Checklists in EM: Multifaceted Tool

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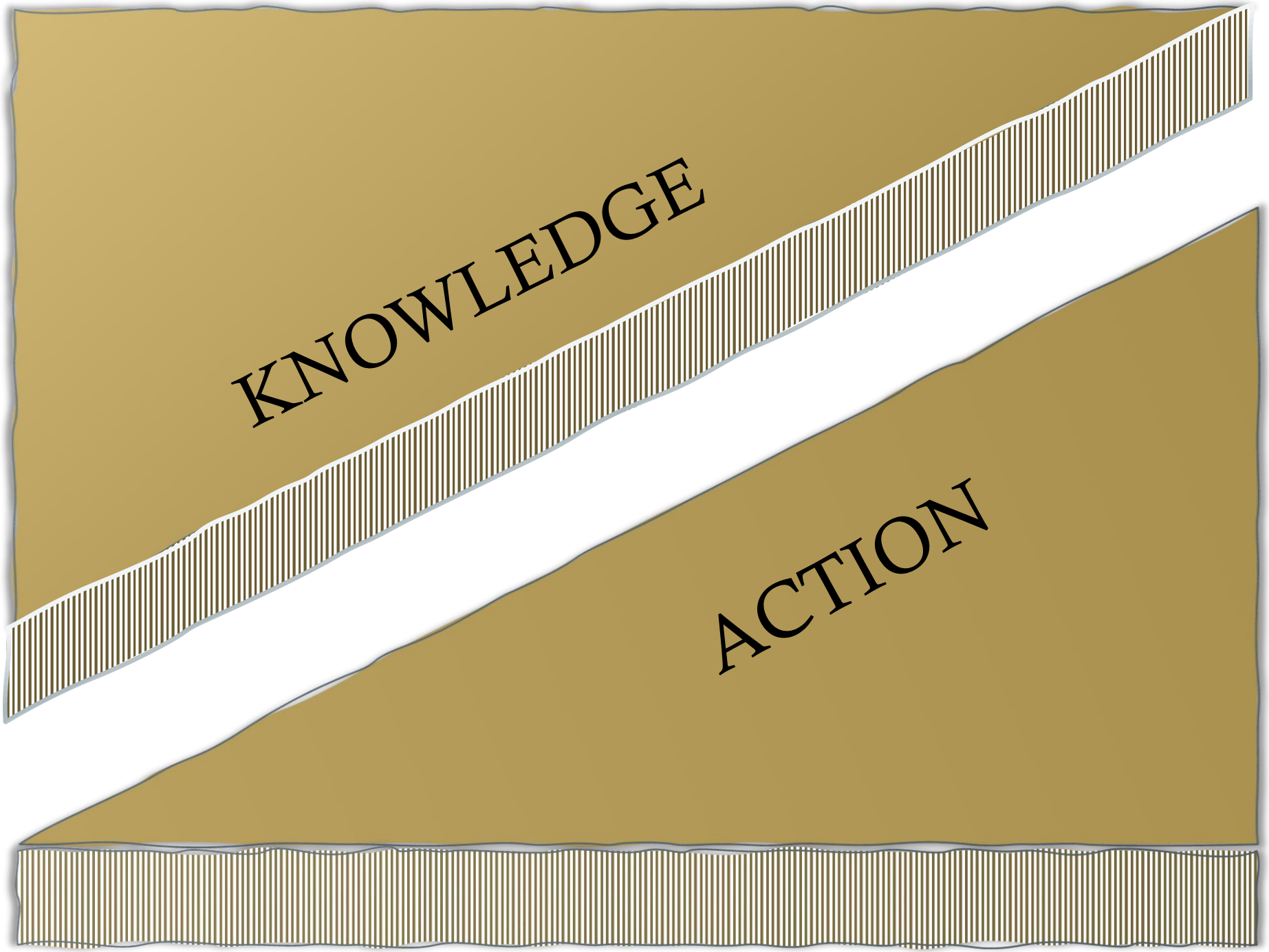
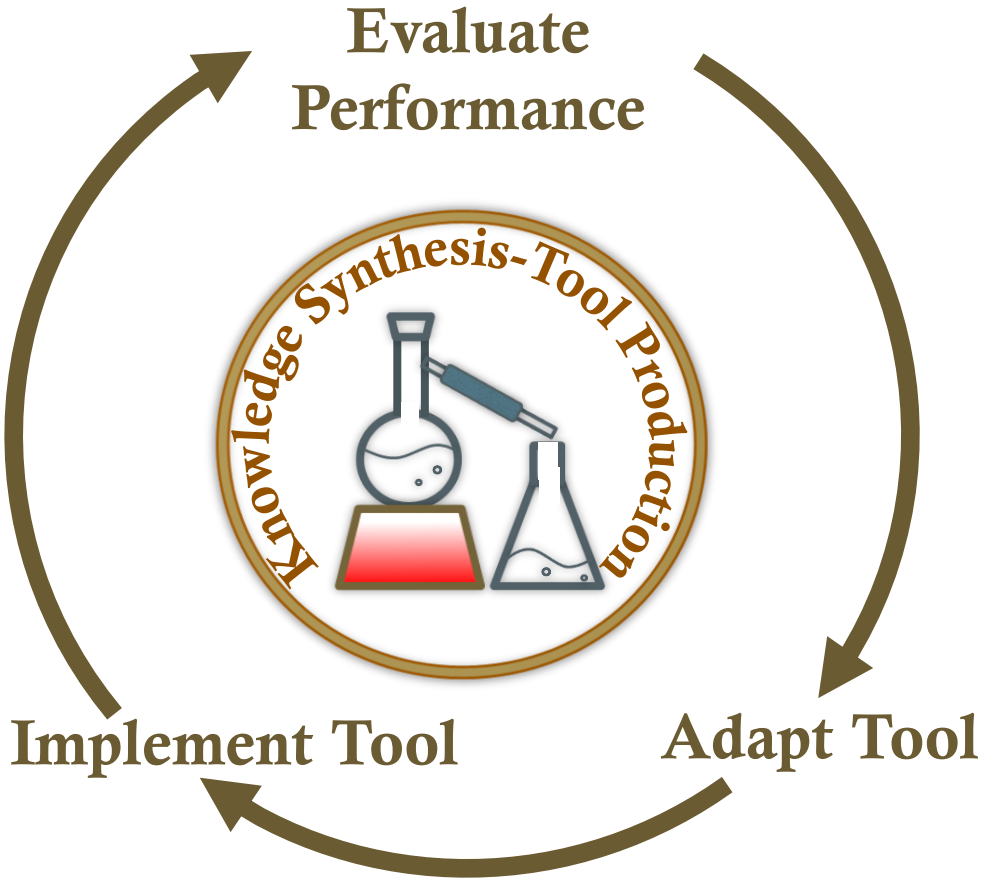
LUND UNIVERSITY

