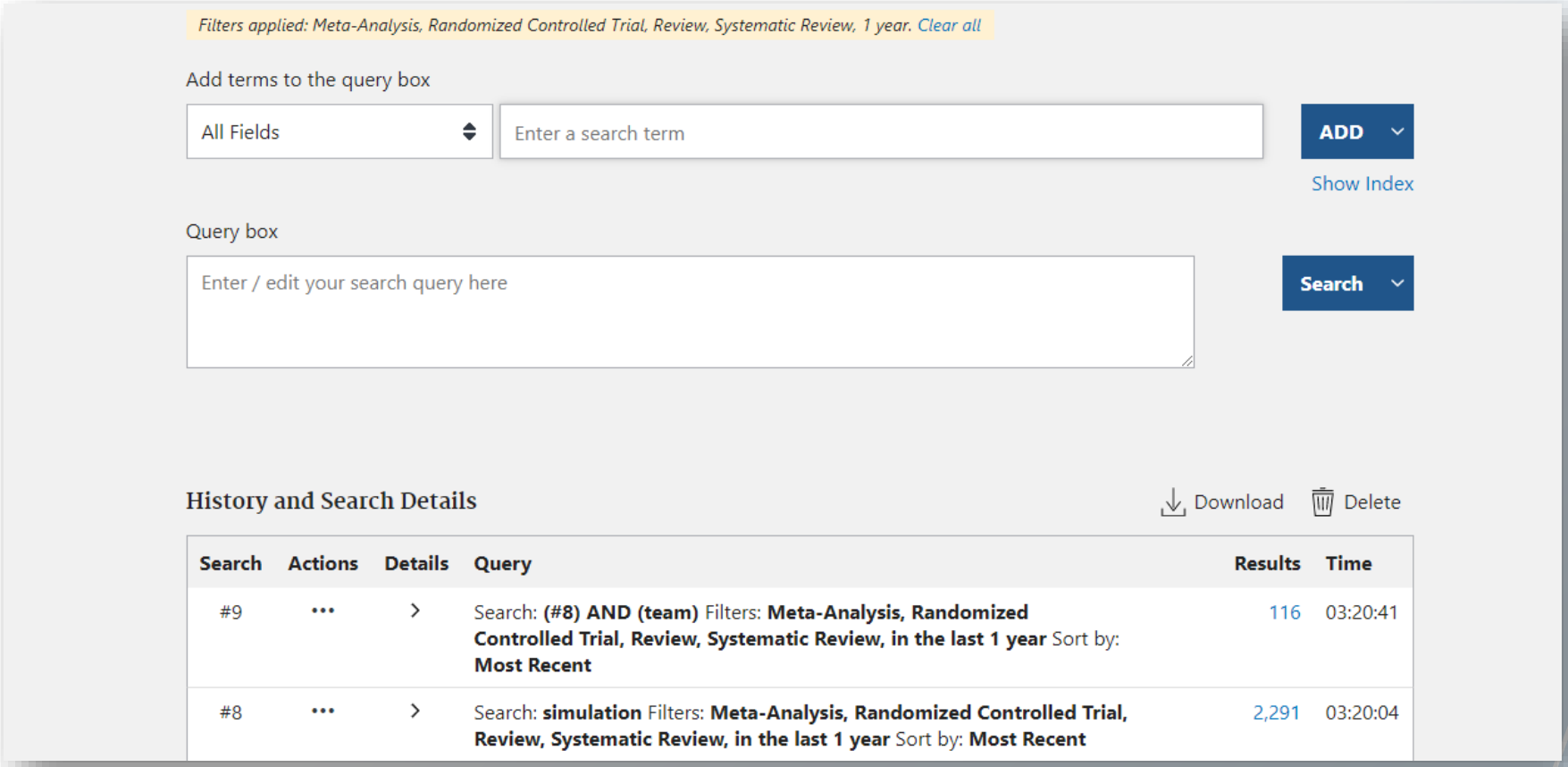


Læringsutbytte (individuelt eller team) – Kirkpatrick





Søk


Filters applied: Meta-Analysis, Randomized Controlled Trial, Review, Systematic Review, 1 year. Clear all
Add terms to the query box
All Fields
Enter a search term
ADD
Show Index
Query box
Enter / edit your search query here
Search
History and Search Details
Download
Delete
Search
Actions
Details
Query
Results
Time
#9
Search: (#8) AND (team) Filters: Meta-Analysis, Randomized Controlled Trial, Review, Systematic Review, in the last 1 year Sort by: Most Recent
116
03:20:41
#8
Search: simulation Filters: Meta-Analysis, Randomized Controlled Trial, Review, Systematic Review, in the last 1 year Sort by: Most Recent
2,291
03:20:04

Simulering innen nyfødtresuscitering

Simulation-Based Neonatal Resuscitation Team Training: A Systematic Review

Morten Søndergaard Lindhard, MD, PhD,[a] Signe Thim, MD,[b] Henrik Sehested Laursen, MSc,[c] Anders Wester Schram, MSc,[d] Charlotte Paltved, MD, MHPE,[d] Tine Brink Henriksen, MD, PhD[b]

abstract

CONTEXT: Several neonatal simulation-training programs have been deployed during the last decade, and in a growing number of studies, researchers have investigated the effects of simulation-based team training. This body of evidence remains to be compiled.

