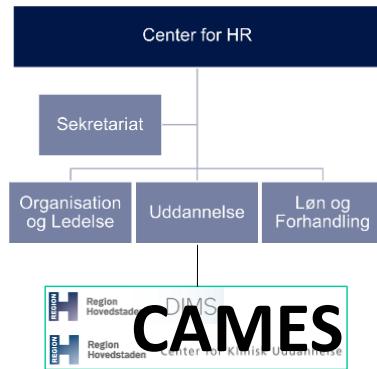


Torsdag den 9. juni 2016

Simulation i dagligdagen

Lars Konge, Overlæge, Ph.D., Klinisk Forskningslektor
lars.konge@regionh.dk

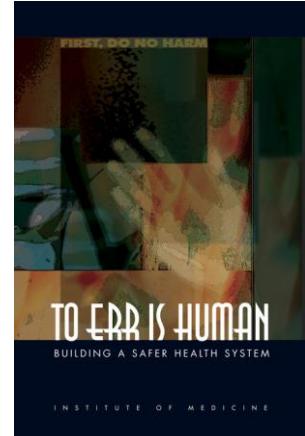
Faculty of Health Sciences
University of Copenhagen CAMES
Copenhagen Academy for Medical Education and Simulation Rigshospitalet



Simulationscenter
Rigshospitalet

Copenhagen Academy for
Medical Education and
Simulation

<http://vimeo.com/109224706>



Forbes / Pharma & Healthcare

SEP 23, 2013 @ 08:50 AM 60,424 VIEWS

Stunning News On Preventable Deaths In Hospitals

Leah Binder, CONTRIBUTOR
[FOLLOW ON FORBES \(78\)](#) [f](#) [t](#) [w](#) [d](#) [e](#)

FULL BIO ▾

In 1999, Americans learned that 98,000 people were dying every year from preventable errors in hospitals. That came from a widely touted analysis by the Institute of Medicine (IOM) called *To Err Is Human*. This was the "Silent Spring" of the health care world, grabbing headlines for revealing a serious and deadly problem that required policy and action.

As it turns out, those were the good old days.

According to a new study just out from the prestigious *Journal of Patient Safety*, four times as many people die from preventable medical errors than we thought, as many as 440,000 a year.

thebmj

BMJ 2016;353:i2139 doi: 10.1136/bmj.i2139 (Published 3 May 2016)

Page 1 of 5

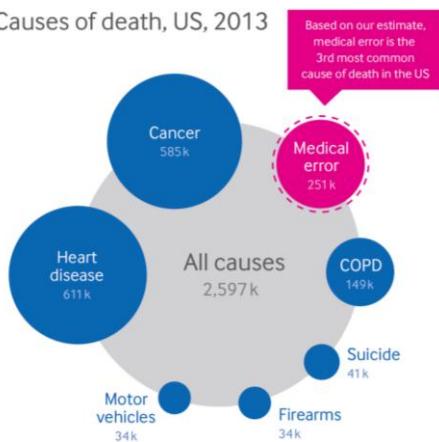
ANALYSIS



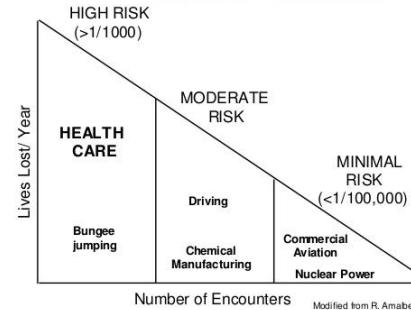
Medical error—the third leading cause of death in the US

Medical error is not included on death certificates or in rankings of cause of death. Martin Makary and Michael Daniel assess its contribution to mortality and call for better reporting