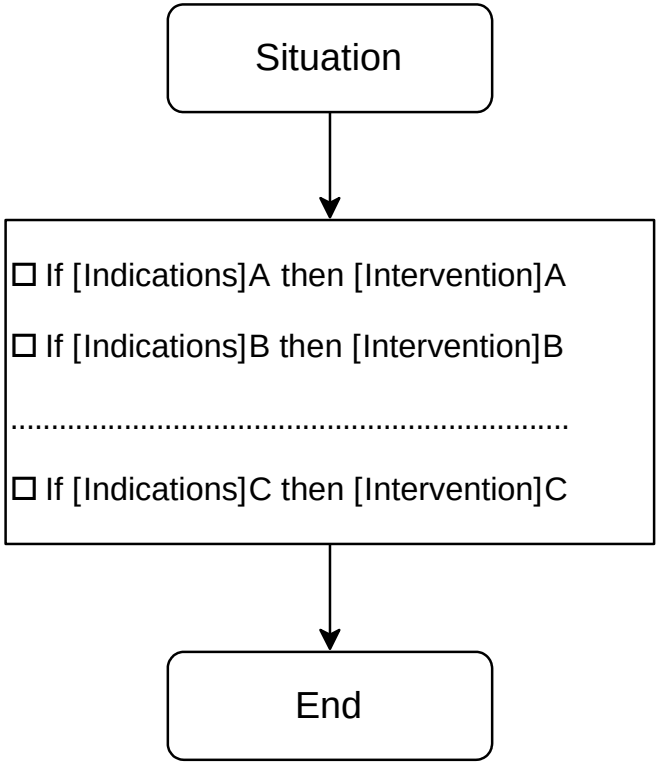

KNOWLEDGE
ACTION

Knowledge-to-Action Framework

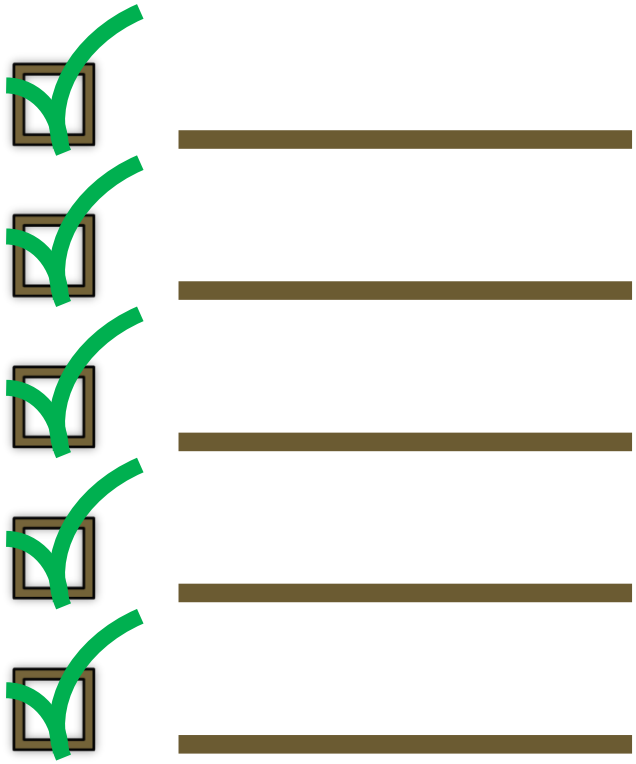


Tool Production

Knowledge-to-Action Tool



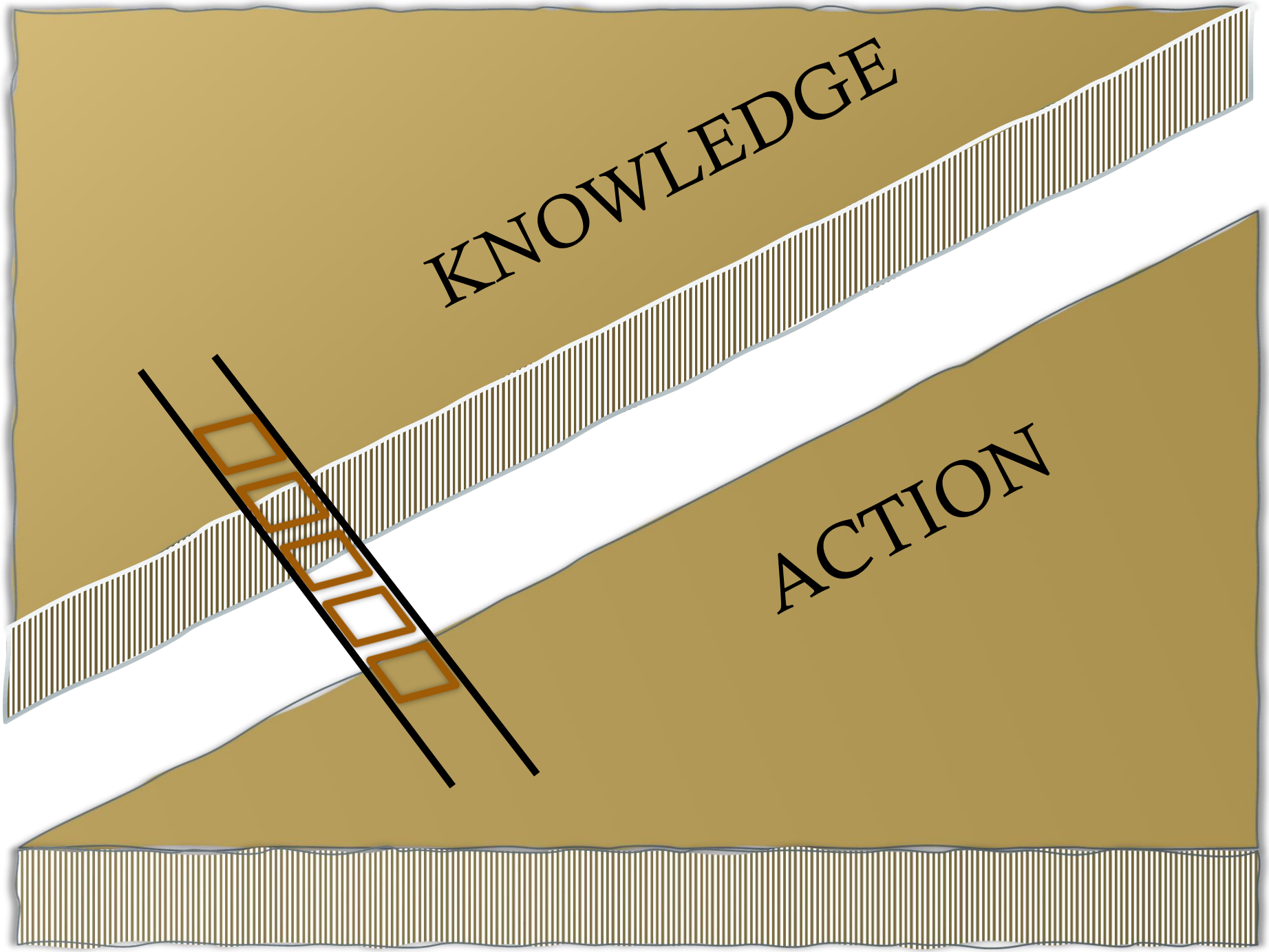
Checklist



Knowledge-to-Action Tool

Checklist: purpose?

Completeness, consistency, efficiency
when carrying out tasks

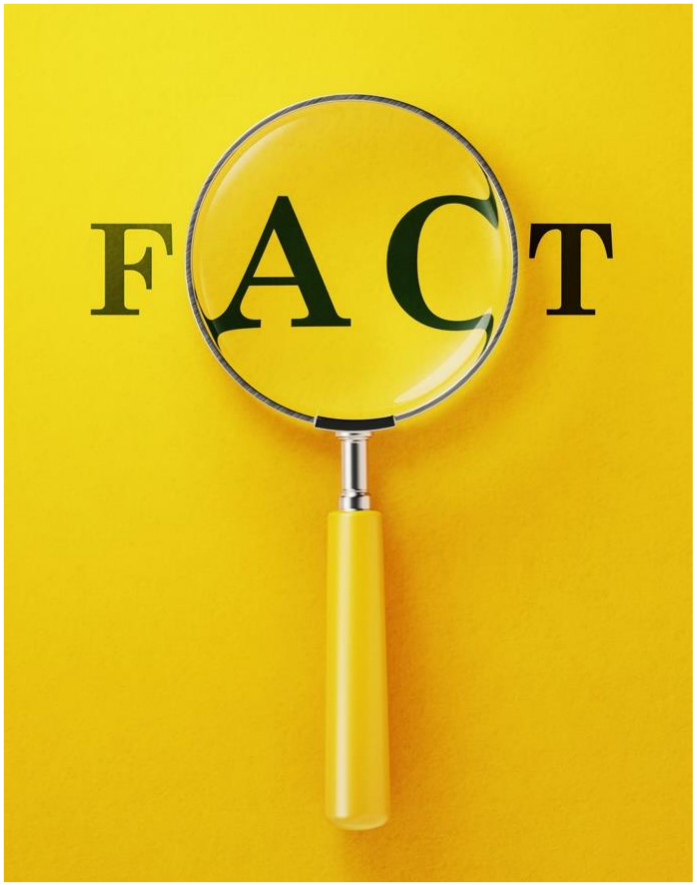

KNOWLEDGE
ACTION

How do checklists work?

- Focus

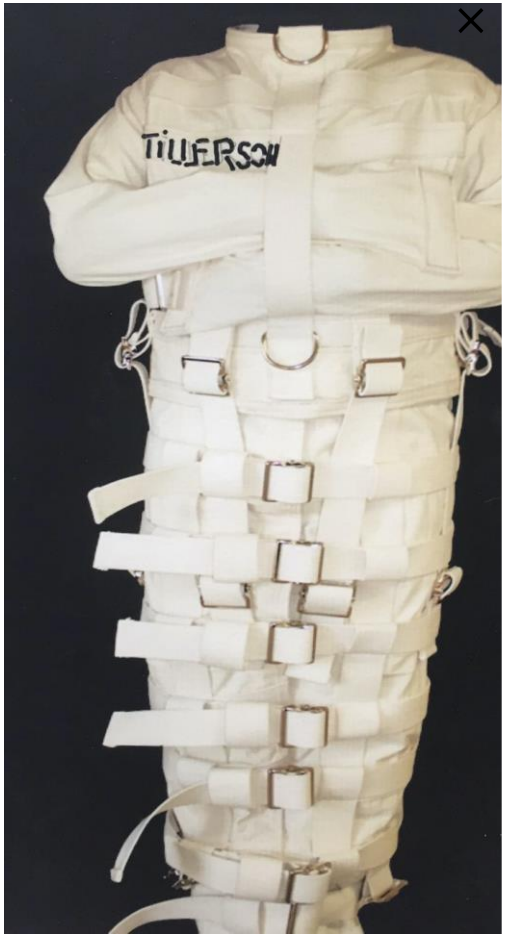
How do checklists work?

