Barrières

Pour mobiliser les patients critiques

Organisation du service

Priorités des soins et critères de prescription

Procédures des soins

« Equipe » de mobilisation

Quantité du personnel

Formation du staff

Matériel

Protocole de mobilisation

« Trop malade »

« Trop sédaté »

Facteurs liés aux patients

Instabilité:

- Hémodynamique
- Respiratoire
- Neurologique

Ventilation mécanique invasive

Dispositifs Invasifs

Niveau de Sédation

Delirium

Faiblesse

Refus du patient

Barrières

Par discipline

Themes related to barriers to mobilisation identified by each focus group.

Major themes	Medical	Physiotherapy	Nursing
Culture			
Endotracheal tube	Yes	Yes	Yes
Sedation	No	Yes	Yes
Lines	No	Yes	Yes
Low priority	No	Yes	Yes
Communication			
Identifying and contacting the appropriate people	No	Yes	Yes
Lack of accountability	Yes	No	No
Not enough resources			
Staffing	Yes	Yes	Yes
Equipment	No	Yes	Yes
Training	No	Yes	Yes
Increased effort and burden	Yes	Yes	Yes

Themes related to facilitators to mobilisation identified by each focus group.

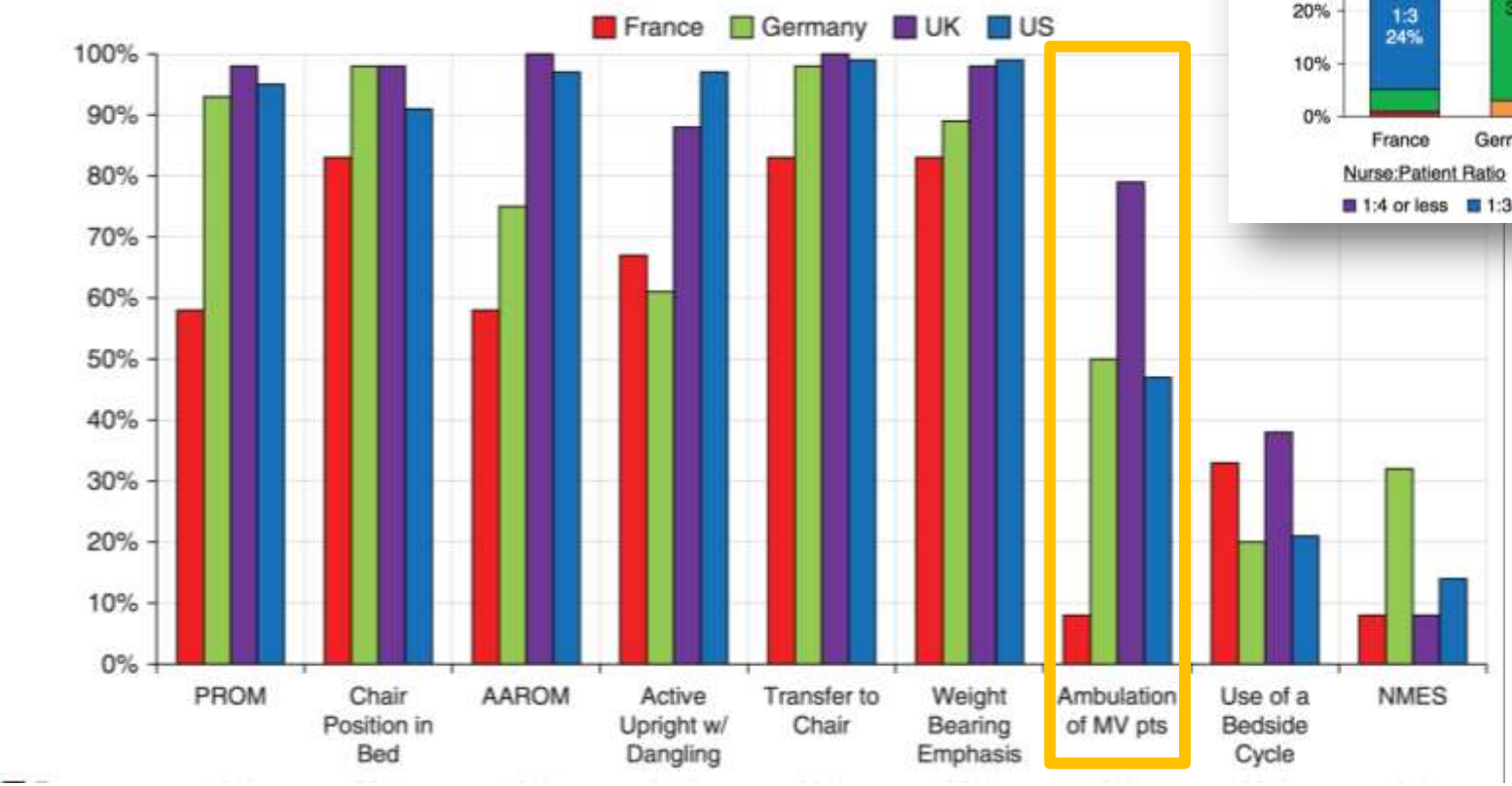
Major themes	Medical	Physiotherapy	Nursing
Organisational change			
Standard care	Yes	No	Yes
Mobility team	Yes	Yes	Yes
Liaising with medical teams	No	Yes	No
Multi-disciplinary team planning	Yes	Yes	Yes
Follow-up failures	Yes	No	No
Involving patient family	No	Yes	No
Leadership			
Mobility champion	Yes	No	No
Senior level support	Yes	Yes	Yes
Adequate resources			
Higher staffing levels	Yes	Yes	Yes
More equipment	No	Yes	Yes
More training	Yes	Yes	Yes

