

réanimation 2021

PARIS 9-11 JUIN

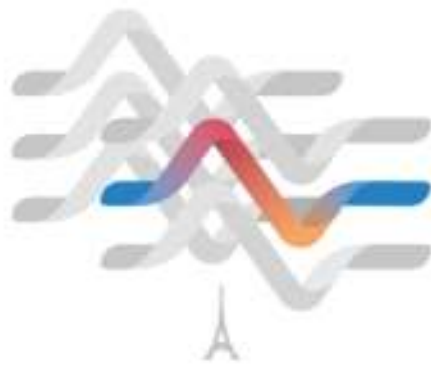
Palais des Congrès de Paris  
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# ATELIER EVALUATION MOTRICE

SCORES ET BILANS FONCTIONNELS

David CHAPEAU  
MKDE CHU Montpellier  
Médecine Intensive Réanimation



# réanimation 2021

PARIS 9-11 JUIN

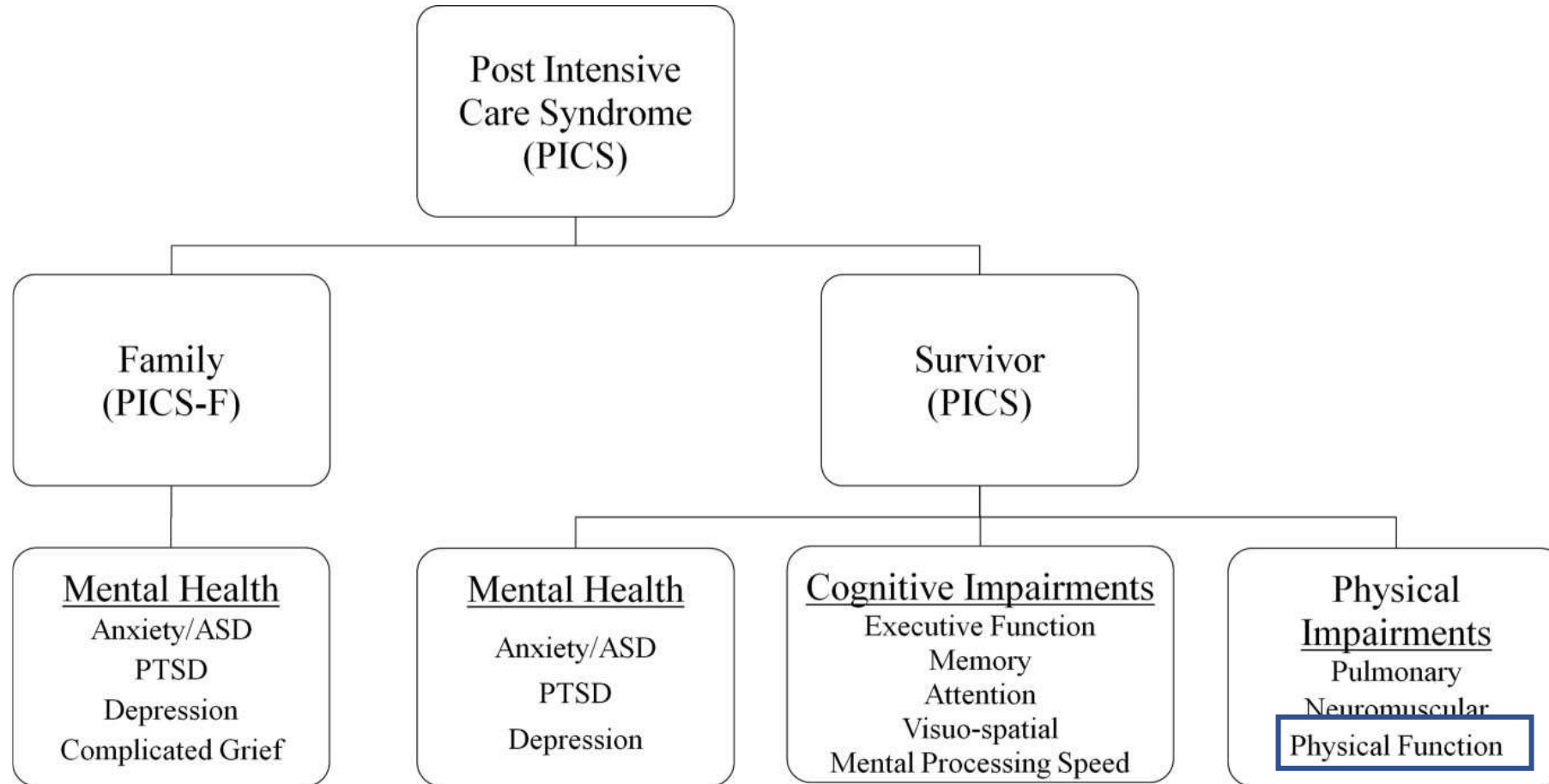
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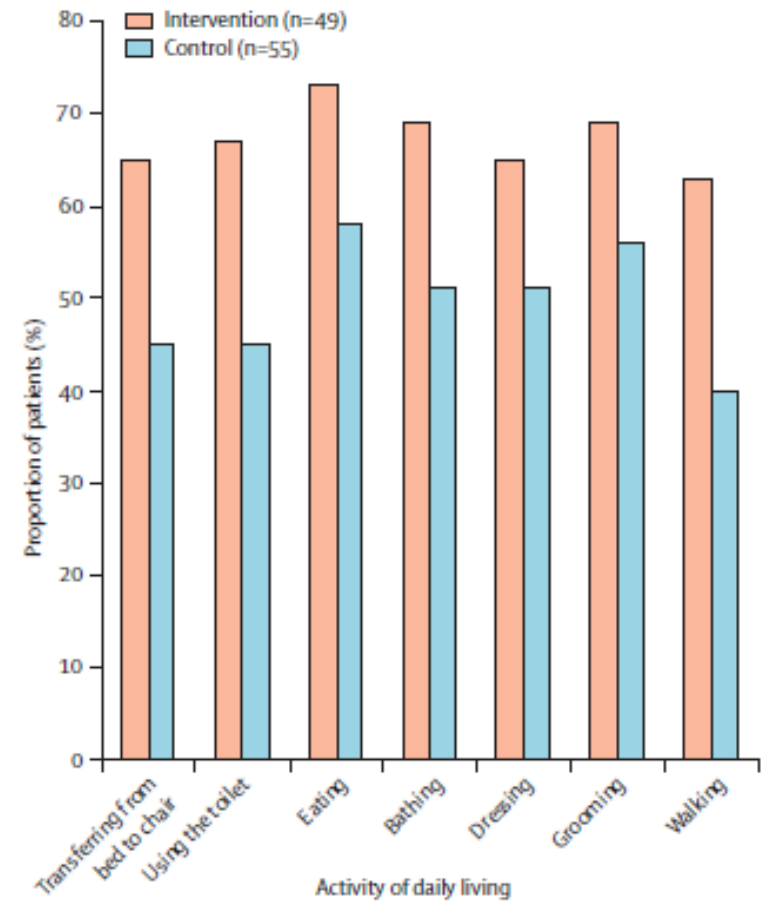
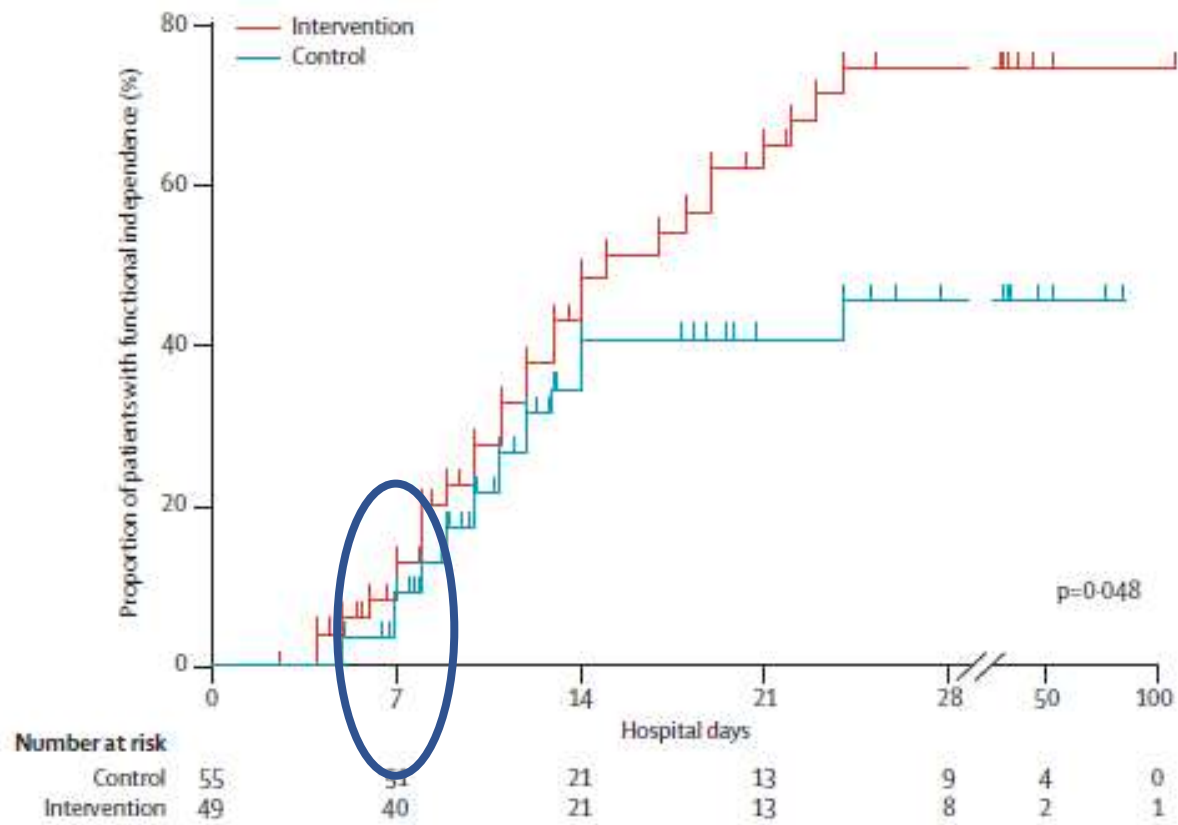
Orateur : David CHAPEAU, Montpellier