- Focus
- Facts



How do checklists work?

- Focus
- Facts
- Forcing function



How do checklists work?

- Focus
- Facts
- Forcing function

Knowledge

↓

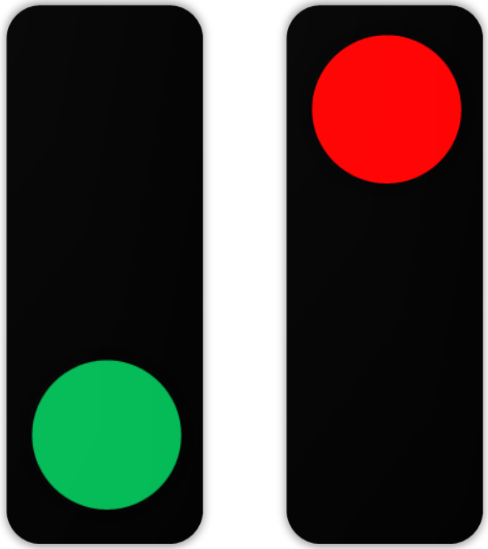
Standard Operating Procedure

↓

Checklist

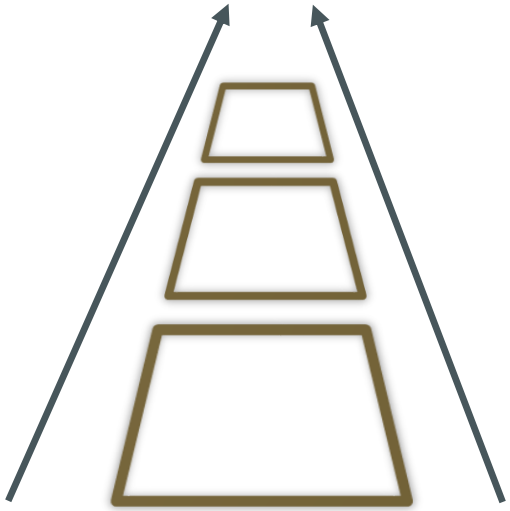
How do checklists work?

- Focus
- Facts
- Forcing function
- aFFirmation



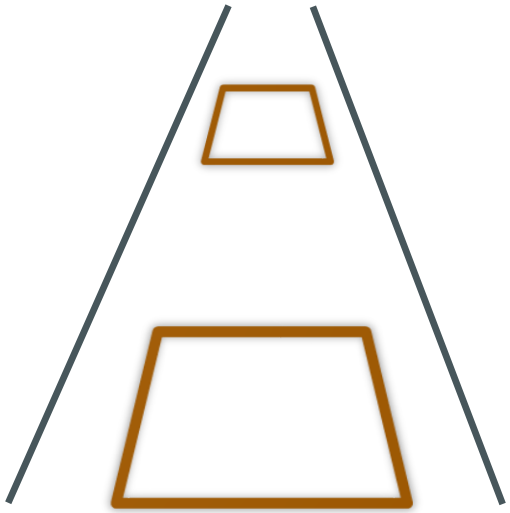
How do checklists work?

- Focus
- Facts
- Forcing function
- aFFirmation
- Flow

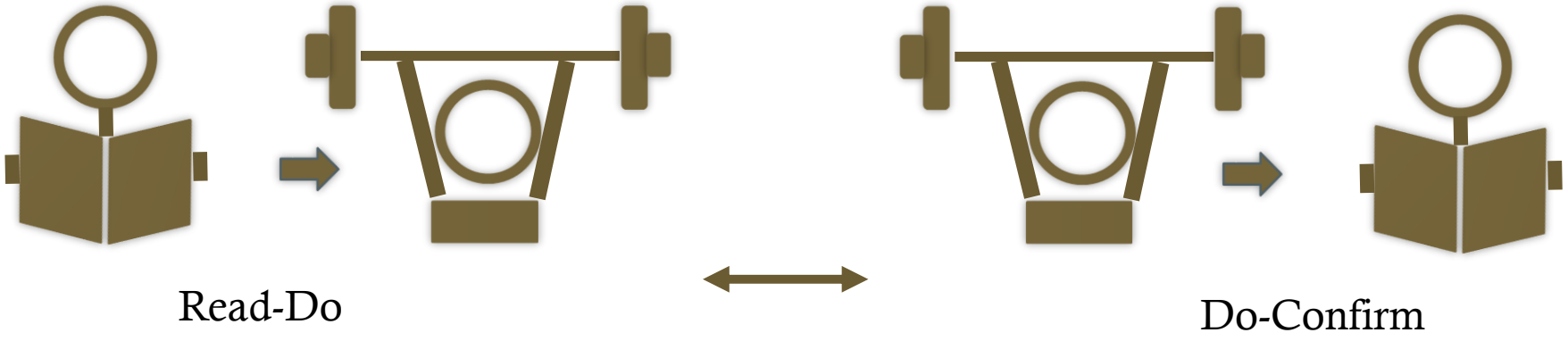


How do checklists work?

- Focus
- Facts
- Forcing function
- aFFirmation
- Flow
- Fewer

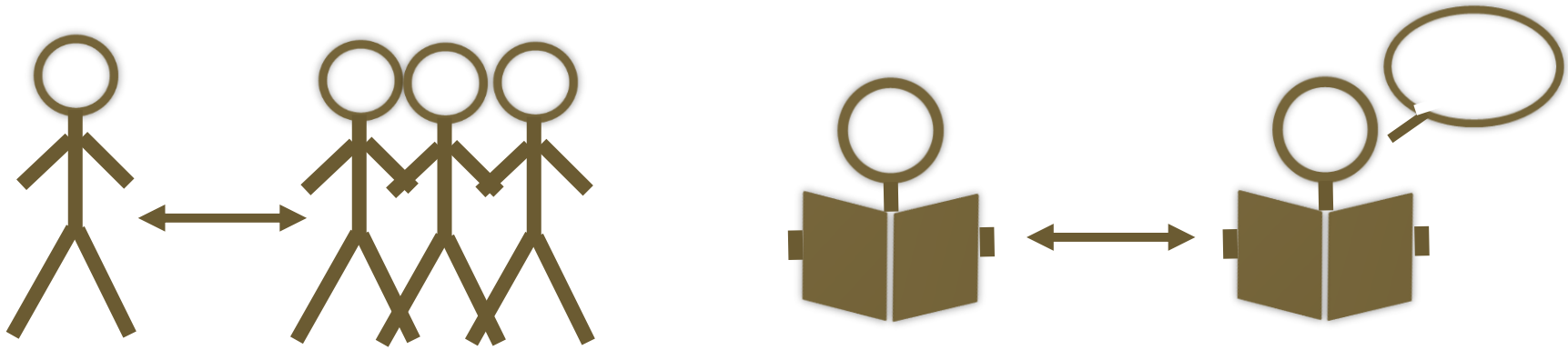


How are checklists used?



Read-Do

Do-Confirm



How do checklists work?

- Focus
- Facts
- Forcing function
- aFFirmation
- Flow
- Fewer
- Forum

Checklists in Emergency Medicine

Checklists in Emergency Medicine

1. Diagnosis
2. Procedures
3. Examination
4. Resuscitation
5. Training

Diagnostic Errors

Insufficient data

Insufficient knowledge

Premature closure

Chest/Thoracic Pain

Pain or discomfort localized to or under the chest wall (including the back) If pain localized to the midline of the back: use instead Back Pain

BACKGROUND

M	☐ Current medications? ☐ Birth control pill, other hormonal treatments?
A	☐ Allergies?
P	☐ Past medical history? ☐ Prior heart or thromboembolic disease?
L	☐ Life circumstances?
E	☐ Alcohol: how often? How much?
S	☐ Smoking: amount? Prior smoking?

PHYSICAL

Vitals	☐ RR, SpO2%, HR, BP, Temp?
Heart	☐ S3/S4, murmurs? ☐ Elevated JVP?
Lungs	☐ Rales? ☐ Decreased breath sounds?
Chest	☐ Redness? Rash? ☐ Tenderness on palpation?
Abdo	☐ Upper abdominal tenderness?
Legs	☐ Swelling? Edema?

HISTORY

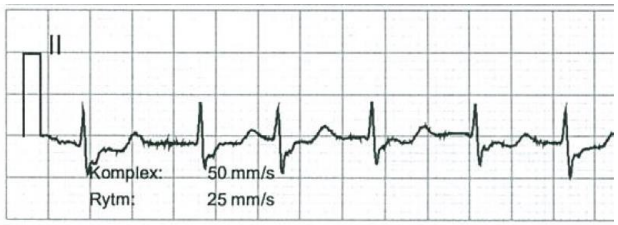
O	☐ When did the pain start? What were you doing? ☐ Time till max intensity: sec? min? hr?
P	☐ Pain location? Size of the painful area? ☐ Radiation?
Q	☐ Cramping, aching, sharp, ripping, burning?
R	☐ Worse with deep inspiration? ☐ Worse with movement?
S	☐ VAS (1-10)?
T	☐ Constant or intermittent? Increasing? ☐ Prior similar painful episodes?
+	☐ Wind: shortness of breath? ☐ Walk: leg pain/swelling? ☐ Warm: fever/chills?