OBJECTIVE: We performed a systematic review of the effects of simulation-based team training on clinical performance and patient outcome.

DATA SOURCES: Medline, Embase, Cumulative Index to Nursing and Allied Health Literature, and the Cochrane Library.

STUDY SELECTION: Two authors included studies of team training in critical neonatal situations with reported outcomes on clinical performance and patient outcome.

DATA EXTRACTION: Two authors extracted data using a predefined template and assessed risk of bias using the Cochrane risk-of-bias tool 2.0 and the Newcastle-Ottawa quality assessment scale.

RESULTS: We screened 1434 titles and abstracts, evaluated 173 full texts for eligibility, and included 24 studies. We identified only 2 studies with neonatal mortality outcomes, and no conclusion could be reached regarding the effects of simulation training in developed countries. Considering clinical performance, randomized studies revealed improved team performance in simulated re-evaluations 3 to 6 months after the intervention.

LIMITATIONS: Meta-analysis was impossible because of heterogenous interventions and outcomes. Kirkpatrick's model for evaluating training programs provided the framework for a narrative synthesis. Most included studies had significant methodologic limitations.

CONCLUSIONS: Simulation-based team training in neonatal resuscitation improves team performance and technical performance in simulation-based evaluations 3 to 6 months later. The current evidence was insufficient to conclude on neonatal mortality after simulation-based team training because no studies were available from developed countries. In future work, researchers should include patient outcomes or clinical proxies of treatment quality whenever possible.

Lindhard MS et al. Simulation-Based Neonatal Resuscitation Team Training: A Systematic Review. Pediatrics. 2021;147(4):e2020042010

Simulering innen nyfødtresuscitering

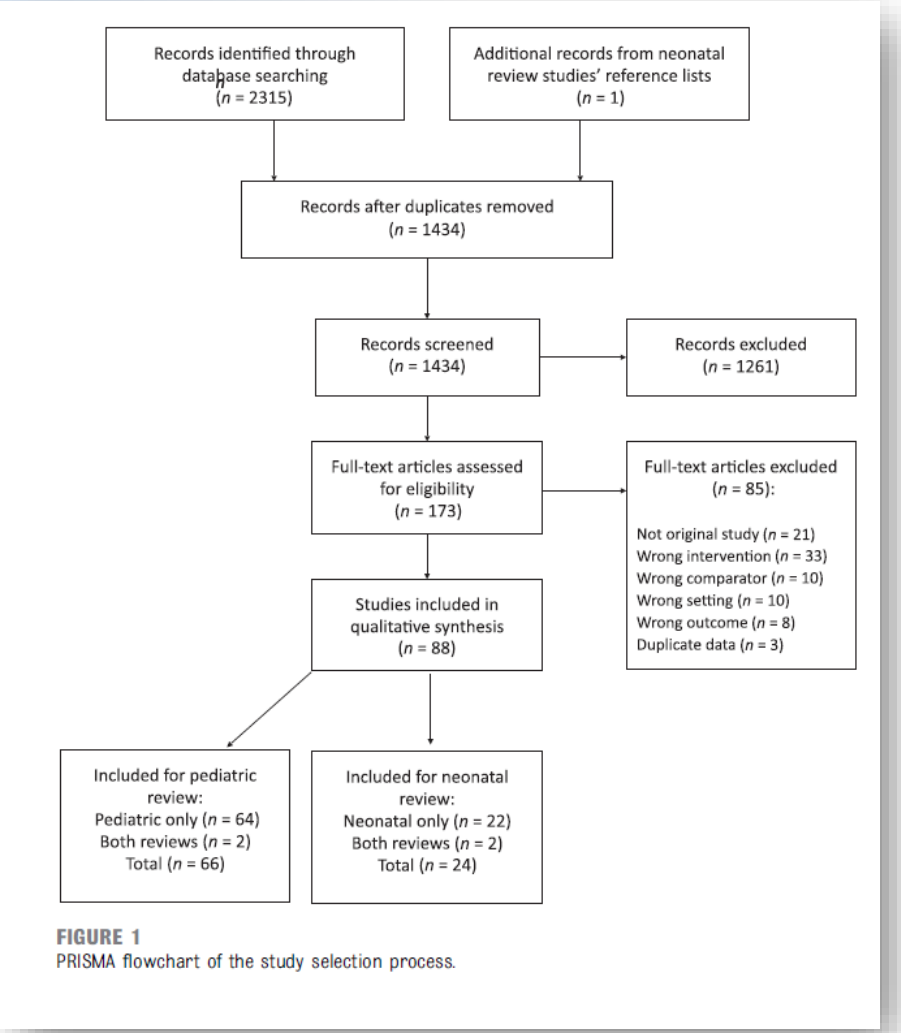


FIGURE 1
PRISMA flowchart of the study selection process.