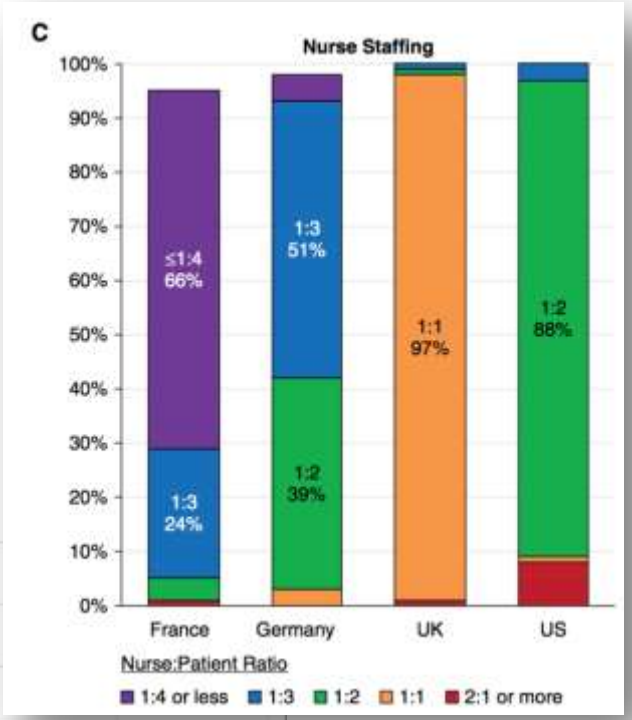
E.A. Barber et al. / Australian Critical Care 2014

Barrières

par pays

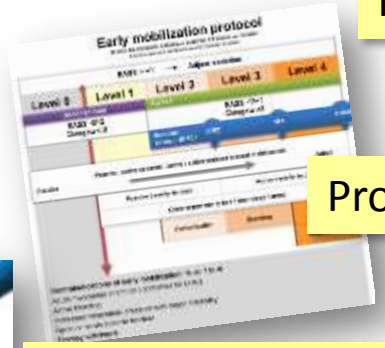
Enquête téléphonique USI
151 en France
150 en Allemagne
150 au Royaume uni
500 aux Etats unis