☒ Je n'ai pas de lien d'intérêt potentiel à déclarer

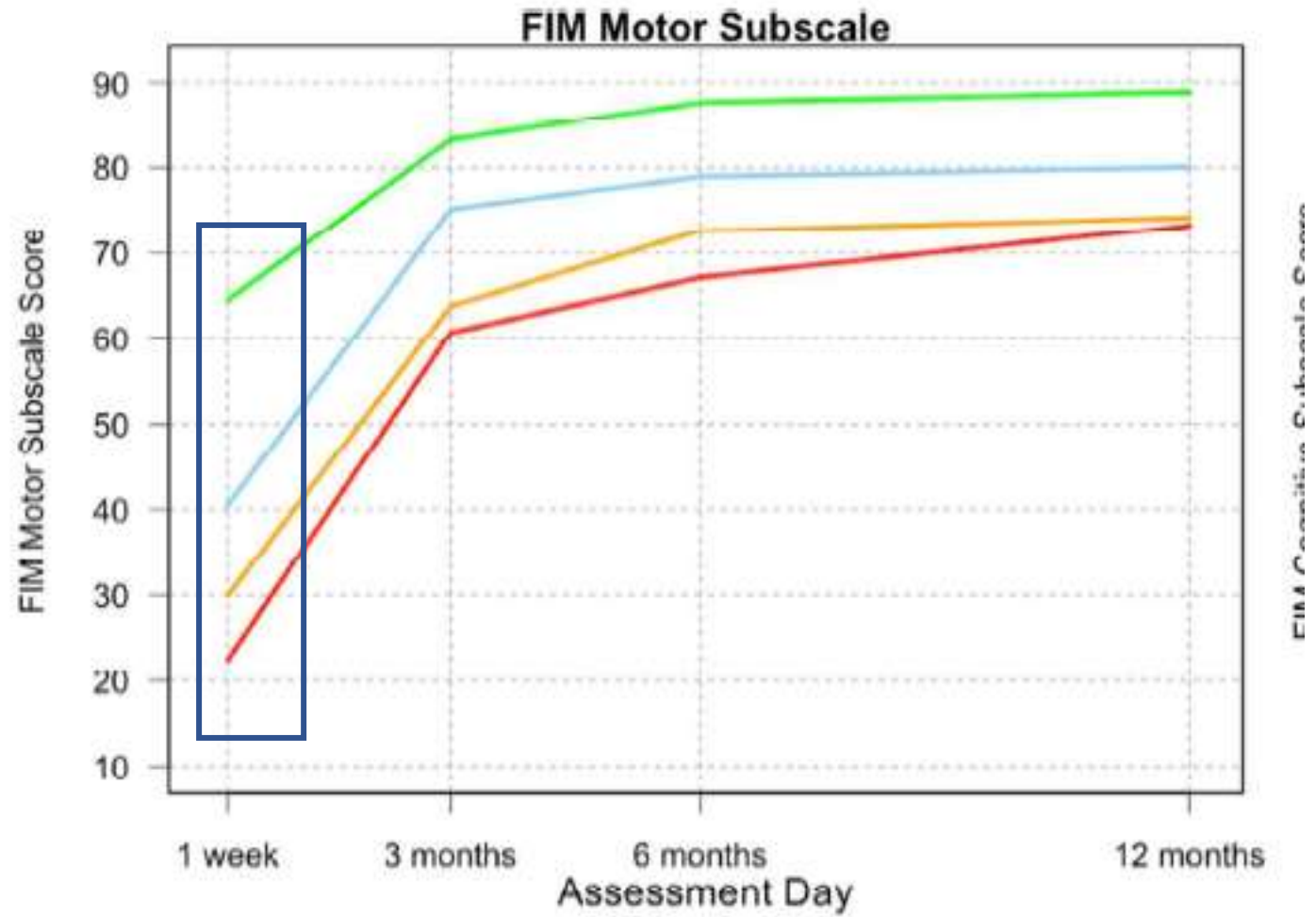
POURQUOI FAIRE UN BILAN  
FONCTIONNEL?



*Needham CCM 2012*



*Schweickert Lancet 2009*



max = 91

*Herridge AJRCCM 2016*

# COMMENT FAIRE LE BILAN FONCTIONNEL?

A quel moment/fréquence?

Pour quel destinataire?

# COMMENT FAIRE LE BILAN FONCTIONNEL?

## Approche pragmatique

- Personnalisation/adaptation
- Faisabilité
- **Quels éléments sont susceptibles d'améliorer/faciliter/orienter la suite de la prise en charge?**

## Approche scientifique

- Reproductibilité
- Sensibilité
- Faisabilité
- Objectif?



# EQUILIBRES



- Tonus du tronc
- Déstabilisations
- Equilibre assis (bord du lit, matelas à air?)
- Bipodal, unipodal etc...

# TRANSFERTS



- Tolérance
  - Respiratoire
  - Cardiaque
  - Hémodynamique
  - Fatigabilité
- Qualitatif (aides, autonomie)
- Précautions nécessaires ( $FiO_2$ )

# INSTALLATION AU FAUTEUIL



- Outils nécessaires (cf transferts)
- Type de fauteuil (obèses, confort, escarres)
- Durée/tolérance

# DÉAMBULATION



- Tolérance
  - Respiratoire
  - Cardiaque
  - Hémodynamique
  - Fatigabilité
- Précautions nécessaires ( $FiO_2$ )
- Aides nécessaires (*technique/ humaine*)
- Distance/pauses



**Bilan**

**05.Kinésithérapie - Bilan réanimation médicale**

---

**Respiratoire**

Type ☒ Tube ☐ Endotrachéal ☐ VNI ☐ OHD

Pinax ou NIF (cmH2O)

Mode ventilatoire ☐ VAC ☒ VSA ☐ Bicap

Capacité vitale (ml)

Encombrement ☐ Aucun ☐ modéré ☐ abondant

F/Vt en zeep

Peak Flow (L/min)

Epreuve de VS ☒ Oui ☐ Non

Si oui, type

Durée (min)

Prise en charge et commentaires (respiratoire)  
ECHO diaph : Exc = 11mm, FRE=26%

---

**Moteur**

Score MRC (score entre 0 et 5)