Causes of death, US, 2013

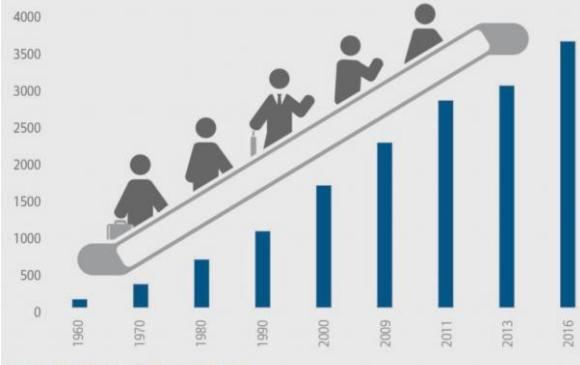


Comparison of Risk in Health Care With Other Industries

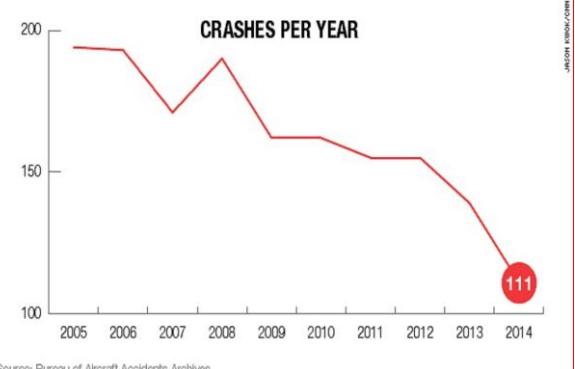


Modified from R. Amalberti and L. Leape

Global passenger numbers on the move (millions)



Sources: IATA Airline Industry Forecast 2012-2016



Certificering



XII/XIII Revalidation of Ratings:					
Rating certificate endorsement	Date of Rating test	Date of IR test	Valid until	Examiner's certificate no.	Examiner's signature
SEP(land)	21.05.2014		31.05.2016	TS / DTA	
BIE300/1900IR	22.11.2014	22.11.2014	30.11.2015	TS / DTA	
B737 300/900IR	27.05.2015	27.05.2015	30.06.2015	TS / DTA	
TR(A)	30.08.2013		30.09.2016	TS / DTA	

Licence no: DK_FCL_04201
Date of issue: 23.06.2015

Name: Christian Collin

Page 5 of 8

REGION Hovedstaden

For sundhed og vækst i hovedstaden

HOSPITALER **TIL FÆGTEK**

Sundhed Forskning Handicap Social Erhverv Miljø Politik Trafik Mere ▾

Forside > Presse og Nyt > Pressemeldelser og nyheder > Læger skal have kørekort først, før de må undersøge og operere patienter

PRESSE OG NYT

Pressefoto Pressekontakter Pressemeldelser og nyheder Region Hovedstaden i pressen

Læger skal have kørekort først, før de må undersøge og operere patienter

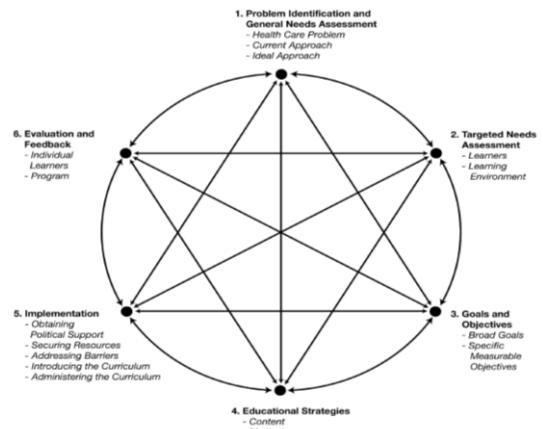
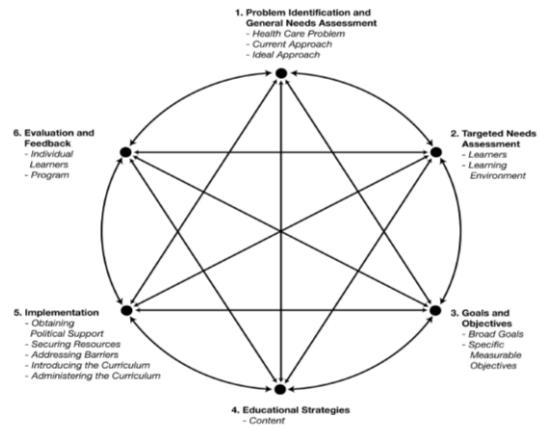
Region Hovedstaden indfører som det første sundhedsråd i verden obligatorisk træning på alle specialister på dukker og computere for læger under speciallægeuddannelse