TESTS

- ☐ Troponin if > 40 years
- ☐ EKG

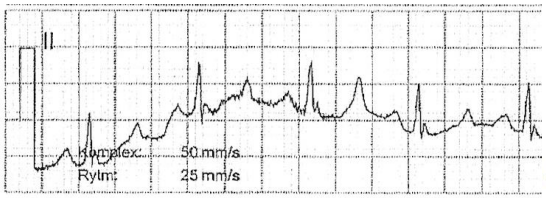
http://lucem.info/checklists/

2-Procedures

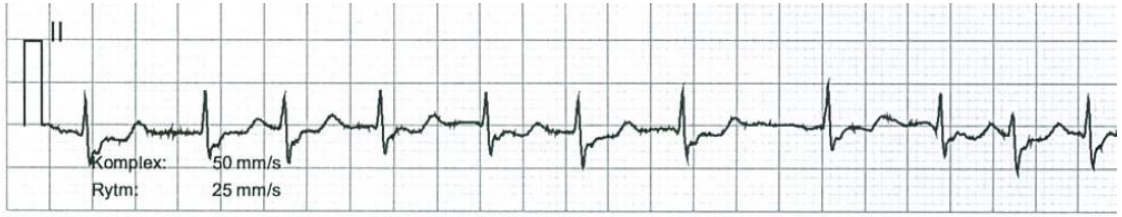


- 2014

MAVA

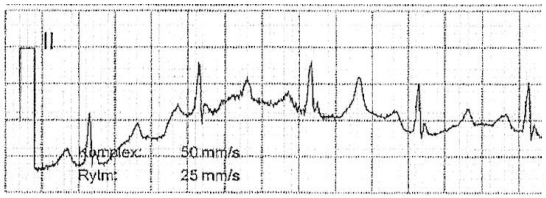


2015


II
Komplex: 50 mm/s
Rytm: 25 mm/s


MAVA


Propofol-PF %
Emulsion for
Injection or Infusion
200 mg/20 ml
Propofol
Sterile
For I.V. Administration
Shake ampoule
thoroughly before use
PF
POLFARMA


II
Komplex: 50 mm/s
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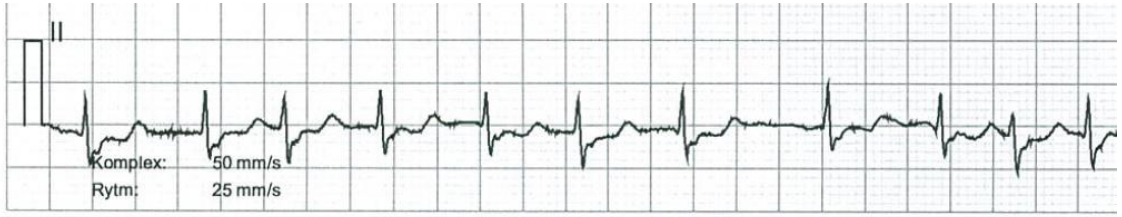
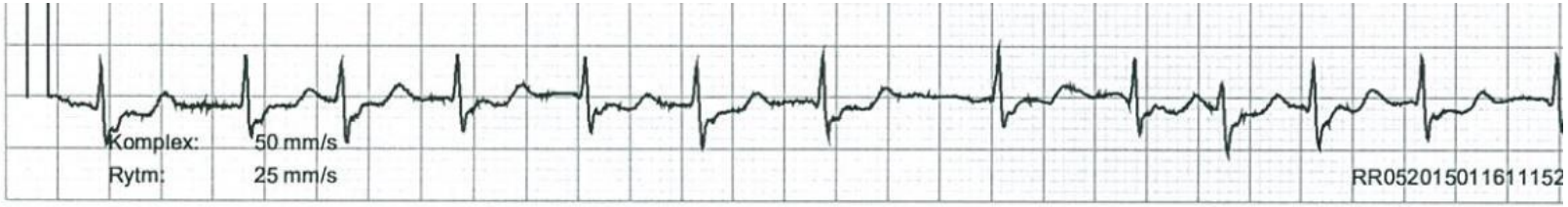
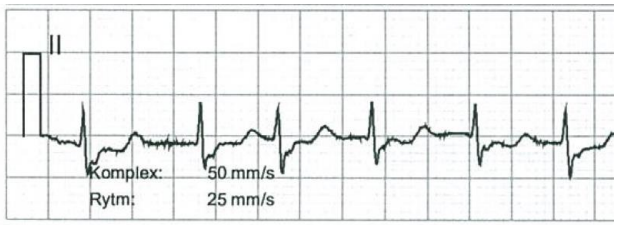
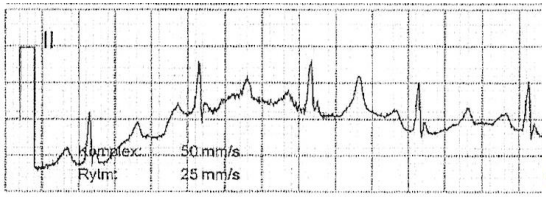
2016


II
Komplex: 50 mm/s
Rytm: 25 mm/s


Komplex: 50 mm/s
Rytm: 25 mm/s
RR052015011611152

PSA by EM docs





PSA Checklist

PATIENTDATA					
☐ Fastande: ≥ 2 timmar klara vätskor och ≥ 6 timmar mat/icke klara vätskor					
☐ SpO2 ≥ 90% och Systoliskt blodtryck ≥ 100 mmHg					
☐ Inga allergier mot sederingsmedlet		☐ Icke gravid, ammar ej			
Född år:	Vikt:	Längd:	ASA-klass:	DMV score:	Kalium:

UPPKOPPLING OCH FÖRBEREDELSER		
☐ Pulsoximeter	☐ O2 10 L/min via mask med reservoar	☐ 3-avl EKG
☐ Ringeracetatdropp via 3-vägskran, gott flöde		☐ Blodtrycksmanschett motsatt sida
☐ Dra upp läkemedel		

UTRUSTNING MED FUNKTIONSKONTROLL OCH TILLGÅNG TILL LÄKEMEDEL		
☐ Sug	☐ Svalgtub	☐ Näskantarell
☐ Rubens blåsa	☐ Larynxmask	☐ Laryngoskop
☐ Atropin 0,5 mg/ml	☐ Adrenalin 0,1 mg/ml	☐ NaCl 0,9% 10 ml

TIME-OUT				
Sederingsläkaren redovisar för handläggningsplan vid eventuella komplikationer:				
☐ Kräkning	☐ Ofri luftväg	☐ Apné	☐ Hypotension	☐ Bradykardi

KRÄKNING

1. Vänster sidoläge
2. Trendelenburg

OFRI LUFTVÄG

1. Basala luftvägsmanövrar (käklyft, jaw thrust, head tilt)
2. Näskantarell eller svalgtub vid uteblivен effekt
3. Anestesilarm vid uteblivен effekt
4. Larynxmask risk för kräkning när patienten återfår medvetande