Lindhard MS et al. Simulation-Based Neonatal Resuscitation Team Training: A Systematic Review. Pediatrics. 2021;147(4):e2020042010

Simulering innen nyfødtresuscitering

TABLE 1 The 24 Included Studies Arranged by Study Design, Outcome Kirkpatrick Level, and Number of Participants

Author	Year	Country	Design	No.	Outcome Kirkpatrick Level[a]		
					II	III	IV
Walker et al[22]	2016	Mexico	Cluster randomized	305	—	—	X
Rubio-Gurung et al[19]	2014	France	Cluster randomized	114	—	X	—
Thomas et al[20]	2010	United States	Randomized; 3 arms	98	—	X	—
Bender et al[17]	2014	United States	Randomized; 2 arms	50	X	X	—
Sawyer et al[21]	2012	United States	Randomized; 2 arms	30	—	X	—
Lee et al[18]	2012	United States	Randomized; 2 arms	27	X	X	—
Rovamo et al[23]	2015	Finland	Cohort	99	—	X	—
LeFlore and Anderson[24]	2008	United States	Cohort	72	—	X	—
Barry et al[25]	2012	United States	Cohort	52	—	X	—
Charafeddine et al[26]	2016	Lebanon	Pre-post	256	X	—	X
Walker et al[28]	2014	Mexico	Pre-post	305	X	X	—
Dadiz et al[27]	2013	United States	Pre-post	228	X	X	—
Sawyer et al[29]	2013	United States	Pre-post	42	X	X	—
Cordero et al[30]	2013	United States	Pre-post	33	—	X	—
Sawyer et al[32]	2011	United States	Pre-post	30	—	X	—
Cordero et al[31]	2013	United States	Pre-post	26	X	X	—
Dettinger et al[33]	2018	Kenya	Pre-post	182	X	—	—
Walker et al[34]	2015	Guatemala	Pre-post	159	X	—	—
Letcher et al[35]	2017	United States	Pre-post	130	X	—	—
Malmström et al[36]	2017	Sweden	Pre-post	92	X	—	—
Raffaeli et al[37]	2018	Italy	Pre-post	28	X	—	—
Hossino et al[38]	2018	United States	Pre-post	26	X	—	—
Ross et al[10]	2016	United States	Pre-post	17	X	—	—
Bragard et al[11]	2018	Belgium	Pre-post	16	X	—	—

—, not available.

[a] Kirkpatrick level II (learning), level III (clinical performance), and level IV (patient outcome).

Lindhard MS et al. Simulation-Based Neonatal Resuscitation Team Training: A Systematic Review. Pediatrics. 2021;147(4):e2020042010

Simulering innen nyfødtresuscitering

CONCLUSIONS

This systematic review compiles the first decade of research on simulation-based team training in neonatal medicine emergencies. We were unable to reveal the effects of team training on neonatal morbidity and mortality because we identified only 2 studies, both conducted in developing countries and with significant methodologic limitations. However, 5 randomized studies revealed improved team performance in simulation-based re-evaluations 3 to 6 months after the intervention simulation training. In future research, researchers should include patient outcomes or clinical proxy measures of treatment quality whenever possible.

Lindhard MS et al. Simulation-Based Neonatal Resuscitation Team Training: A Systematic Review. Pediatrics. 2021;147(4):e2020042010

Simulering innen organdonasjon

ARTICLE IN PRESS

Patient Education and Counseling xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pec

Education and training methods for healthcare professionals to lead conversations concerning deceased organ donation: An integrative review

Julie E. Potter[a,b,*], Rosalind M. Elliott[a,c,d], Michelle A. Kelly[a,e], Lin Perry[a,f]

[a] University of Technology Sydney, Faculty of Health, Ultimo, Australia
[b] Royal North Shore Hospital, Department of Medical Oncology, St Leonards, Australia
[c] Royal North Shore Hospital, Department of Intensive Care, St Leonards, Australia
[d] Northern Sydney Local Health District, Nursing and Midwifery Directorate, St Leonards, Australia
[e] Curtin University, Curtin School of Nursing, Bentley, Australia
[f] Prince of Wales Hospital, Department of Endocrinology, Randwick, Australia

ARTICLE INFO

Article history:
Received 22 July 2020
Received in revised form 10 March 2021
Accepted 15 March 2021
Available online xxxx

Keywords:
Communication
Decision-making
Education
Multidisciplinary team
Simulation training
Organ donation, tissue procurement

ABSTRACT

Objectives: To determine which training methods positively influenced healthcare professionals' communication skills and families' deceased organ donation decision-making.
Methods: An integrative review using systematic methods and narrative synthesis for data analysis. Electronic databases of PubMed, Cumulative Index to Nursing and Allied Health Literature (EBSCO), Embase (OVID) and ProQuest Dissertations & Theses Global, were searched between August 1997 and March 2020, retrieving 1019 papers. Included papers (n = 14) were appraised using the Medical Education Research Study Quality Instrument.
Results: Training programmes offered theory, experiential learning, feedback and debriefing including self-reflection, the opportunity to role-play and interact with simulated participants within realistic case scenarios. Programmes reported observed and self-rated improvements in communication learning and confidence. The methodological quality score averaged 13, (72% of maximum); few studies used an experimental design, examined behavioural change or families' perspectives. Weak evidence suggested training could increase organ donation authorisation/consent rates.
Conclusions: Multiple training strategies are effective in improving interprofessional healthcare professionals' confidence and learning of specialised communication. Methodological limitations restricted the ability to present definitive recommendations and further research is warranted, inclusive of family decision-making experiences.
Practice implications: Learning of specialised communication skills is enhanced by using multiple training strategies, including role-play and debriefing.