20. februar 2015, KL 15:20



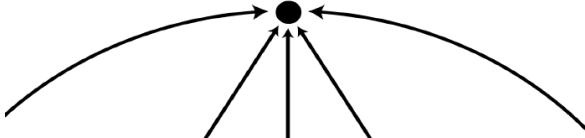
VISION

Man øver sig før man udfører procedurer på patienter



1. Problem Identification and General Needs Assessment

- Health Care Problem
- Current Approach
- Ideal Approach



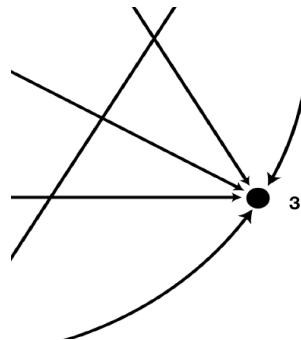
Dansk Selskab for Medicinsk Uddannelse



DELPHI ROUND 2: 30 clinical procedures identified and ranked from 1 to 30, with 1 as the highest AND 30 as the lowest	
1	Pleuracenteste og antageelse af griseplakatete
2	Fokussert bronchoskop
3	EUS-FNA/EUS-B-FNA
4	Antageelse af blærsædler (KAD)
5	Kontrolsionsundersøgelse
6	Transthoracisk biopsi ved pulmonal emboli
7	Transthoracisk
8	EBUS-TBNA
9	Biopsi ved hjælp af magnetisk resonans
10	EUS-FNA/EUS-B-FNA
11	Transthoracisk biopsi af pulma eller lungetumør
12	Biopsi ved hjælp af magnetisk resonans
13	Hudprøvest
14	Nålbiopsi af syrlig hæfthead/tumor i huden
15	Mammotom/mastotom prøvetaking
16	Mammotom/mastotom prøvetaking
17	Ganglionprøvetaking af stort pleuramedie
18	Mammotom
19	Fokussert ultralydsundersøgelse af hjertet
20	Fokussert ultralydsundersøgelse af hjertet (TTE)
21	Afleggerundersøgelse
22	Immunologisk
23	Immunologisk
24	Endoskopisk antropunktur
25	Endoskopisk antropunktur
26	Pleuradækning
27	Pleuradækning ved pulmonal emboli
28	Pleuradækning
29	Eukapnisk hyperventilationstest (EUE)
30	Continuous lungeskopisk exercise test (CLEx)

L. Nayagham et al. 2016 - In press

FINAL LIST OF PROCEDURES IN PULMONARY MEDICINE	
✓ 1	Flexible bronchoscopy
✓ 2	Pleuracenteste
✓ 3	EBUS-TBNA
4	EUS-FNA/EUS-B-FNA
5	NIV
6	Transthoracic biopsy
✓ 7	Focused lung ultrasound
✓ 8	Chest tube
9	Needle biopsy
10	Focused heart ultrasound
✓ 11	Thoracoscopy



- ## 3. Goals and Objectives
- Broad Goals
 - Specific
 - Measurable
 - Objectives

Surg Endosc (2006) 20: 1460–1466
DOI: 10.1007/s00464-005-0745-x
© Springer Science+Business Media, Inc. 2006



Objective assessment of gynecologic laparoscopic skills using the LapSimGyn virtual reality simulator

C. R. Larsen,¹ T. Grancharov,² R. Aggarwal,³ A. Tully,³ J. L. Sorensen,¹ T. Dalsgaard,¹ B. Ottesen¹

Chest clinic

AUDIT, RESEARCH AND GUIDELINE UPDATE

A new instrument to assess physician skill at chest tube insertion: the TUBE-iCOMPT

Matthew R Salamonsen,¹ Farzad Bashirzadeh,¹ Alexander J Ritchie,² Helen E Ward,³ David I K Fielding¹



Testing Basic Competency in Knee Arthroscopy Using a Virtual Reality Simulator

Exploring Validity and Reliability
Mark E. H. Thomassen,¹ MS, Bernt Jon Andreassen,¹ MD, Claus O Hansen,¹ MD, Lars Konge,¹ MD
J Bone Joint Surg Am. 2010 May; 92 (5): 775-781. <http://dx.doi.org/10.2106/JBJS.N.0247>

Validity of a cross-specialty test in basic laparoscopic techniques (TABLET)
E. Thøgersen¹, J. E. Hærrem², J. Strandbergsgaard³, I. Gjerris⁴ and L. Konge⁵

Simulation-based certification for cataract surgery

Anne Sofia Skov Thomsen,^{1,2} Jens Folke Kilsgaard,¹ Hadi Kjærbo,¹ Morten la Cour³ and Lars Konge²

Acta Orthopædiska 2014; 85 (4): 403-407
Assessment of performance measures and learning curves for use of a virtual-reality-driven simulator in training cataract extraction