APNÉ

1. Maskventilation med Rubens blåsa

HYPOTENSION

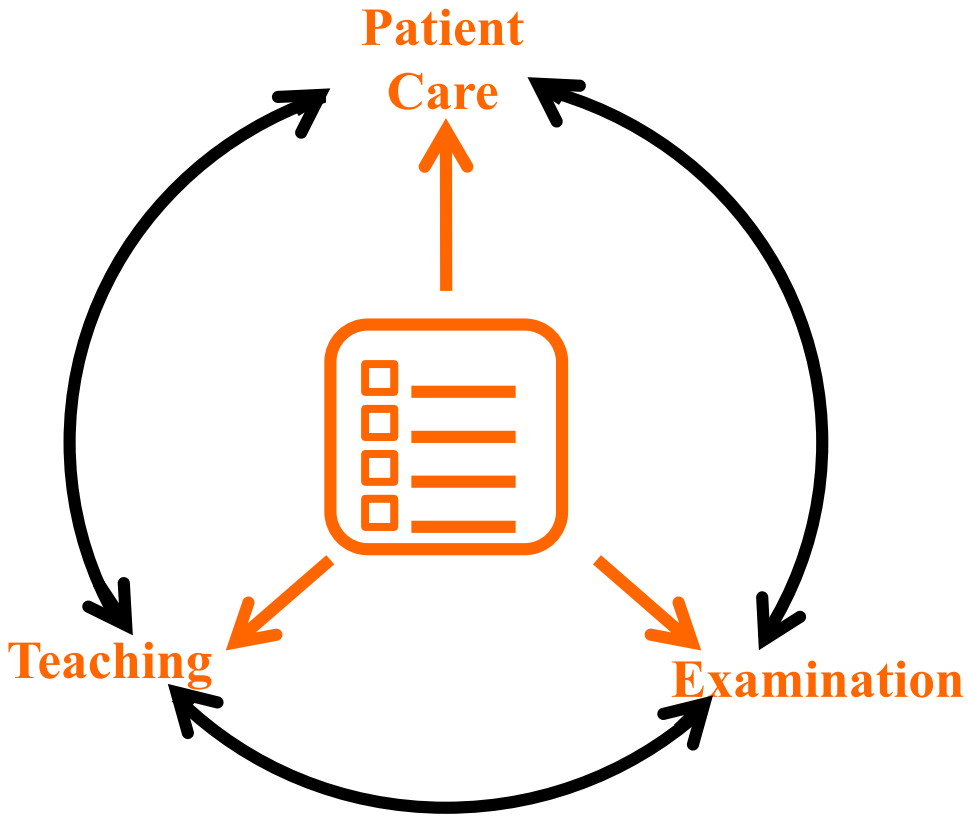
1. Ringeracetat med övertryck
2. Push-dose pressor:
   - Efedrin 50 mg/ml 0,1 ml IV. Eller:
   - Adrenalin 20 µg IV:
     - Adrenalin 0,1 mg/ml 1 ml dras upp i en 10 ml spruta
     - NaCl 0,9% 9 ml dras upp i sprutan (resulterar i lösning Adrenalin 10 µg/ml)
     - 2 ml (20 µg) administreras IV
3. Tillkalla narkos vid uteblivен effekt

BRADYKARDI

1. Asystole/svår bradykardi: pacing (100 mA, 60/min)
2. Atropin 0,5 mg/ml 2 ml IV
3. Bradykardi + hypotension: Adrenalin 20 µg IV (se ovan)