Bakhru, McWilliams, 2016

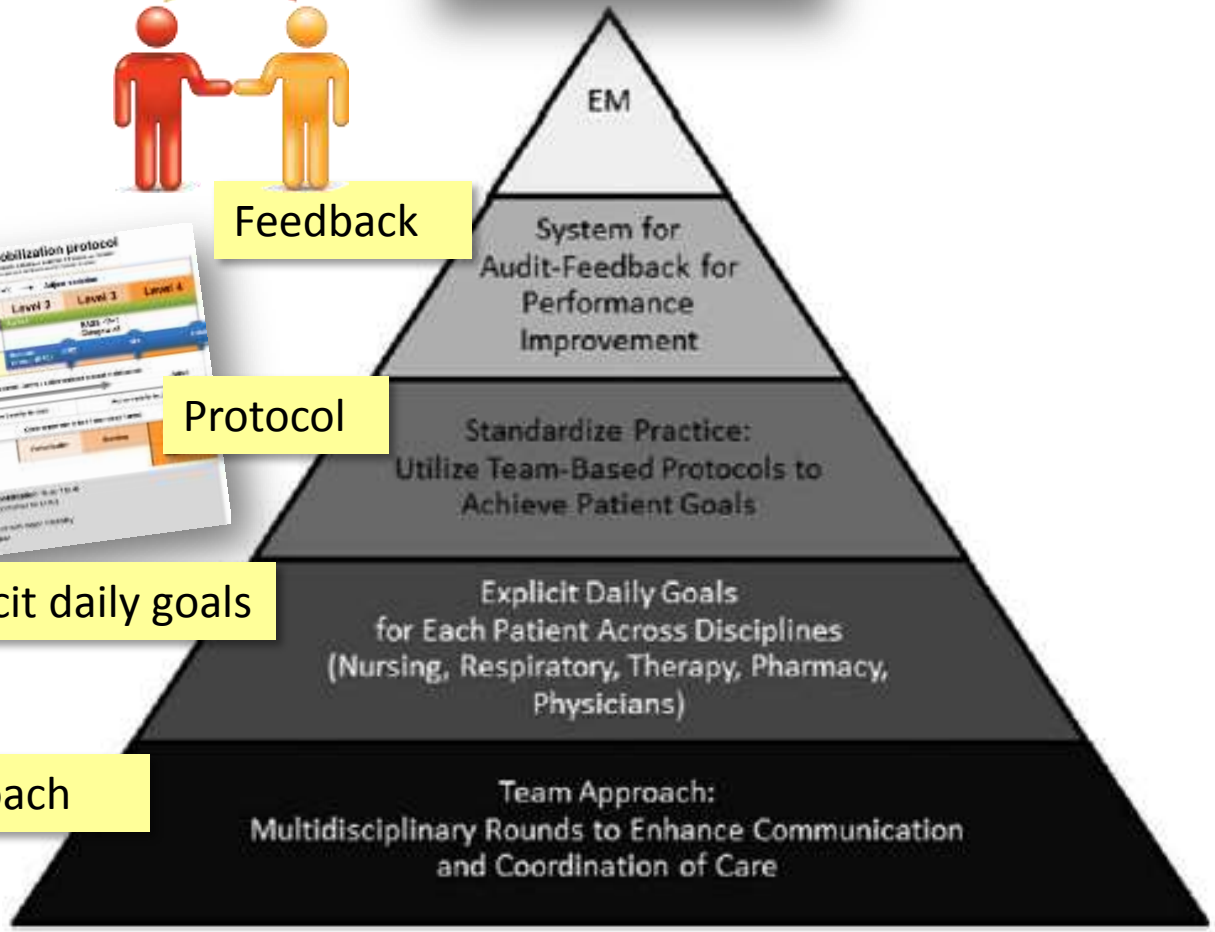
Feedback



Protocol

Explicit daily goals

Team approach



Bakhru RN, et al. *Crit car med* 2015

Hickmann et al. Ann. Intensive Care (2016) 6:80
DOI 10.1186/s13613-016-0184-y

Annals of Intensive Care

RESEARCH Open Access

Teamwork enables high level of early mobilization in critically ill patients

Cheryl Elizabeth Hickmann, Diego Castanares-Zapatero, Emilie Bialais, Jonathan Dugernier, Antoine Tordeur, Lise Colmant, Xavier Wittebole, Giuseppe Tirone, Jean Roeseler and Pierre-François Laterre*