Flexion épaule droite	<input type="text" value="2"/>	Flexion épaule gauche	<input type="text" value="2"/>
Flexion coude droit	<input type="text" value="2"/>	Flexion coude gauche	<input type="text" value="2"/>
Extension poignet droit	<input type="text" value="3"/>	Extension poignet gauche	<input type="text" value="3"/>
Flexion hanche droite	<input type="text" value="3"/>	Flexion hanche gauche	<input type="text" value="3"/>
Extension genou droit	<input type="text" value="3"/>	Extension genou gauche	<input type="text" value="3"/>
Flexion cheville droite	<input type="text" value="4"/>	Flexion cheville gauche	<input type="text" value="5"/>

Total Score MRC/60

Neuropathie acquise en réa ☒ Oui ☐ Non

Assis bord du lit

Position debout

Transfert au fauteuil

Marche

Prise en charge et commentaires (Moteur)  
Hypotonie du tronc, tient sa tête quelques secondes au bord du lit  
Polypnée et désaturation à la mobilisation  
Cycloergomètre  
Travail actif au lit  
Bord de lit

# AVQ/préhensions



*Alimentation*



*Toilette*



# APPROCHE PRAGMATIQUE

## Contenu

- Transferts (DL, BDL, Fauteuil)
- Equilibres (assis, debout)
- Installation au fauteuil
- Déambulation
- Préhensions
- AVQ (toilette, repas)

## Timing

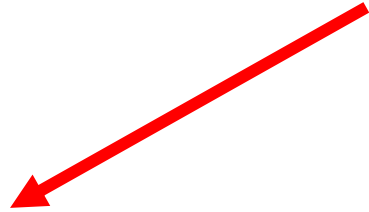
- Tous les 2-3j (?)

→ Orientation

- A la sortie +++

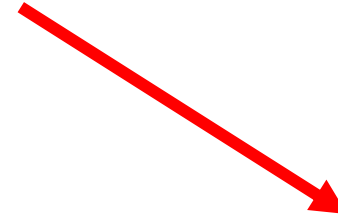
→ Collègues

# APPROCHE SCIENTIFIQUE



## ETUDE COMPARATIVE

- ☐ Sensibilité (changements minimes)
- ☐ Reproductibilité
- ☐ Faisabilité (+/-)
- ☐ Floor/ceiling effect

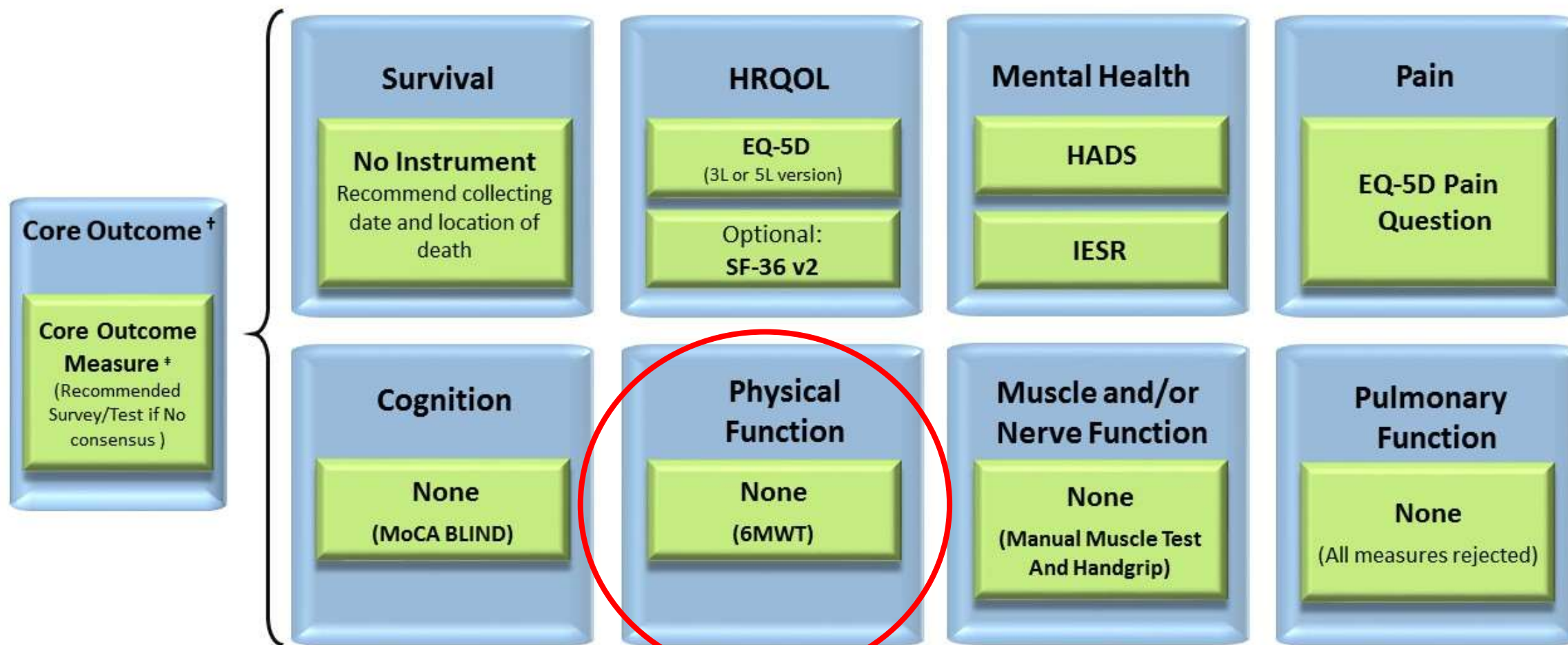


## ROUTINE CLINIQUE

- ☐ Faisabilité +++
- ☐ Valeur prédictive (orientation)



## Core Outcome Set (COS) and Core Outcome Measurement Set (COMS) for Clinical Research in Acute Respiratory Failure Survivors



<sup>†</sup> *Crit Care Med.* 2017; 45:1001-1010    <sup>‡</sup> *Am J Resp Crit Care Med.* 2017;196:1122-1130.