J.E. Potter et al. Education and training methods for healthcare professionals to lead conversations concerning deceased organ donation: An integrative review. Patient Education and Counseling, https://doi.org/10.1016/ j.pec.2021.03.019i

Simulering innen organdonasjon

Table 3
Training strategies used in each study.

First author, year	Written information	Oral presentation	Instructional videotape	Discussion	Web-based instruction	Self-reflection	Modelling (instructor)	Role-play	Observer role	Feedback/ debriefing	Interview practice with SPM (actors)	Clinical rotation	Total strategies per study (n)
Vaidya, 1999 [38]	✓							✓		✓	✓[a,b]		4
Morton, 2000 [30]	–	✓	✓	✓		✓		✓	✓	✓	✓[b]		8
DeVita, 2003 [34]	✓	✓	✓	✓		✓		✓	✓	✓		✓	9
Blok, 2004 [25]	–	✓	✓	✓		✓		✓	✓	✓	✓		8
Hales, 2008 [27]	✓[c]		✓[c]	✓	✓[c]	✓		–	✓	✓	✓[d]		8
Meyer, 2009 [29]	✓[c]	✓	✓	✓		✓		–	✓	✓	✓[b]		8
Siminoff, 2009 [32]		✓		✓				✓		✓	✓[b]		5
Downar, 2012 [35]	✓	✓		–		–		–	–	✓	✓		4
Tobler, 2014 [37]	✓[c]	✓	✓	✓		✓	✓	✓	✓	✓	✓		10
Siminoff, 2015 [33]	–				✓			✓		✓	✓		4
Johnson, 2017 [36]	✓[c]	✓		✓		✓	✓	✓	–	✓	✓		8
Marogna, 2018 [28]	–	✓					–	✓	–	✓	✓[b]		4
Potter, 2018 [31]	–	–	–	–	✓	✓	–	✓	✓	✓	✓[b]		6
Fico, 2019 [26]	–	–	✓	–	✓	✓	–						3

Note. SPM = standardised family member; ✓ = reported; – = unclear.
[a] Simulated participants (parents) played by real parents and paediatric healthcare professionals (volunteers).
[b] Video-recorded.
[c] Pre-reading.
[d] Simulated participants (colleague and SPM) played by actors.

J.E. Potter et al. Education and training methods for healthcare professionals to lead conversations concerning deceased organ donation: An integrative review. Patient Education and Counseling, https://doi.org/10.1016/ j.pec.2021.03.019i

Simulering innen organdonasjon

Table 4
Outcome categories based on a modified Kirkpatrick's classification.

First author, year	Category of evaluation				
	1, Reaction[a]	2A, Learning[c]	2B, Learning[d]	3, Behaviour[e]	4, Results[f]
Vaidya, 1999 [38]			Yes (smn)		
Morton, 2000 [30]	Yes[b]		Yes (smn)		
DeVita, 2003 [34]	Yes	Yes (NR)	Yes (NR)		
Blok, 2004 [25]		Yes (+)			
Hales, 2008 [27]	Yes[b]	Yes (+)			
Meyer, 2009 [29]	Yes	Yes			
Siminoff, 2009 [32]				Yes (smn)	Yes (-)
Downar, 2012 [35]	Yes	Yes (+)	Yes (smn)		
Tobler, 2014 [37]	Yes[b]	Yes (+)	Yes (+)		
Siminoff, 2015 [33]				Yes (smn)	Yes (smn)
Johnson, 2017 [36]	Yes[b]	Yes (smn)			
Marogna, 2018 [28]			Yes (NR)		Yes (NR)
Potter, 2018 [31]					Yes (smn)
Fico, 2019 [26]			Yes (-)		Yes (-)

Note. (+) – statistical significance; (-) – non-significant; (smn) – some variables with significance; (NR) – not recorded.
[a] Category 1 – scheduling, topic content, quality of instructors.
[b] Included quality of the case scenarios and actors.
[c] Category 2A – change perceptions, attitudes (comfort, confidence).
[d] Category 2B – improve knowledge (theory test) and increase (communication) skills (performance test).
[e] Category 3 – transfer to the clinical setting (attitudes, knowledge & skills).
[f] Category 4 – benefits to patients (families' final organ donation decision).

J.E. Potter et al. Education and training methods for healthcare professionals to lead conversations concerning deceased organ donation: An integrative review. Patient Education and Counseling, https://doi.org/10.1016/ j.pec.2021.03.019i

CRM (crew resource management)

REVIEW ARTICLE

OPEN

What Do We Really Know About Crew Resource Management in Healthcare?: An Umbrella Review on Crew Resource Management and Its Effectiveness

Martina Buljac-Samardžić, PhD, Connie M. Dekker-van Doorn, PhD, RN,† and M. Travis Maynard, PhD‡*

Objective: The aim of this article was to present an overview of the crew resource management (CRM) literature in healthcare. The first aim was to conduct an umbrella review on CRM literature reviews. The second aim was to conduct a new literature review that aims to address the gaps that were identified through the umbrella review.