How Early?
at 19 hours (IQR 15-23hours)

Table 2 Characteristics of mobilized and non-mobilized patients

	ICU patient-days	EM performed				No EM performed
		Sitting in chair			In bed PTS+	
		All sitting in chair	PTS+	PTS-		
Total	709	527	337	190	83	99
Invasive mechanical ventilation (MV)	327	223 (68 %)	142 (43 %)	81 (25 %)	40 (12 %)	64 (20 %)
Severe sepsis/sepsis shock	241	166 (69 %)	102 (42 %)	64 (27 %)	28 (12 %)	47 (20 %)
Vasoactive drugs (VAD)	211	149 (71 %)	99 (47 %)	50 (24 %)	25 (12 %)	37 (18 %)
Renal replacement therapy (RRT)	115	76 (66 %)	59 (51 %)	17 (15 %)	11 (10 %)	28 (24 %)
Sedatives (SD)	260	193 (74 %)	122 (47 %)	71 (27 %)	22 (8 %)	45 (17 %)
MV + VAD	158	104 (66 %)	72 (46 %)	32 (20 %)	21 (13 %)	33 (21 %)
MV + VAD + RRT	77	46 (60 %)	38 (49 %)	8 (10 %)	8 (10 %)	23 (30 %)
MV + without SD	122	77 (63 %)	49 (40 %)	28 (23 %)	22 (18 %)	23 (19 %)
RASS −1 to +1	576	454 (79 %)	284 (49 %)	170 (30 %)	58 (10 %)	64 (11 %)
RASS >+1	25	21 (84 %)	18 (72 %)	3 (12 %)	1 (0.4 %)	3 (12 %)
RASS <−1	108	50 (46 %)	33 (31 %)	17 (16 %)	22 (20 %)	36 (33 %)

Values expressed as number (percentage)

MV mechanical ventilation, *VAD* vasoactive drugs, *RRT* renal replacement therapy, *SD* sedatives drug, *RASS* Richmond agitation-sedation scale, *PTS+* physical therapy session carried out, *PTS−* no physical therapy session carried out, *EM* early mobilization

Hickmann CE, Ann. Intensive Care, 2016

Hickmann et al. Ann. Intensive Care (2016) 6:80
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Supplemental Digital Content3: Multivariate analyses for risk factors associated with mortality.