Courrier - d-chapeau@chu-montpellier.fr x Improving Long-Term Outcomes x +

← → ↻ 🏠

improvelto.com

🔍 ☆ 📄 📅 📌 📧

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Improving Long-Term Outcomes Research fo... Howdy, d-chapeau@chu-montpellier.fr 🔍

# Respiratory Failure

R24HL111895

About

Core Outcome Set (COS)

Instruments

Cohort Retention ▾

Statistical Tools

COS Resources

Publications

Media

Account Info ▾

## About Us

Dale Needham, FCPA, MD, PhD, Director of the Outcomes After Critical Illness and Surgery (OACIS) Group at Johns Hopkins University School of Medicine, received an R24 grant from the National Heart, Lung and Blood Institute (NHLBI). This R24 project, entitled "Improving Long-Term Outcomes Research for Acute Respiratory Failure" is aimed at creating resources for researchers conducting long-term follow-up of patients surviving acute respiratory failure and acute respiratory distress syndrome (ARF/ARDS).

This R24 project has three Aims in advancing long-term outcomes research for ARF/ARDS:

- 1) to recommend long-term outcome measures and associated measurement instruments for research in this patient population. (Click here for: [Methodology Summary](#), [Protocol for Modified Delphi Consensus](#))
- 2) to create and disseminate practical tools for maximizing patient cohort retention for longitudinal long-term outcomes

Improving Long-Term Outcomes Research for Acute Respiratory Failure

An NHLBI-funded Research Network Research Project (R24HL111895)  
Johns Hopkins University's Outcomes After Critical Illness and Surgery (OACIS) Group

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## ICU Mobility scale (IMS)

Classification	Definition
0 Nothing (lying in bed)	Passively rolled or passively exercised by staff, but not actively moving
1 Sitting in bed, exercises in bed	Any activity in bed, including rolling, bridging, active exercises, cycle ergometry and active assisted exercises; not moving out of bed or over the edge of the bed
2 Passively moved to chair (no standing)	Hoist, passive lift or slide transfer to the chair, with no standing or sitting on the edge of the bed
3 Sitting over edge of bed	May be assisted by staff, but involves actively sitting over the side of the bed with some trunk control
4 Standing	Weight bearing through the feet in the standing position, with or without assistance. This may include use of a standing lifter device or tilt table.
5 Transferring bed to chair	Able to step or shuffle through standing to the chair. This involves actively transferring weight from one leg to another to move to the chair. If the patient has been stood with the assistance of a medical device, they must step to the chair ( <u>not</u> included if the patient is wheeled in a standing lifter device.)
6 Marching on spot (at bedside)	Able to walk on the spot by lifting alternate feet (must be able to step at least 4 times, twice on each foot), with or without assistance
7 Walking with assistance of 2 or more people	Walking away from the bed/chair by at least 5 metres (5 yards) assisted by 2 or more people
8 Walking with assistance of 1 person	Walking away from the bed/chair by at least 5 metres (5 yards) assisted by 1 person
9 Walking independently with a gait aid	Walking away from the bed/chair by at least 5 metres (5 yards) with a gait aid, but no assistance from another person. In a wheelchair bound person, this activity level includes wheeling the chair independently 5 metres (5 yards) away from the bed/chair
10 Walking independently without a gait aid	Walking away from the bed/chair by at least 5 metres (5 yards) without a gait aid or assistance from another person.

*Tipping ATS 2016*

☐ Peu sensible

☐ Rapide +++ (1min)

☐ Possible rétrospectif

## Manchester Mobility Score (MMS)

Mobility is assessed on a 7-point ordinal scale describing the maximum activity completed by a patient on each day of their ICU stay:

1. In bed interventions - passive movements, active exercises, chair position in bed
2. Sit on edge of bed
3. Hoisted to chair (including standing hoist)
4. Standing practice
5. Step transfers with assistance
6. Mobilizing with or without assistance
7. Moving/Walking for at least 30 meters