http://lucem.info/checklists/

3-Examination



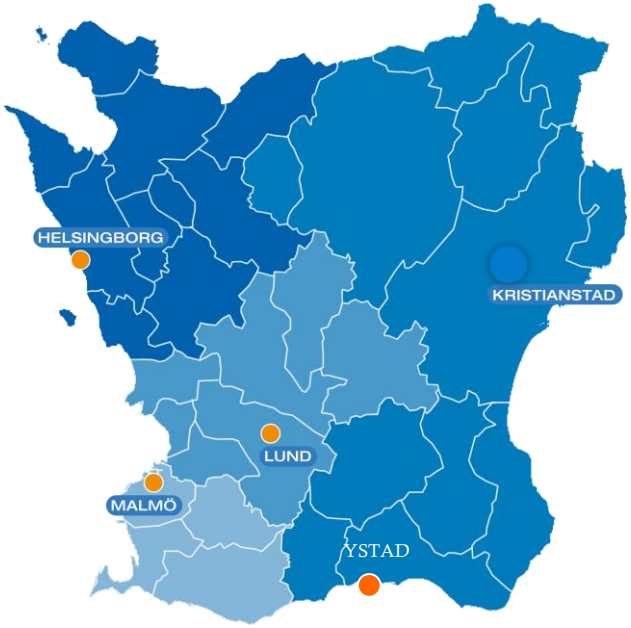
Alignment **Transparency**

http://www.swesem.org/

Utbildningsmaterial

4-Resuscitation

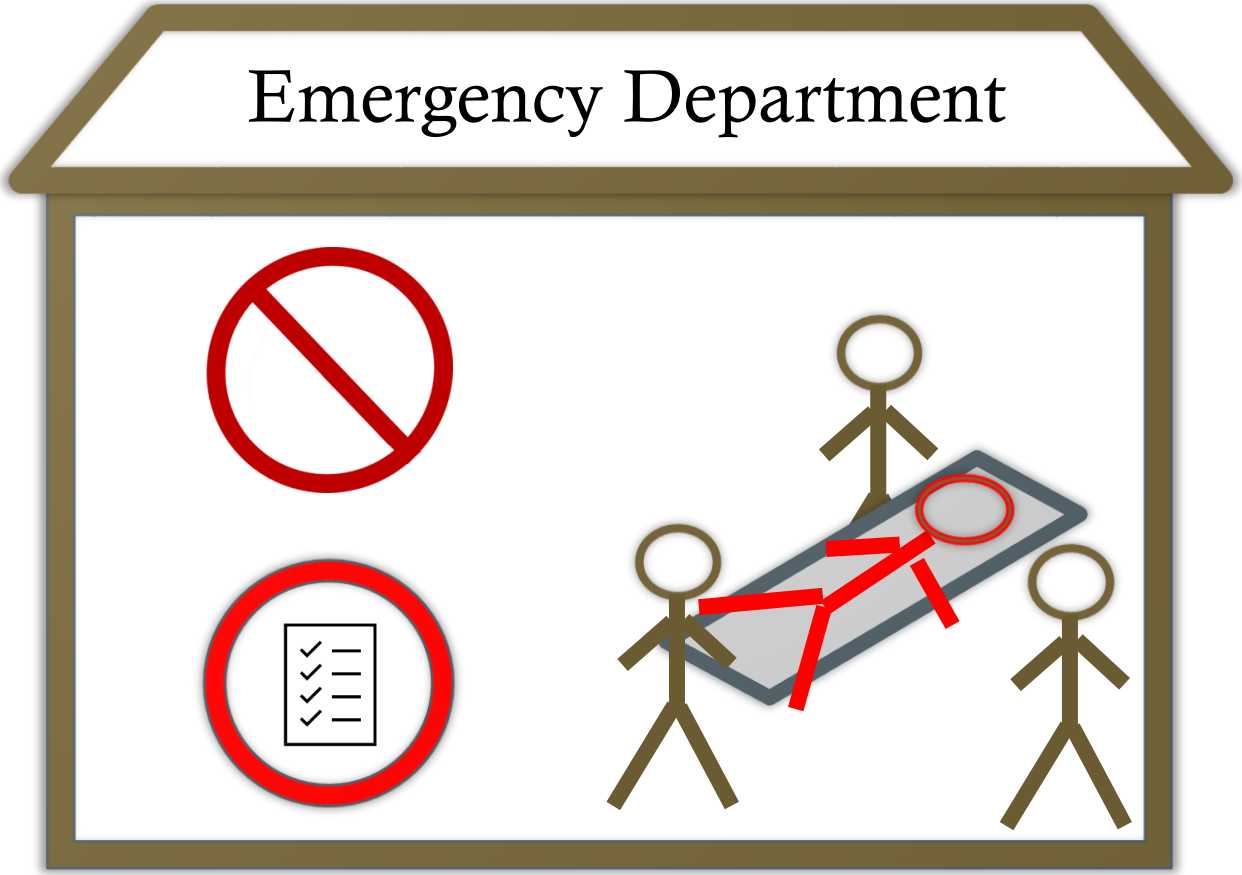
Helsingborg

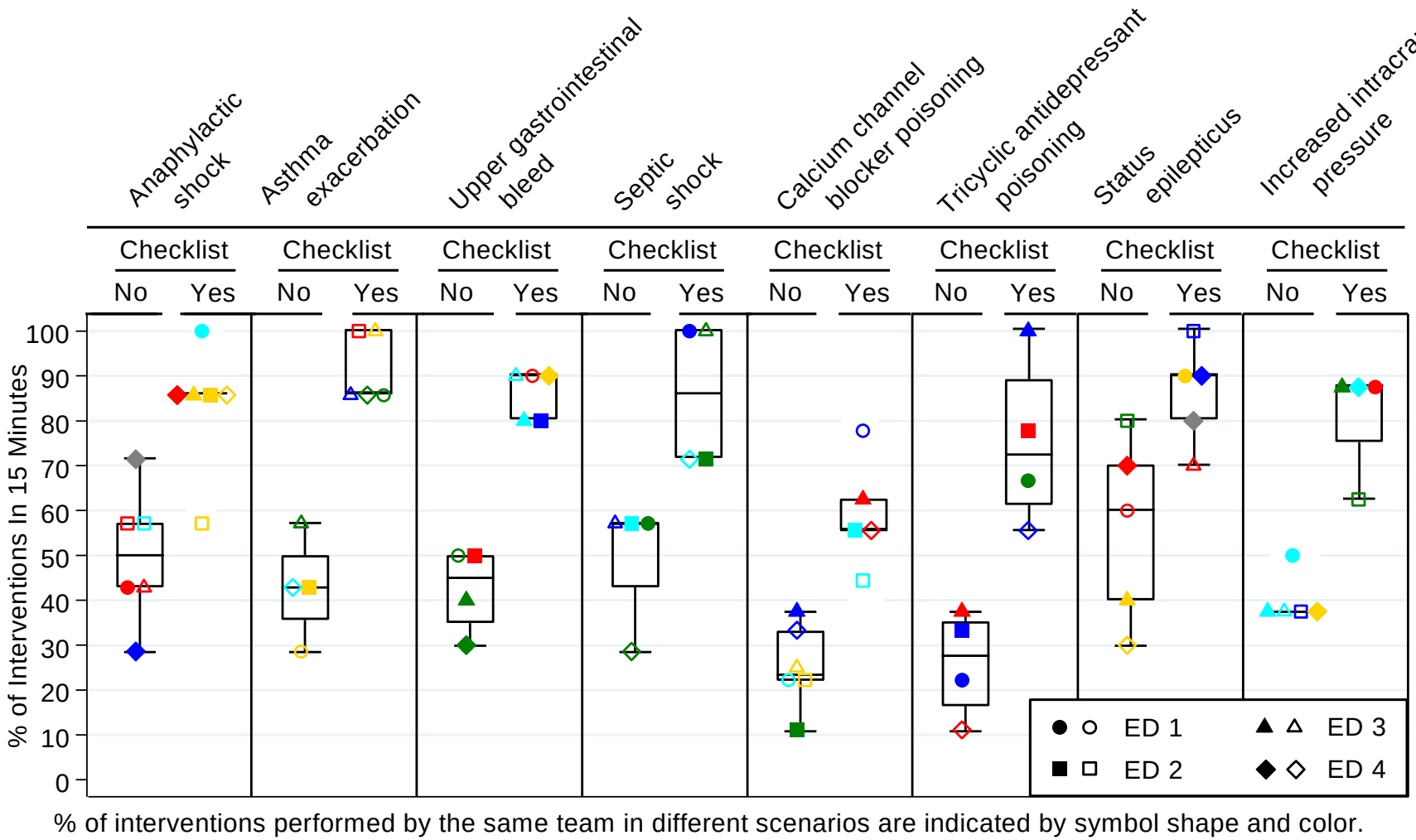


Lund

Malmö

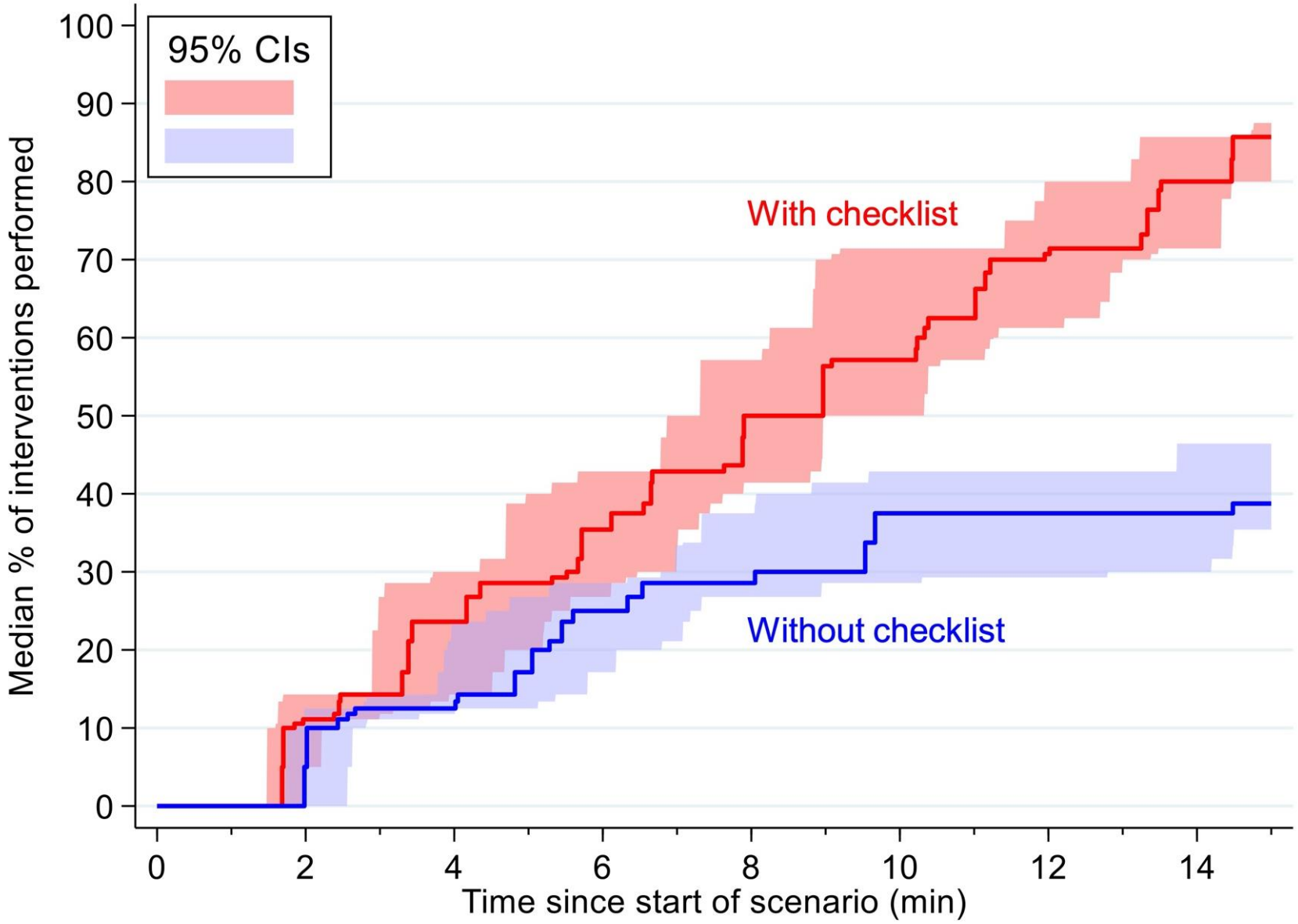
Ystad


Emergency Department



% of interventions performed by the same team in different scenarios are indicated by symbol shape and color.

Median: 39% without vs 86% with checklist ($p < 0.001$)


95% CIs
With checklist
Without checklist
Median % of interventions performed
100
90
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
Time since start of scenario (min)

Strengths & Limitations

Strengths

- Actual teams during shift
- In-situ, finding own stuff
- Access to usual cognitive aids

Limitations

- Nil on diagnostic process
- Nil on navigation
- Selected crises
- Checklist = gold standard

ORIGINAL RESEARCH

Medical crisis checklists in the emergency department: a simulation-based multi-institutional randomised controlled trial

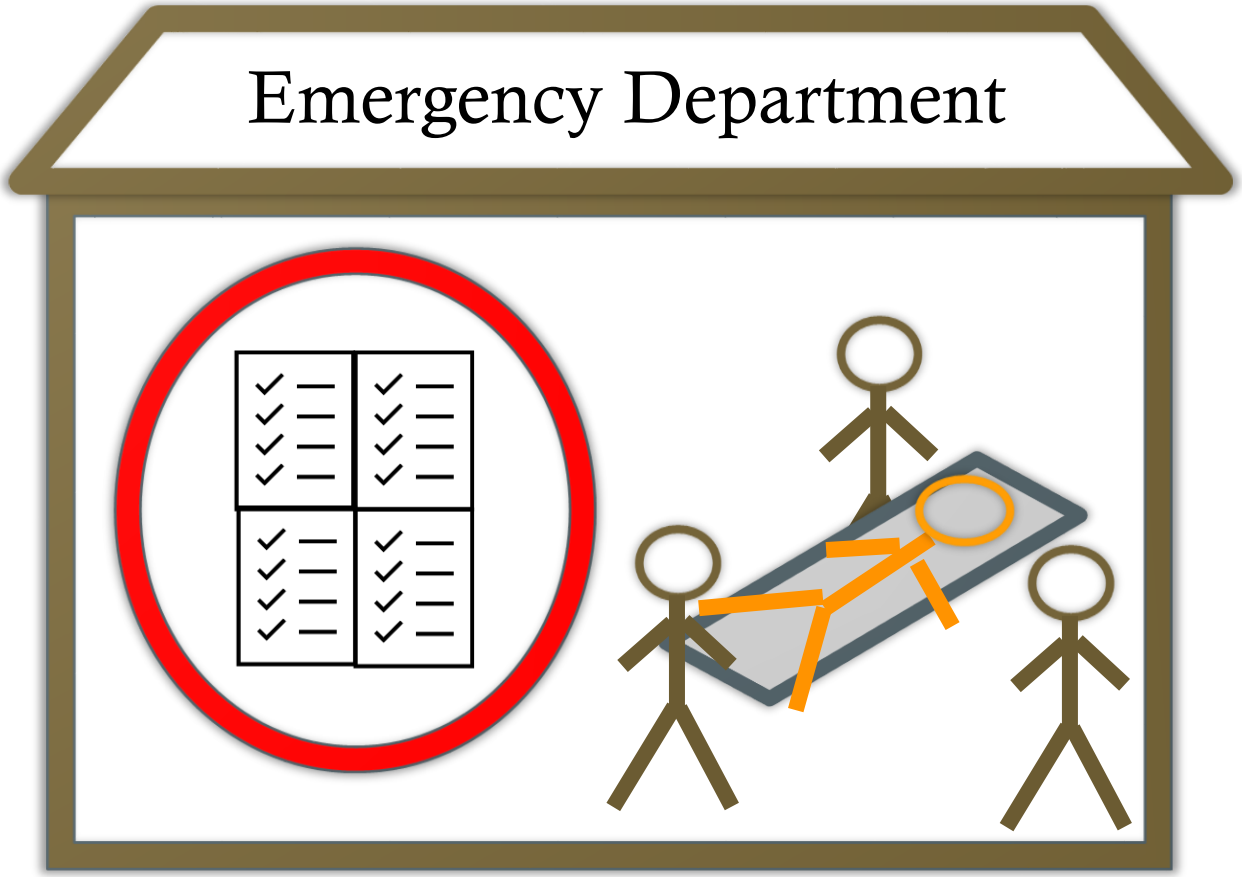
Eric Dryver ,[1,2,3] Jakob Lundager Forberg,[4] Caroline Hård af Segerstad,[5] William D Dupont,[6] Anders Bergenfelz,[2,3] Ulf Ekelund[1,2]