S. E. Skov Thomsen,¹ J. Kjærbo,¹ L. N. Kilsgaard,¹ L. Konge,² C. Ringstedt,¹ H. Kjærbo,¹ S. A. A. Klemmensen,¹ B. Ottosen¹ and M. G. Thøgersen¹

EJA

Eur J Anaesthesiol 2014; 31:1-6

ORIGINAL ARTICLE

Simulation-based training in flexible fiberoptic intubation: A randomized study

Philip M. Nilsson,¹ Lars Russell,¹ Charlotte Ringstedt,¹ Peter Hertz and Lars Konge²

Eur J Anaesthesiol 2014; 31:1-6
Assessment of performance measures and learning curves for use of a virtual-reality-driven simulator in training cataract extraction

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Interventional Pulmonology

Intervent Pulmonol 2014; 10 (1): 1-6

Using Virtual-Reality Simulation to Assess Performance in Endotracheal Ultrasound

Philip M. Nilsson,¹ Lars Russell,¹ Charlotte Ringstedt,¹ Peter Hertz and Lars Konge²

Intervent Pulmonol 2014; 10 (1): 1-6
Assessment of performance measures and learning curves for use of a virtual-reality-driven simulator in training cataract extraction

S. E. Skov Thomsen,¹ J. Kjærbo,¹ L. N. Kilsgaard,¹ L. Konge,² C. Ringstedt,¹ H. Kjærbo,¹ S. A. A. Klemmensen,¹ B. Ottosen¹ and M. G. Thøgersen¹

Otolaryngology

Otolaryngol Head Neck Surg 2014; 151 (5): 1011-1016

Preparing for Emergency: A Valid, Reliable Assessment Tool for Emergency Cricothyroidotomy Skills

Jacob Melchior,¹ Tobias Tødsen,¹ Philip Nilsson,¹ Kasper Wennervadlt,¹ Birgitte Charabi,¹ Morten Bettiger,¹ Lars Konge² and Christian von Buchwald¹

Otolaryngology – Head and Neck Surgery published online 10 November 2014

ORIGINAL ARTICLE

EJA

Eur J Anaesthesiol 2014; 31:1-6

REVIEW

Respiratory

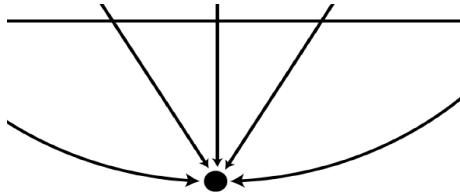
Respiratory 2014; 21 (1): 1-10

Reliable and Valid Assessment of Point-of-care Ultrasonography

Julian Tolson,¹ MDT¹ Martin Grunewald Tødsen,¹ MDT¹ Both Hærrem¹, Øivind MDT¹, Birthe Mørck Hærrem¹, MDT¹ Ann Georg Hilleberg¹, MDT¹ Lars Konge,¹ MDT¹, Morten La Cour¹, MDT¹ and Charlotte Ringstedt¹

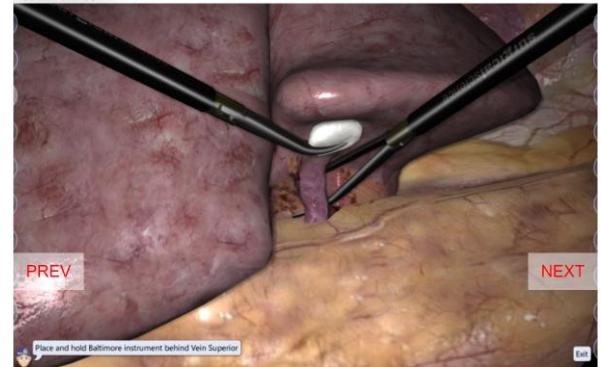
Respiratory 2014; 21 (1): 1-10
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4. Educational Strategies

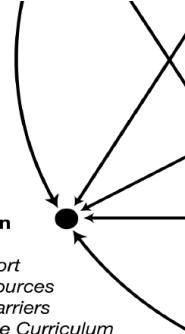
- Content
- Method



a TABLIT training kit



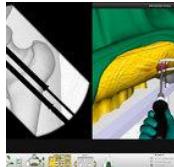
b TABLIT in use



5. Implementation

- Obtaining Political Support
- Securing Resources
- Addressing Barriers
- Introducing the Curriculum
- Administering the Curriculum