*www.improvelto.com*



**Table 1** Summary of measurement properties of physical functioning instruments for the ICU

Instrument name (range for score)	Evidence of reliability?	Evidence of validity?	Evidence of predictive validity?	Evidence of responsiveness?	Evidence for MID?	Evaluation of floor and ceiling effects? <sup>#</sup>
ACIF (0–1)	Yes	Construct validity: Yes	Yes: for discharge to home	No	No	Low floor and ceiling in ICU
CPAx (0–50)	Yes	Content validity: Yes Construct validity: Yes	Yes: for discharge to home	Yes <sup>a</sup>	Yes <sup>a</sup>	High floor at ICU admission; Low floor and ceiling at ICU and hospital discharge <sup>a</sup>
CcFROM (0–63)	Yes	Face/content validity: Yes	No	No	No	Low floor and ceiling in ICU
DEMMI (0–100)	Yes	Convergent validity: Yes Divergent validity: Yes	No	No	No	Low floor and ceiling in ICU
FSS-ICU (0–35)	Yes	Construct validity: Yes Discriminant validity: Yes Known groups validity: Yes	Yes: for discharge to home and post-ICU hospital LOS <sup>b</sup>	Yes	Yes	Low floor and ceiling at awakening and ICU discharge, high ceiling at hospital discharge
IMS (0–10)	Yes	Construct validity: Yes Divergent validity: Yes	Yes: for discharge to home and 90-day survival <sup>b</sup>	Yes	No	High floor at ICU admission; Low floor and ceiling at ICU awakening and ICU discharge
MMS (0–7)	Yes	Construct validity: Yes	Yes: for post-ICU hospital LOS	No	No	High floor during ICU stay
Perme (0–32)	Yes	Construct validity: Yes	No	No	No	High floor during ICU stay
PFIT-s (0–10)	Yes	Construct validity: Yes Divergent validity: Yes	Yes: for discharge to home, post-ICU hospital LOS; Not predictive of 28-day and 12- month mortality <sup>c</sup>	Yes	Yes	High floor at ICU admission; Low floor and ceiling at awakening and ICU discharge
SOMS (0–4)	Yes	Construct validity: Yes Divergent validity: Yes	Yes: for ICU and hospital LOS, and in-hospital mortality <sup>d</sup>	No	No	Low floor and ceiling at ICU admission
SPPB (0–12)	No	Construct validity: Yes Divergent validity: Yes	Not predictive of discharge to home <sup>b</sup>	Yes	Yes	High floor at awakening and ICU discharge

## PFIT-s

**Table 3.**

Classification of Component Scores Used in the Physical Function ICU Test (Scored) (PFIT-s) Ordinal Score

PFIT-s Components			
Assistance	Cadence (steps/min)	Shoulder Strength <sup>a</sup>	Knee Strength <sup>b</sup>
0=unable	0=unable	0=grade 0, 1, or 2	0=grade 0, 1, or 2
1=assist × 2	1=>0-49	1=grade 3	1=grade 3
2=assist × 1	2=50-<80	2=grade 4	2=grade 4
3=no assistance	3=80+	3=grade 5	3=grade 5

*Denehy Phys Ther 2013*

☐ Peu sensible pour non marchants

☐ Pas possible en rétrospectif

☐ Rapide (10min)

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## FSS-ICU

Task	Score
1. Rolling	
2. Supine to Sit Transfer	
3. Sit to Stand Transfer	
4. Sitting Edge of Bed	
5. Walking	
<b>TOTAL SCORE (sum of scores)</b>	

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☐ Pas Possible rétrospectif

☐ Long (+/-30min)

☐ Apprentissage

☐ Sensible +++

☐ Adapté à tous patients EN REANIMATION

### 4. Sitting Edge of Bed:

*Does the patient require assistance in order to sit up at the side of the bed?*

[Testing Note: There is no time requirement for this task]

No:

- Does the patient sit at the side of the bed by themselves with hands free and not holding onto a bed rail or object for support? If yes, score 7.
- Does the patient require their hand(s) or a bed rail to balance themselves while sitting up at the side of the bed by themselves? If yes, score 6.

Yes:

- Does the patient require cueing or coaxing in order to sit at the side of the bed, but physically can perform without assistance (may use hand to balance themselves if needed)? If yes, score 5.
- Does the patient require minimal assistance to sit at the side of the bed (defined as the patient performing 75% or more of the amount of the work)? If yes, score 4.
- Does the patient require moderate assistance to sit at the side of the bed (defined as the patient performing between 26-74% of the amount of work)? If yes, score 3.
- Does the patient require maximum assistance to sit at the side of the bed (defined as the patient helping 25% or less of the amount of work)? If yes, score 2.
- Is the patient completely dependent or unable to assist with sitting at the side of the bed (defined as sitting at the edge of the bed performed, but patient not being able to assist at all)? If yes, score 1.
- Is the patient unable to attempt or complete the task of sitting at the side of the bed due to weakness? If yes, score 0.
- If task(s) were not performed for any other reason other than weakness (e.g., patient declines, or patient's medical equipment prevents performance of the task), then do not score.



**Table 1** Summary of measurement properties of physical functioning instruments for the ICU

Instrument name (range for score)	Evidence of reliability?	Evidence of validity?	Evidence of predictive validity?	Evidence of responsiveness?	Evidence for MID?	Evaluation of floor and ceiling effects? <sup>#</sup>
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SPPB (0–12)	No	Construct validity: Yes Divergent validity: Yes	Not predictive of discharge to home <sup>b</sup>	Yes	Yes	High floor at awakening and ICU discharge





## 1. Rolling

***Does the patient need assistance to roll in the bed?***

[Testing Note: Place the bed as flat as safely possible for the patient]

No:

- Does the patient perform rolling by themselves without the use of a bed rail or other object to pull on? If yes, score 7.
- Does the patient require a use of a rail or object to pull on in order to roll themselves in bed? If yes, score 6.

Yes:

- Does the patient require cueing or coaxing in order to roll, but physically can perform rolling without assistance (the patient may use a bed rail or object to pull self if needed)? If yes, score 5.
- Does the patient require minimal assistance to perform rolling (defined as the patient performing 75% or more of the amount of the work)? If yes, score 4.
- Does the patient require moderate assistance to perform rolling (defined as the patient performing between 26%-74% of the amount of work)? If yes, score 3.
- Does the patient require maximum assistance to perform rolling (defined as the patient performing 25% or less of the amount of work)? If yes, score 2.
- Is the patient completely dependent or unable to assist with rolling (defined as rolling performed, but patient not being able to assist at all)? If yes, score 1.
- Is the patient unable to attempt or complete the task of rolling due to weakness? If yes, score 0.
- If task(s) were not performed for any other reason other than weakness (e.g., patient declines, or patient's medical equipment prevents performance of the task), then do not score.