Methods: First, we conducted an umbrella review to identify all reviews that have focused on CRM within the healthcare context. This step resulted in 16 literature reviews. Second, we conducted a comprehensive literature review that resulted in 106 articles.

Results: The 16 literature reviews showed a high level of heterogeneity, which resulted in discussing 3 ambiguities: definition, outcome, and information ambiguity. As a result of these ambiguities, a new comprehensive review of the CRM literature was conducted. This review showed that CRM seems to have a positive effect on outcomes at Kirkpatrick's level 1, 2, and 3. In contrast, whether CRM has a positive effect on level 4 outcomes and how level 4 should be measured remains undetermined. Recommendations on how to implement and embed CRM training into an organization to achieve the desired effects have not been adequately considered.

Conclusions: The extensive nature of this review demonstrates the popularity of CRM in healthcare, but at the same time, it highlights that research tends to be situated within certain settings, focuses on particular outcomes, and has failed to address the full scope of CRM as a team intervention and a management concept.

Key Words: crew resource management, teams, training, teamwork, intervention, systematic review, patient safety

(*J Patient Saf* 2021;00: 00–00)

government-initiated cost-saving programs that aim to keep healthcare systems affordable and sustainable. As a result, teamwork is seen as a key ingredient in helping healthcare organizations face this environmental dynamism. Several studies support the notion that teamwork is one of the most critical components of a high functioning healthcare system (e.g., the study by Rosen et al[2]). Similarly, the importance of teamwork was loudly acknowledged within the Institute of Medicine hallmark report "To Err Is Human, Crossing the Quality Chasm," which evidenced a link between the lack of teamwork and preventable medical errors. In addition, they cited that training in team behavior is essential given its role in reducing medical errors and increasing patient safety.[3,4]

Consequently, healthcare organizations are using interventions that aim to improve team functioning. In particular, Hughes et al[5] (2016) showed in their meta-analysis the high potential that team training programs in healthcare had on a variety of outcomes including patient health. Although there are various teamwork training programs being used within the healthcare industry, crew resource management (CRM) is likely the most well-known and widely applied intervention within healthcare organizations aimed to enhance team functioning and improve patient safety.

Crew resource management is often referred to as a training intervention that covers nontechnical skills such as situational awareness, decision making, teamwork, leadership, coping with stress, and managing fatigue.[6] A typical CRM training program comprises a combination of information-based methods (e.g., lectures), demonstration-based methods (e.g., videos), and practice-based methods (e.g., simulation, role playing).[7] However, at its

Buljac-Samardžić M, J Patient Saf 2021 epub ahead of print

CRM (crew resource management)

TABLE 2. Descriptions of the CRM Concept

Authors (Year)	Description of CRM Within Review
I. Reviews that focus on CRM	
Boet et al[16] (2014)	"The ultimate goal of all CRM simulation training is to increase patient safety and result in better patient outcomes."
Fung et al[17] (2015)	"CRM includes clinical as well as communication and team-working abilities. CRM refer to principles such as leadership and followership, communication, teamwork, resource use, and situational awareness."
Gross et al[11] (2019)	Salas et al[30] (1999) defined CRM training as a "a family of instructional strategies designed to improve teamwork in the cockpit by applying well-tested training tools (e.g., performance measures, exercises, feedback mechanisms) and appropriate training methods (e.g., simulators, lectures, videos) targeted at specific content (i.e., teamwork knowledge, skills, and attitudes). The purpose of CRM in high-risk organizations can be summarized as error countermeasures with three lines of defense: (1) avoidance of error, (2) trapping incipient errors before they are committed and (3) mitigating the consequences of those errors which occur and are not mitigated."
Maynard et al[18] (2012)	Possible CRM training components: patient safety overview within healthcare, role of CRM in other industries and within healthcare to address safety, communication, normalization of deviance, ingredients for effective teamwork, conflict, team briefings, team debriefings, assertiveness, situational awareness, shared mental models, red flags, and decision making.
O'dea et al[7] (2014)	"The purpose of CRM training is to promote safety and enhance efficiency through optimum use of all available resources: equipment, procedures and people. The focus of CRM training is not on technical skills but rather cognitive and interpersonal skills, such as communication, situational awareness, problem solving, decision making, leadership, assertiveness and teamwork. Training is usually designed to develop generalizable, transportable teamwork competencies that learners can apply across different settings and teams. Instructional methods include: information-based methods (e.g., didactic lecture); demonstration-based methods (e.g., behavioral modeling, videos); and practice-based methods (e.g., simulation, role playing)."
O'Connor et al[19] (2008)	CRM training can be defined as "a set of instructional strategies designed to improve teamwork in the cockpit by applying well-tested tools (e.g., performance measures, exercises, feedback mechanisms) and appropriate training methods (e.g., simulators, lectures, videos) targeted at specific content (i.e., teamwork knowledge, skills, and attitudes) (Salas et al, 1999, p.163).[30]" "An introductory CRM course is generally conducted in a classroom for 2 or 3 days. Teaching methods include lectures, practical exercises, role playing, case studies, and video of accident re-enactments. CRM courses typically cover core topics such as teamwork, leadership, situation awareness, decision making, communication, and personal limitations."
Salas et al[20] (2006)	"CRM is an instructional strategy that trains crews to effectively use all of their available resources (i.e., people, equipment, and information). CRM training has been defined as a set of "instructional strategies designed to improve teamwork in the cockpit by applying well tested training tools (e.g., performance measures, exercises, feedback mechanisms) and appropriate training methods (e.g., simulators, lectures, videos) targeted at specific content (i.e., teamwork knowledge, skills, and attitudes)" (Salas et al, 1999, p.163).[30]" "… it can be conceptualized as a team training strategy focused on improving crew coordination and performance."
Verbeek-van Noord et al[12] (2014)	"CRM typically includes educating teams about the limitations of human performance. Operational concepts include inquiry, seeking relevant operational information, assessing personal and peer behavior, communicating proposed actions, conflict resolution, and decision making."
Zeltser and Nash[21] (2010)	Not clear.
II. Reviews that focus on simulation	
Doumouras et al[22] (2012)	"Simulation-based crisis resource management (CRM) training using a realistic computer-controlled mannequin is believed to be a useful strategy for teaching team-based skills. This methodology allows for repeated instruction and deliberate practice while posing no threat to patients."
Murphy et al[23] (2015)	"It (referring to simulation) is based on the experiential learning theory which provides devices, staff, virtual environments and contrived situations that replicate the clinical environment and events that arise in professional situations."
Tan et al[24] (2014)	Not clear.
III. Reviews that focus on team training in general	
Buljac-Samardzic et al[25] (2010)	"CRM encompasses a wide range of knowledge, skills, and attitudes including communication, situational awareness, problem solving, decision making, and teamwork."
Low et al[26] (2018)	"Crew resource management (CRM) is an educational curriculum that was initially developed for the aviation industry to improve safety, communication and decision making. CRM was adapted to healthcare when patient simulators were used in anesthesia training programs and highlights five essential core concepts: team structure, leadership, situational awareness, mutual support and communication."
McCulloch et al[27] (2011)	Not clear.
Weaver et al[28] (2014)	"A specific team-training strategy focused on developing a subset of teamwork competencies including hazard identification, assertive communication and collective management of available resources."