ICU mortality

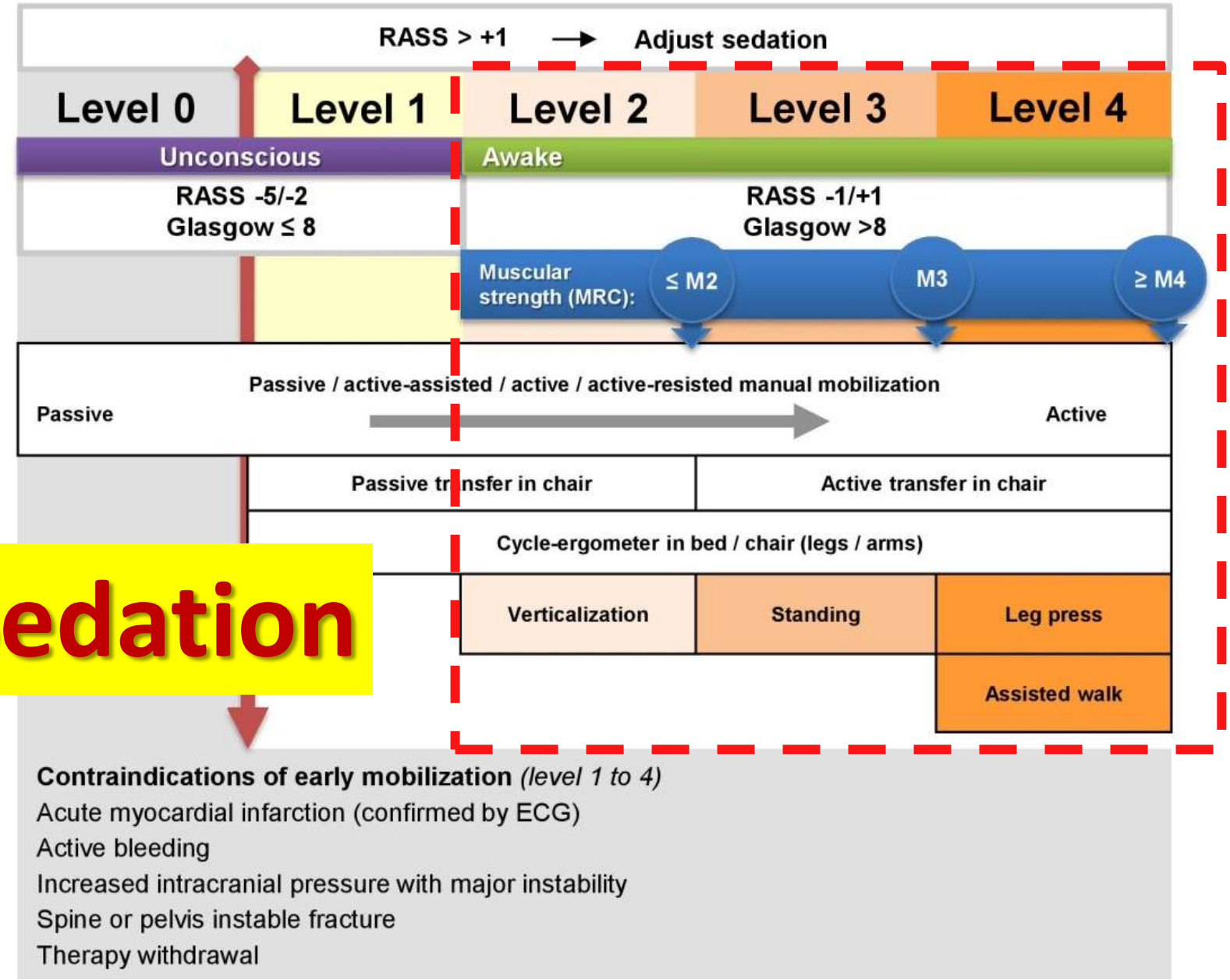
	AOR (95% CI) *Adjusted on 15 covariables*	*p*-value	AOR (95% CI) *Adjusted on 4 covariables*	*p*-value
Early Mobilization	**0.06 (0.01-0.42)**	**0.004***	**0.06 (0.01-0.29)**	**0.001***
ICU length of stay	1.10 (1.04-1.17)	0.001*	1.08 (1.03-1.12)	0.001*
Male	1.78 (0.27-11.63)	0.55		
Age (years)	1.09 (1.01-1.17)	0.04*	1.07 (1.02-1.13)	0.01*
Tracheotomy	0.67 (0.05-8.47)	0.76		
Berlin classification	1.95 (0.78-4.90)	0.15	2.26 (1.01-5.03)	0.04*
Surgery#	1.54 (0.50-4.69)	0.45		
Cirrhosis	2.81 (0.35-22.77)	0.33		
BPCO	0.24 (0.01-5.07)	0.36		
Cancer	1.32 (0.21-8.18)	0.77		
Neurologic	1.24 (0.06-26.49)	0.89		
APACHE II score	1.06 (0.91-1.23)	0.49		
SOFA score	1.24 (0.92-1.69)	0.16	1.38 (1.14-1.67)	0.001*
Sedatives drug use	1.04 (0.07-15.33)	0.98		
Vasoactive drug use	1.99 (0.15-26.70)	0.60		
Renal replacement therapy	0.24 (0.04-1.40)	0.11		

AOR: Adjusted Odd-Ratio; #surgery: elective or urgent surgery; *denotes p-value <0.05

Hickmann CE, Ann. Intensive Care, 2016

Early mobilization protocol

M. Patri, CE. Hickmann, E. Bialais, J. Dugernier, P-F Laterre , J. Roeseler
Intensive care unit, Saint Luc university hospital, Brussels.



Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal


15

Early mobilization protocol

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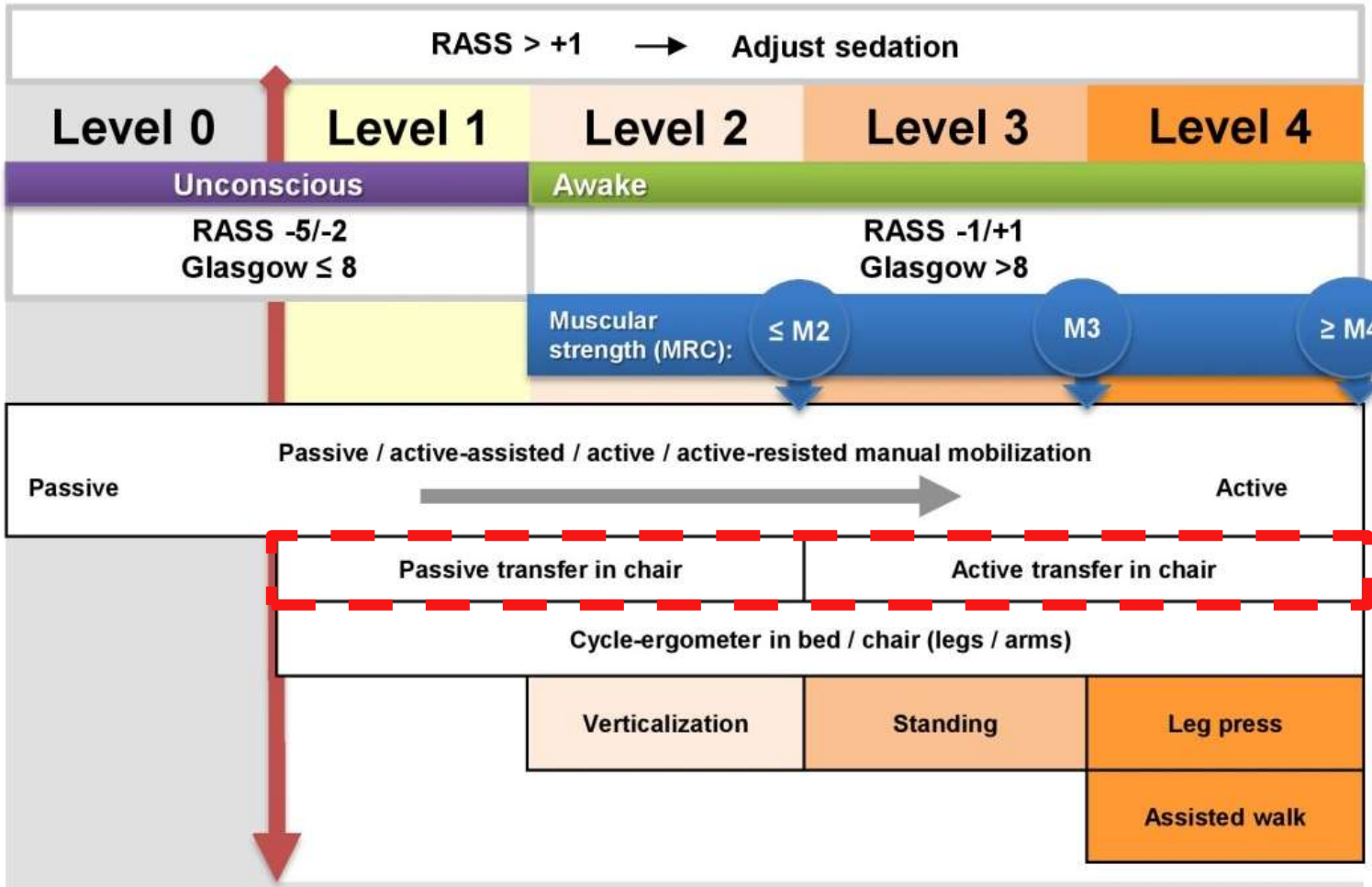