## **2. Supine to Sit Transfers:**

***Does the patient require assistance to come to sitting from supine position?***

[Testing Note: Place the bed as flat as safely possible for the patient]

No:

- Does the patient come to sitting from a lying down position by themselves without the use of a bed rail or other object to pull on for support? If yes, score 7
- Does the patient come to sitting from a lying down position by themselves, but requires the use of a bed rail or other object to pull on for support? If yes, score 6.

Yes:

- Does the patient require cueing or coaxing in order to come to sitting from a lying down position, but physically can perform without assistance (the patient may use a bed rail or object to assist themselves if needed)? If yes, score 5.
- Does the patient require minimal assistance to come to sitting from a lying down position (defined as the patient performing 75% or more of the amount of the work?) If yes, score 4.
- Does the patient require moderate assistance to come to sitting from a lying down position (defined as the patient performing between 26%-74% of the amount of the work?) If yes, score 3.
- Does the patient require maximum assistance to come to sitting from a lying down position (defined as the patient performing 25% or less of the amount of the work?) If yes, score 2.
- Is the patient completely dependent or unable to assist with transferring to sitting from a lying down position (defined as supine to sit transfer performed, but patient not being able to assist at all)? If yes, score 1.
- Is the patient unable to attempt or complete the task of transferring from supine to sit due to weakness? If yes, score 0.
- If task(s) were not performed for any other reason other than weakness (e.g., patient declines, or patient's medical equipment prevents performance of the task), then do not score.







### **3. Sit to Stand Transfers:**

***Does the patient require assistance to stand up from a sitting position?***

[Testing Note: Transfers can occur from any surface of a reasonable and customary height, including a bed, chair, etc.]

No:

- Does the patient stand up or pull up from a seated position by themselves without the use of bed rail/ armrests or other object to push on or pull from? If yes, score 7.
- Does the patient require the use of bed rail/armrests or other object to push on or pull from in order to stand up? If yes- score 6.

Yes:

- Does the patient require cueing or coaxing in order to stand from a seated position, but physically can perform without assistance (the patient may use a bed rail/armrests or other objects to assist themselves if needed)? If yes, score 5.
- Does the patient require minimal assistance to stand from a seated position (defined as the patient performing 75% or more of the amount of the work)? The patient may use armrests, if needed. If yes, score 4.
- Does the patient require moderate assistance to stand from a seated position (defined as the patient performing between 26-74% of the amount of work)? If yes, score 3.
- Does the patient require maximum assistance to stand from a seated position (defined as the patient performing 25% or less of the amount of work)? If yes, score 2.
- Is the patient completely dependent or unable to assist with going from a seated to standing position (defined as sit to stand transfer performed, but patient not being able to assist at all)? If yes, score 1.
- Is the patient unable to attempt or complete the task of transferring from sit to stand due to weakness? If yes, score 0.
- If task(s) were not performed for any other reason other than weakness (e.g., patient declines, or patient's medical equipment prevents performance of the task), then do not score.



#### **5. Walking:**

##### ***Does the patient need assistance to walk 150 feet (45 m)?***

[Testing Note: Following the patient with a wheelchair or assisting with managing medical equipment while ambulating should not be considered as a second person assisting with the task]

No:

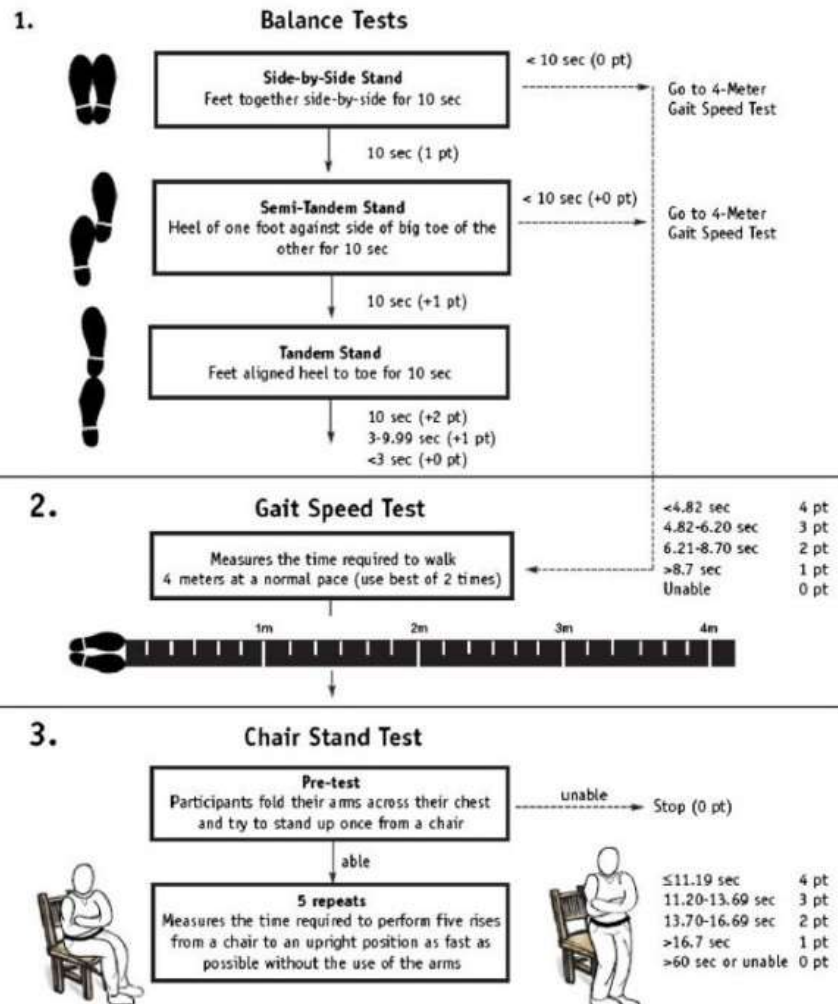
- Can the patient walk 150 feet (45 m) without using an assistive device such as a cane, walker, crutches, or use of a brace or prosthesis? If yes, score 7.
- Can the patient walk 150 feet (45 m) but requires the use of an assistive device such as a cane, walker, crutches, or use of a brace or prosthesis? If yes, score 6.