Buljac-Samardžić M, J Patient Saf 2021 epub ahead of print

CRM (crew resource management)

Conclusion Phase 2

Based on our *new* and more comprehensive literature review, we can clearly state that CRM seems to have a positive effect on Kirkpatrick's level 1, 2, and 3. However, effects on level 3 were not only obtained through observations but also through the perception of participants. Whether CRM has a positive effect on level 4 outcomes and how level 4 should be measured remain undetermined. Likewise, the precise manner in which to implement and embed CRM training into the organization so that the desired effects will occur and will be sustained should be given more research attention. Furthermore, future research attention is needed on how long the positive effects will sustain and what the critical factors are to sustain the effects of CRM training interventions.

Buljac-Samardžić M, J Patient Saf 2021 epub ahead of print

Hva gjør vi så?

Hva gjør vi så?

The Joint Commission Journal on Quality and Patient Safety

Teamwork and Communication

Twelve Best Practices for Team Training Evaluation in Health Care

Sallie J. Weaver, M.S.; Eduardo Salas, Ph.D.; Heidi B. King, M.S.

Improving communication, a critical component of effective teamwork among caregivers, is the only dimension of teamwork explicitly targeted in the current Joint Commission National Patient Safety Goals (Goal 2, Improve the effectiveness of communication among caregivers).[1] Yet dimensions of teamwork underlie nearly every other National Patient Safety Goal in some form. For example, improving the safe use of medications (Goal 3), reducing the risk of hospital infections (Goal 7), and accurately reconciling medication (Goal 8) all require much more than communication. To achieve these goals, providers across the continuum of care must engage in mutual performance monitoring and backup behaviors to maintain vigilant situational awareness. They must speak up with proper assertiveness if they notice inconsistencies or potentially undesirable interactions, and they must engage the patient and his or her family to do the same. They must share complementary mental models about how procedures will be accomplished, the roles and competencies of their teammates, and the environment in which they are functioning. There must be leadership to guide and align strategic processes both within and across teams in order for care to be streamlined, efficient, and effective. In addition, providers, administrators, and patients and their families must want to work with a collective orientation, recognizing that they are all ultimately playing for the same "team"—that of the patient.

Thanks to the expanding wealth of evidence dedicated to developing our understanding of the role teamwork plays in patient care quality[2-6] and provider well-being,[7] strategies to develop these skills, such as team training, have been integrated into the vocabulary of health care in the 21st century. Considerable effort and resources have been dedicated to developing and implementing team training programs across a broad spectrum of clinical arenas and expertise levels. For example, anesthesia Crew Resource Management[8-10] and TeamSTEPPS®[11,12] represent the culmination of more than 10 years of direct research and development built on nearly 30 years of science dedicated to the study of team performance and training.[13]

Article-at-a-Glance

Background: Evaluation and measurement are the building blocks of effective skill development, transfer of training, maintenance and sustainment of effective team performance, and continuous improvement. Evaluation efforts have varied in their methods, time frame, measures, and design. On the basis of the existing body of work, 12 best practice principles were extrapolated from the science of evaluation and measurement into the practice of team training evaluation. Team training evaluation refers to efforts dedicated to enumerating the impact of training (1) across multiple dimensions, (2) across multiple settings, and (3) over time. Evaluations of efforts to optimize teamwork are often afterthoughts in an industry that is grounded in evidence-based practice. The best practices regarding team training evaluation are provided as practical reminders and guidance for continuing to build a balanced and robust body of evidence regarding the impact of team training in health care.