Simulator



+ Klinisk ekspert



+ Ph.D.-student



= Implementering

I4	Basal gynækologisk kirurgi (C/D)	<p>Som assistent ved kirurgiske indgreb være orienteret om indikation og valgte operationsmetode og i dialog med operator afstemme egen rolle <i>Rolle: Professionel</i></p> <p>Etablere samarbejde i det tværfaglige kirurgiske team</p> <p>Redegøre for og kunne anvende principperne for "sikker kirurgi"</p> <p><i>Rolle: Samarbejder og Leder/administratør/organisator</i></p> <p>Indgå i det tværfaglige team omkring patienten før, under og efter operationen</p> <p><i>Rolle: Samarbejder og Leder/administratør/organisator</i></p>	<p>Superviseret klinisk arbejde</p> <p>Formaliseret undervisning i teoretisk viden inden for basal laparoskopisk kirurgi, gerne afsluttet med teoretisk test</p> <p>Struktureret simulations-trening i basale laparoskopiske færdigheder ved brug af virtual reality simulator</p> <p>Foretage deloperacion ved operative laparoscopier fx den diagnostiske</p>	<p>Forud for operationer på patienter have bestået basal model og procedure model (fx salpingekтоми) på virtual reality simulator</p> <p>Checkliste til dokumentation af laparoskopiske sterilisationer inklusiv diagnostiske laparoscopier evt. som deloperacion (ca. 10 indgreb)</p> <p>Videoptagelse og efterfølgende vurdering af ca. én laparoskopisk operation (OSATS el. OSALS)</p>
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Kompetence	Konkretisering af kompetence	Læringsstrategi(er), anbefaling	Kompetence-vurderingsmetode(r) obligatorisk(e)
12 Den akutte Øre-næse og halspatient Modtage, vurdere og starte behandling af akutte patienter med akutte hals-, øre, samt livstrudske symptomer, herunder: •Have kendskab til midnatskostomi og kunne foretage dette på fantom •Kunne foretage trakotomni under supervision fra en kollega (niveau C) •Relevant ordination af medicin ved infektion og ødem •Hemostase Indenfor disse patientekategorier kunne: væsentlig relevant akut reaktion, informere patienten om indesøgelse, diagnose, behandling og sikre patients accept	Herunder initial håndtering af: <ul style="list-style-type: none"> Fremmedlegemer og atsning i luftveje, oesophagus Ansigts- og halstraumer Traumatiske øjne Akut øjensmerte Paranasal osseal absces Blødning efter tonsillektomi Angioneurotisk ødem i mundhule, sværtig og stribe Bilateral recurrenspuse	Superviseret klinisk arbejde Færdighedstræning med fantom til nosotracheotomi Case-gennemgang Gennemgang af case ved hovedejeler Bestud simulations-fellob i kirurgisk nosotracheotomi	Kompetencevurdering: Dokumentation for træningsstunden i kitellommebog.



1. Simulations-baseret træning bør erstatte den traditionelle mesterlære model ved indlæring af tekniske færdigheder.

SAND

FALSK

2. Alle hospitalsafdelinger med uddannelsessøgende læger bør have fantomer og virtual-reality simulatorer til simulations-baseret træning.

SAND

FALSK

3. Simulatorernes grad af realisme er meget vigtig for læringsudbyttet. Højere realisme giver bedre læring.

SAND

FALSK

4. Heldags-kurser med hands-on træning er meget effektive når man skal lære tekniske færdigheder.

SAND

FALSK

5. En dygtig speciallæge er nødvendig under hele den simulationsbaserede træning for konstant at give instruktioner og feedback.

SAND

FALSK

6. Afsluttende eksaminer er kun nødvendige hvis de kræves i målbeskrivelsen – ellers er det bedre at bruge tiden på mere træning.