Yes:

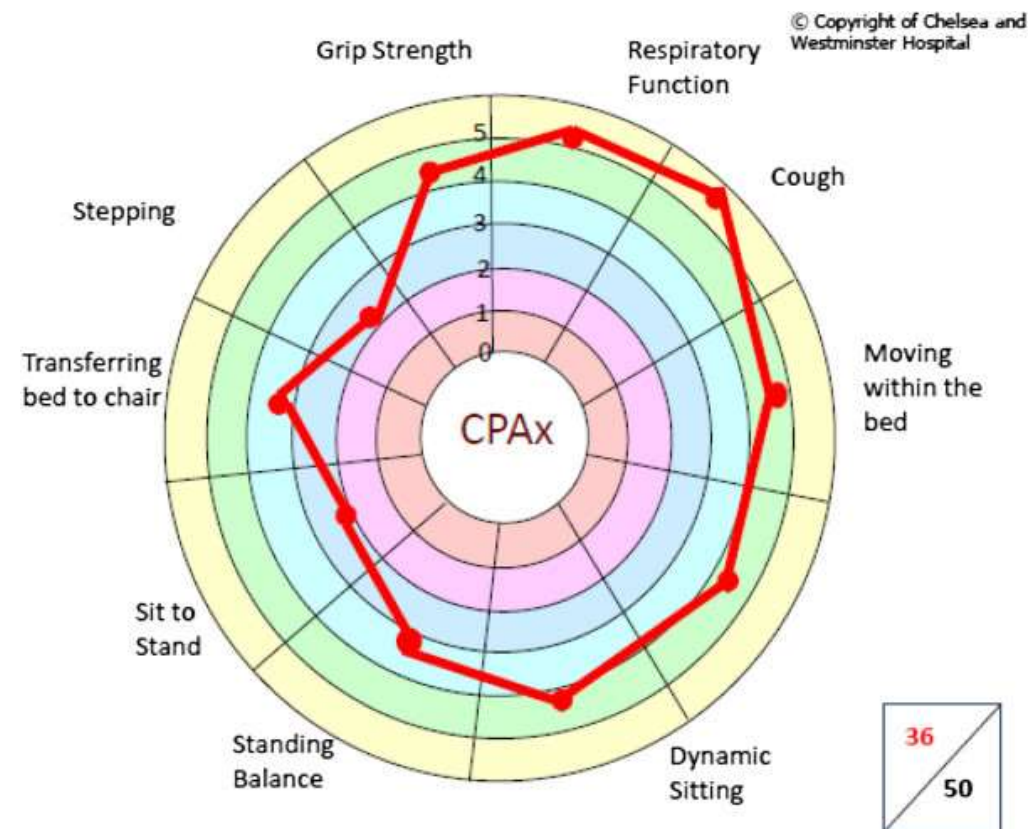
- Does the patient require only supervision or cueing in order to walk 150 feet (45 m) without physical help (the patient may use an assistive device as need)? If yes, score 5.
- Can the patient walk a minimum of 150 feet (45 m) with minimum assistance of only one person (defined as the patient being able to perform 75% or more of the walking effort)? If yes, score 4.
- Can the patient walk a minimum of 150 feet (45 m) with moderate assistance of only one person (defined as the patient being able to perform between 50 to 74% of the walking effort)? If yes, score 3.
- Can the patient walk at least 50 feet (15 m) with the assistance of only one person? If yes, score 2.
- Can the patient walk less than 50 feet (15 m) with the assistance of one person or requires the assistance of two people to physically assist with any ambulation distance? If yes, score 1.
- Is the patient unable to attempt or complete the task of ambulation due to weakness? If yes, score 0.
- If task(s) were not performed for any other reason other than weakness (e.g., patient declines, or patient's medical equipment prevents performance of the task), then do not score.

<b>Task</b>	<b>Score</b>
1. Rolling	4
2. Supine to Sit Transfer	6
3. Sit to Stand Transfer	3
4. Sitting Edge of Bed	7
5. Walking	1
<b>TOTAL SCORE (sum of scores)</b>	<b>21/35</b>





## Short Physical Performance Battery (SPPB)




## Chelsea Physical Assessment Tool (CPAx)

RESEARCH

Open Access

# Functional outcomes in ICU – what should we be using? - an observational study

Selina M Parry<sup>1\*</sup>, Linda Denehy<sup>1,3</sup>, Lisa J Beach<sup>2</sup>, Sue Berney<sup>3,4</sup>, Hannah C Williamson<sup>4</sup> and Catherine L Granger<sup>1,2,3</sup>



Based on the findings in this study the PFIT-s and FSS-ICU are promising functional measures and should be considered currently when measuring physical function in the ICU in clinical practice and research.