The 12 Best Practices: The best practices are organized around three phases of training: planning, implementation, and follow-up. Rooted in the science of team training evaluation and performance measurement, they range from Best Practice 1: Before designing training, start backwards: think about traditional frameworks for evaluation in reverse to Best Practice 7: Consider organizational, team, or other factors that may help (or hinder) the effects of training and then to Best Practice 12: Report evaluation results in a meaningful way, both internally and externally.

Conclusions: Although the 12 best practices may be perceived as intuitive, they are intended to serve as reminders that the notion of evidence-based practice applies to quality improvement initiatives such as team training and team development as equally as it does to clinical intervention and improvement efforts.

A Systems-Oriented Approach to Evaluation

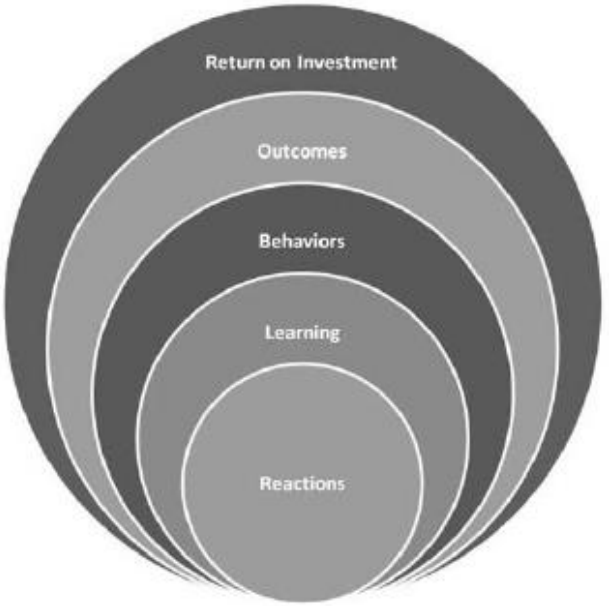


Figure 1. *Effective evaluation demands a systems-oriented approach, with evaluation objectives and specific training objectives aligned across multiple levels of analysis.*

Weaver SJ. Joint Comm J Qual Patient Safety. 2011; 37: 341-9

Hva gjør vi så?

Table 2. 12 Best Practices for Team Training Evaluation*

Planning

- **Best Practice 1.** Before designing training, start backwards: Think about traditional frameworks for evaluation in reverse.
- **Best Practice 2.** Strive for robust, experimental design in your evaluation: It is worth the headache.
- **Best Practice 3.** When designing evaluation plans and metrics, ask the experts—your frontline staff.
- **Best Practice 4.** Do not reinvent the wheel; leverage existing data relevant to training objectives.
- **Best Practice 5.** When developing measures, consider multiple aspects of performance.
- **Best Practice 6.** When developing measures, design for variance.
- **Best Practice 7.** Evaluation is affected by more than just training itself. Consider organizational, team, or other factors that may help (or hinder) the effects of training (and thus evaluation outcomes).

Implementation

- **Best Practice 8.** Engage socially powerful players early. Physician, nursing, and executive engagement is crucial to evaluation success.
- **Best Practice 9.** Ensure evaluation continuity: Have a plan for employee turnover at both the participant and evaluation administration team levels.
- **Best Practice 10.** Environmental signals before, during, and after training must indicate that the trained KSAs and the evaluation itself are valued by the organization.

Follow-up

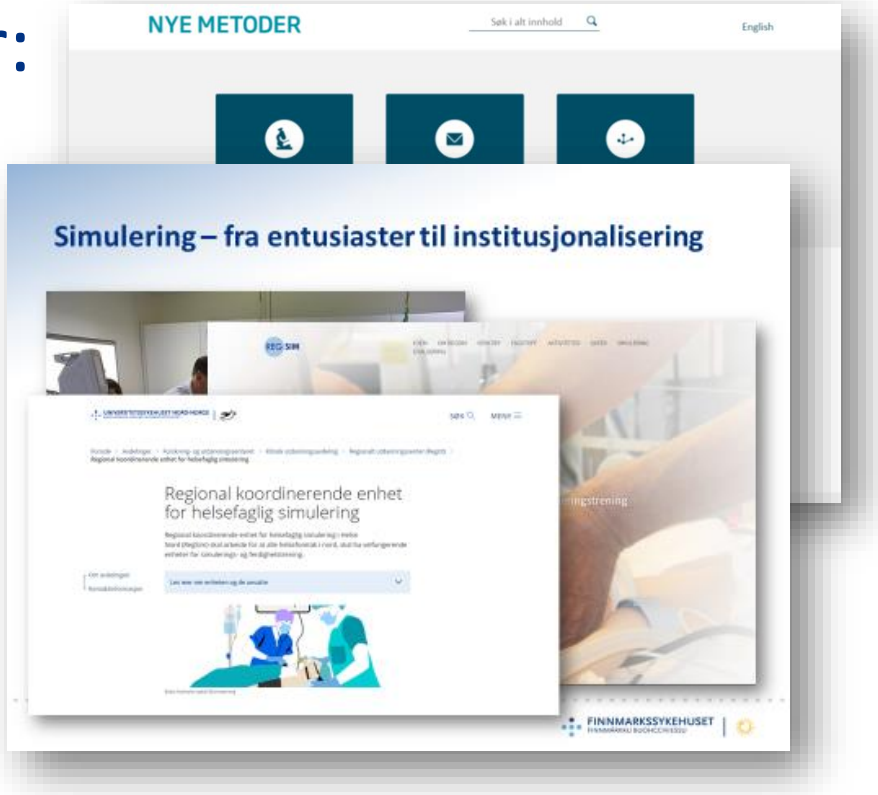
- **Best Practice 11.** Get in the game, coach! Feed evaluation results back to frontline providers and facilitate continual improvement through constructive coaching.
- **Best Practice 12.** Report evaluation results in a meaningful way, both internally and externally.