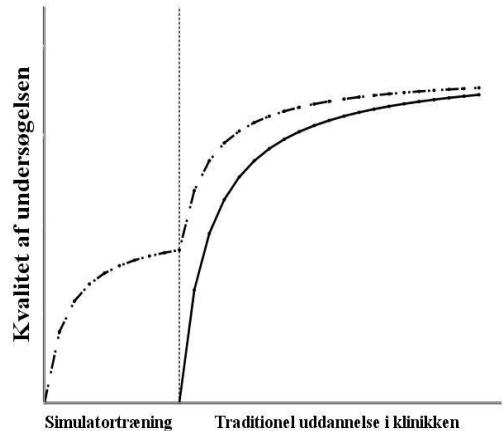
SAND

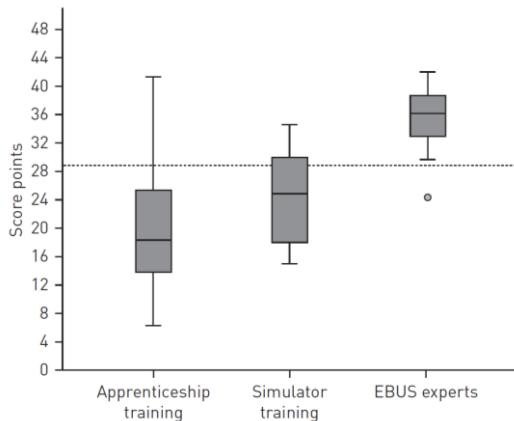
FALSK



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FALSK





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FALSK



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FALSK

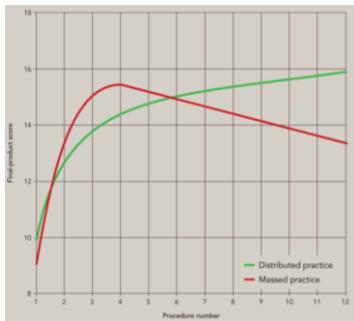


4. Heldags-kurser med hands-on træning er meget effektive når man skal lære tekniske færdigheder.



FALSK

Distributed learning



Andersen S, Konge L, Cayé-Thomassen P, Sørensen M. Learning Curves of Virtual Mastoidectomy in Distributed and Massed Practice. JAMA Otolaryngol Head Neck Surg. Published online September 03, 2015.

5. En dygtig speciallæge er nødvendig under hele den simulationsbaserede træning for konstant at give instruktioner og feedback.

FALSK

Directed Self-Regulated Learning (DSRL)

Directed self-regulated learning versus instructor-regulated learning in simulation training

Ryan Brydges,¹ Parvathy Nair,² Irene Ma,³ David Shanks² & Rose Hatala²

CONCLUSIONS Both IRL and DSRL led to improved LP performance immediately after practice. Whereas the IRL group's skills declined after 3 months, the DSRL group's performance was maintained, suggesting a potential long-term benefit of this training. Participants in the DSRL group also developed a more accurate relationship between confidence and competence following practice. Further research is needed to clarify the mechanisms of self-regulated learning and its role in simulation contexts.

6. Afsluttende eksaminer er kun nødvendige hvis de kræves i målbeskrivelsen – ellers er det bedre at bruge tiden på mere træning.

FALSK

The effect of testing on skills learning

Charles B Kromann, Morten L Jensen & Charlotte Ringsted

CONCLUSIONS Testing as a final activity in a resuscitation skills course for medical students increases learning outcome compared with spending an equal amount of time practising the skills.

OBJECTIVE To determine whether testing as a final activity in a skills course increases learning outcome compared with spending an equal amount of time practising the skills.

METHODS We carried out a prospective, controlled, randomised single-blinded, post-only intervention study, preceded by a similar pre- and post-test pilot study in order to make a power calculation. A total of 140 medical students from the 7th year of a 5-year 1-hour in-hospital resuscitation course in the seventh semester were randomised to either the intervention or control group and were invited to participate in an assessment of learning practising the skills.

RESULTS Testing as a final activity in a resuscitation skills course for medical students increases learning outcome compared with spending an equal amount of time practising the skills.

CONCLUSIONS Testing as a final activity in a resuscitation skills course for medical students increases learning outcome compared with spending an equal amount of time practising the skills.

Unadjusted mean scores: 95% CI vs. 0.00.

Mastery learning



TEORETISK KURSUS
EKSAMEN
SIMULATIONSBASERET TRÆNING
EKSAMEN
SUPERVISERET TRÆNING
EKSAMEN
SELVSTændIG UDFØRELSE
MONITORÉR DINE RESULTATER

TAKE HOME MESSAGES

- Læger skal øve sig før de udfører kliniske procedurer på patienter
- Simulationstræning kræver (meget) mere end simulatorer
- Fordel træningen over tid
- Tillad læger under oplæring at eksperimentere og lære af deres fejl
- Man skal trænes OG testes!



lars.konge@regionh.dk