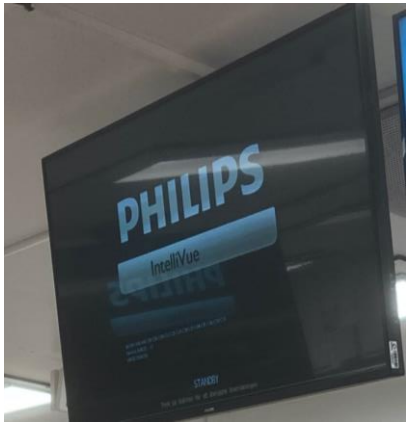
BMJ Qual & Safe 2021;30:697-705

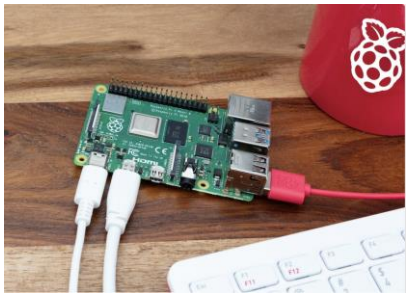
Clinical use of an emergency manual by resuscitation teams and impact on performance in the emergency department: a prospective mixed-methods study protocol

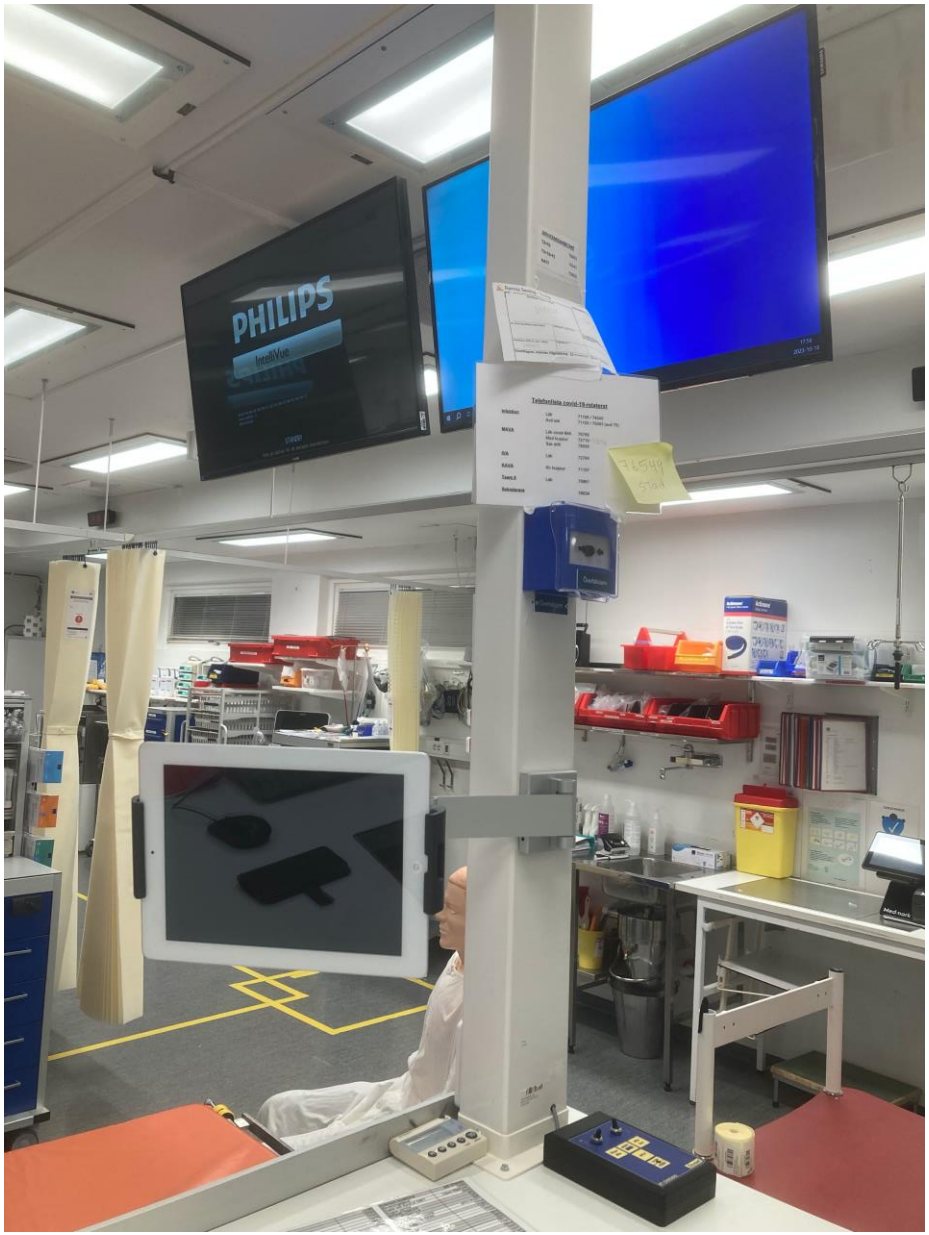
Eric Dryver ,[1,2,3] Pontus Olsson de Capretz,[1,2] Mohammed Mohammad,[1] Malin Armelin,[1] William D. Dupont,[4] Anders Bergenfelz,[2] Ulf Ekelund[1,2]