* KSAs, knowledge, skills, and attitudes.

Weaver SJ. Joint Comm J Qual Patient Safety. 2011; 37: 341-9

Konklusjon

- Simulering har blitt standard praksis
- Bør kunne dokumenteres som andre evidensbaserte metoder:
  - Kreftbehandling
  - Kirurgi
  - ECMO etter hjertestans



Men…

David Gaba, 1992 (!)

"No industry in which human lives depend on the skilled performance of responsible operators has waited for the unequivocal proof of the benefit of simulation before embracing it" *Anesthesiology 1992; 76: 491-4*

Volume 76, No. 4
April 1992

THE JOURNAL OF Anesthesiology
THE AMERICAN SOCIETY OF ANESTHESIOLOGISTS, INC.

EDITORIAL VIEWS

Anesthesiology
76:491–494, 1992

Improving Anesthesiologists' Performance by Simulating Reality

A "simulator" is a "training device that duplicates artificially the conditions likely to be encountered in some operation."[1] It is probable that simulation has long been a part of human activity: it is easy to imagine early hominids putting on the hides of prey or dangerous animals to give their compatriots a chance to practice hunting or survival techniques. Simulation technology goes back many centuries, and Good and Gravenstein[2] have called attention to "quintains," which were objects used as surrogate enemies for training soldiers in Roman times.

This technique of simulating aspects of the world is in principle very powerful, and numerous applications of simulators for a variety of industries have been identified by Singleton in his book on psychological ergonomics[3] (table 1).

Simulators have made their major impact as *training devices* in such diverse fields as commercial and military aviation, space flight, automotive driving, locomotive control, ship handling, fire-fighting, combat, and operation of nuclear power or petrochemical plants.[4] Singleton also emphasizes the many *research* uses of simulators. Thus, the study by Schwid and O'Donnell[5] in this issue of ANESTHESIOLOGY is an example of uses six and seven in Singleton's list, and it represents an important contribution to our understanding of the limits of performance of anesthesia practitioners. The authors have developed a screen-only anesthesia simulator, the responses of which are largely driven by mathematical models of physiology and pharmacology. Using the simulator's research advantage of allowing presentation of the same events to multiple subjects, they tested the response of 30 anesthesiologists to the same case scenarios, some of which involved serious and catastrophic events.

The results were sobering. Two residents seriously mishandled a simulated esophageal intubation. The "correct" management of events involving myocardial ischemia, anaphylaxis, or cardiac arrest was achieved by less than half the anesthesiologists. Suboptimal or erroneous management was common and striking and included: failure to treat severe hypotension and tachycardia; inability to use vasoactive infusions within the typical dose ranges; and failure to monitor blood pressure adequately when using an automated blood pressure cuff. In managing the cardiac arrest, no one followed current Advanced Cardiac Life Support (ACLS) resuscitation protocols unless they had received ACLS training in the previous 2 yr.

A few caveats about the study are in order. How does case management using this simulator differ from the "real world"? Schwid and O'Donnell[5] acknowledge that the computer-screen–based simulation is *not* the real operating room (OR), and so it is impossible to know whether these subjects would have performed as poorly in real life as in this study. Working "in" the computer screen OR is considerably different than working in the real OR, and regardless of how facile the subjects became with the simulator, its artificial nature might well have adversely affected their performance, especially regarding rapid dynamic responses that may rely on subtle environmental cues to trigger and guide them. The artificial environment can be a two-edged sword. Some activities are probably easier to perform on the computer-screen–only anesthesia simulator than in real life (*e.g.*, preparing an epinephrine infusion from scratch), whereas others are actually easier in the real OR than on the computer screen (*e.g.*, simultaneously adjusting a mask on the patient's face, squeezing the reservoir bag, and listening to breath sounds). In addition, this simulator does not reproduce the human–ma-

Accepted for publication December 20, 1991.
Address reprint requests to Dr. Gaba: Anesthesiology Service, 112A, Palo Alto VAMC, 3801 Miranda Avenue, Palo Alto, California 94304.
Key words: Critical incidents: simulation.

FINNMARKSSYKEHUSET
FINNMÁRKKU BUOHCCIVIESSU

Takk for oppmerksomheten

torben@wisborg.net