BMJ Open 2023;13:e071545

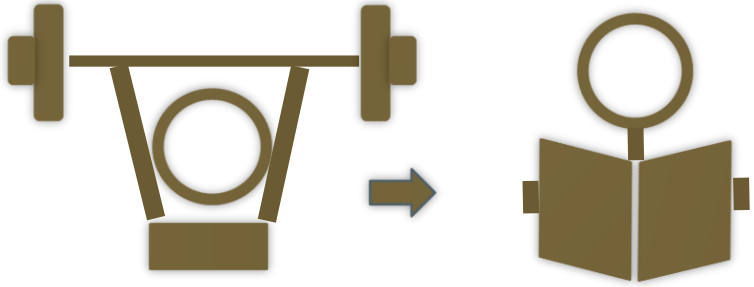

Emergency Department


PHILIPS
IntelliVue

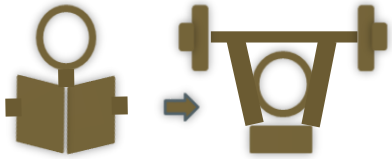



PHILIPS
IntelliVue

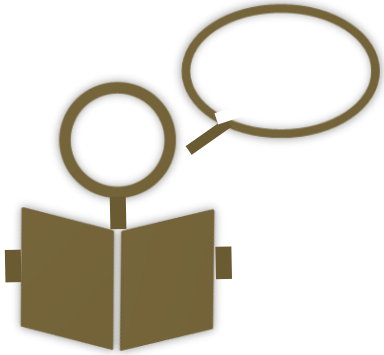
Protocol

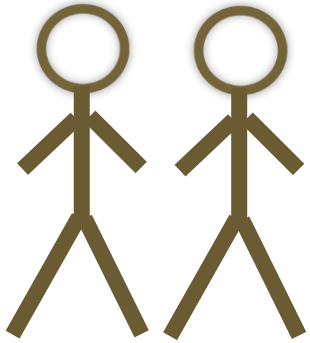


Do-Confirm



Read-Do



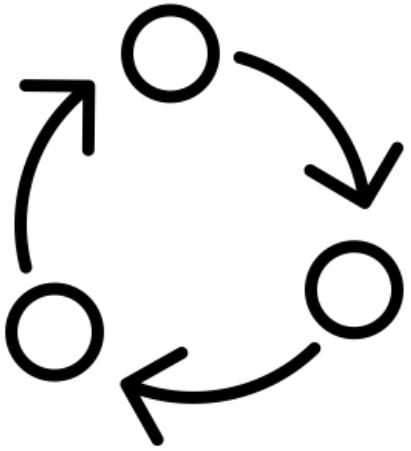


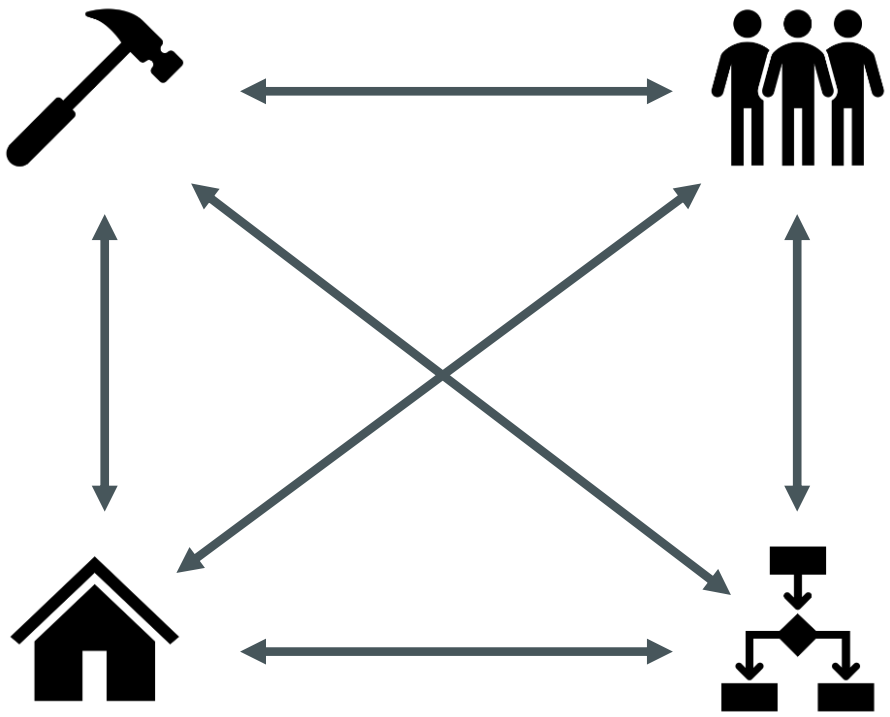
RN MD

Sampling

Product

http://lucem.info/checklists/





5-Training

Emergency Medicine Core Comptencies (EMCC) Course

https://www.emcc.nu/

Take EMCC

Teach EMCC

Run EMCC

Scenario-based training

Regular training

Local training


Europe
Scale 1:4,900,000
Greenland (DENMARK)
Reykjavik
ICELAND
Norwegian Sea
NORWAY
SWEDEN
FINLAND
RUSSIA
North Atlantic Ocean
Tórshavn
Oslo
Stockholm
Helsinki
Moscow
St. Petersburg
Tallinn
ESTONIA
LATVIA
Riga
LITHUANIA
Vilnius
Minsk
BELARUS
North Sea
Edinburgh
Belfast
Dublin
IRELAND
UNITED KINGDOM
Liverpool
Birmingham
London
DENMARK
Copenhagen
Baltic Sea
NETHERLANDS
Amsterdam
Hamburg
Berlin
GERMANY
Cologne
Frankfurt
POLAND
Warsaw
Kraków
Gdańsk
Poznań
Celtic Sea
English Channel
Paris
FRANCE
Prague
CZECH REPUBLIC
SLOVAKIA
Bratislava
Vienna
AUSTRIA
Budapest
HUNGARY
Kyiv
UKRAINE
Chornobyl'
Kharkiv
Dnipropetrovs'k
Donets'k
L'viv
MOLDOVA
Chişinău
ROMANIA
Bucharest
Cluj-Napoca
Sevastopol'
Black Sea
Bay of Biscay
SWITZERLAND
Bern
Zürich
Innsbruck
Munich
Milan
Turin
Lyon
Bordeaux
Zagreb
CROATIA
BOSNIA AND HERZEGOVINA
Sarajevo
Belgrade
SERBIA AND MONTENEGRO
BULGARIA
Sofia
Plovdiv
Varna
Constanța
Samsun
Istanbul
Ankara
Bursa
Konya
Antalya
Adriatic Sea
ITALY
Rome
Florence
Naples
Palermo
Bari
ALBANIA
Tirana
GREECE
Athens
Thessaloniki
Izmir
TURKEY
Mediterranean Sea
Ionian Sea
Tyrrhenian Sea
Sicily
Crete
Iráklion
CYPRUS
Nicosia
PORTUGAL
Lisbon
Porto
Vigo
Bilbao
Madrid
Zaragoza
Barcelona
Valencia
Sevilla
SPAIN
Balearic Sea
Gibraltar
MOROCCO
Rabat
Casablanca
Oran
Algiers
ALGERIA
Tunis
TUNISIA
MALTA
Valletta
Tripoli
LIBYA
Banghāzī
EGYPT
Alexandria
Cairo
Mediterranean Sea

&

PROUDLY PRESENT

EMERGENCY MEDICINE CORE COMPETENCIES COURSE

18-20th March 2024
Gent - Belgium

This course is endorsed by EUSEM

EUSEM
EUROPEAN SOCIETY FOR EMERGENCY MEDICINE

veronique_brabers@hotmail.com

EMAT EMERGENCY MEDICINE ASSOCIATION OF TURKEY
Türkiye Acil Tıp Derneği

&

EUSEM
EUROPEAN SOCIETY FOR EMERGENCY MEDICINE

proudly present

Emergency Medicine Core Competences Course

Developing competence in Emergency Medicine through intensive simulation-training and group discussion

09th -11th of May 2024
Izmir, Turkey

murat.ersel@gmail.com

Questions? Opinions!

"the 'simplicity' of the checklist is one of its greatest strengths and weaknesses."

Prielipp & Birnbach

e_dryver@hotmail.com

Major Pete Hill

APPROVED B-17F and G CHECKLIST

REVISED 3-1-44

PILOT'S DUTIES IN RED

COPILOT'S DUTIES IN BLACK

BEFORE STARTING

1. Pilot's Preflight—COMPLETE
2. Form 1A—CHECKED
3. Controls and Seats—CHECKED
4. Fuel Transfer Valves & Switch—OFF
5. Intercoolers—Cold
6. Gyros—UNCAGED
7. Fuel Shut-off Switches—OPEN
8. Gear Switch—NEUTRAL
9. Cowl Flaps—Open Right—OPEN LEFT—Locked
10. Turbos—OFF
11. Idle cut-off—CHECKED
12. Throttles—CLOSED
13. High RPM—CHECKED
14. Autopilot—OFF
15. De-icers and Anti-icers, Wing and Prop—OFF
16. Cabin Heat—OFF
17. Generators—OFF

STARTING ENGINES

1. Fire Guard and Call Clear—LEFT Right
2. Master Switch—ON
3. Battery switches and inverters—ON & CHECKED
4. Parking Brakes—Hydraulic Check—On-CHECKED
5. Booster Pumps—Pressure—ON & CHECKED
6. Carburetor Filters—Open
7. Fuel Quantity—Gallons per tank
8. Start Engines: both magnetos on after one revolution
9. Flight Indicator & Vacuum Pressures CHECKED
10. Radio—On
11. Check Instruments—CHECKED
12. Crew Report
13. Radio Call & Altimeter—SET

ENGINE RUN-UP

1. Brakes—Locked
2. Trim Tabs—SET
3. Exercise Turbos and Props
4. Check Generators—CHECKED & OFF
5. Run up Engines

BEFORE TAKEOFF

1. Tailwheel—Locked
2. Gyro—Set
3. Generators—ON

AFTER TAKEOFF

1. Wheel—PILOT'S SIGNAL
2. Power Reduction
3. Cowl Flaps
4. Wheel Check—OK right—OK LEFT

BEFORE LANDING

1. Radio Call, Altimeter—SET
2. Crew Positions—OK
3. Autopilot—OFF
4. Booster Pumps—On
5. Mixture Controls—AUTO-RICH
6. Intercooler—Set
7. Carburetor Filters—Open
8. Wing De-icers—Off
9. Landing Gear
   a. Visual—Down Right—DOWN LEFT Tailwheel Down, Antenna in, Ball Turret Checked
   b. Light—OK
   c. Switch Off—Neutral
10. Hydraulic Pressure—OK Valve closed
11. RPM 2100—Set
12. Turbos—Set
13. Flaps ½—⅔ Down

FINAL APPROACH

14. Flaps—PILOT'S SIGNAL
15. RPM 2200—PILOT'S SIGNAL