1 x day –
ICU team

Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal



upiler
upiler

Early mobilization protocol

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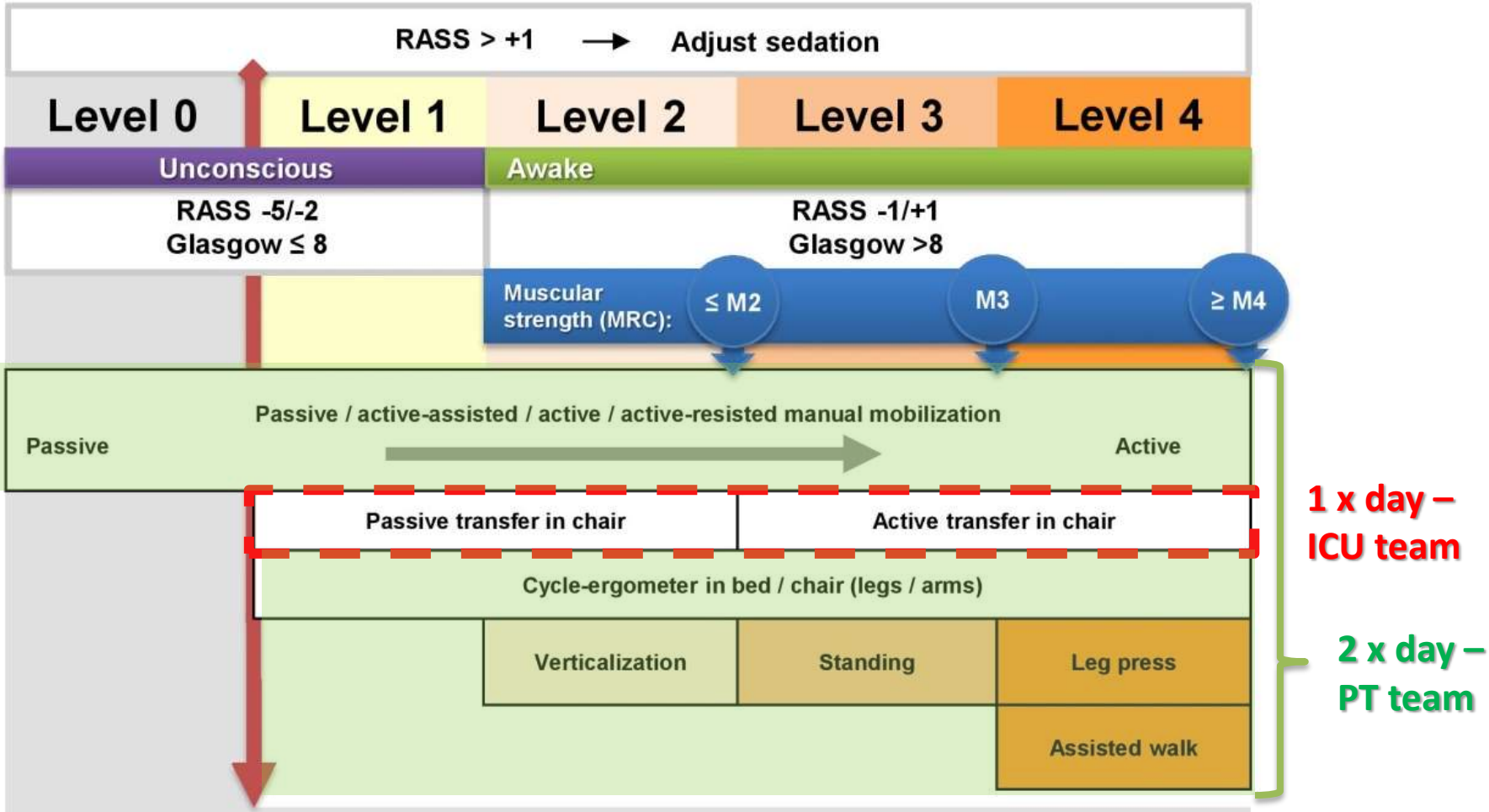

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Early mobilization protocol

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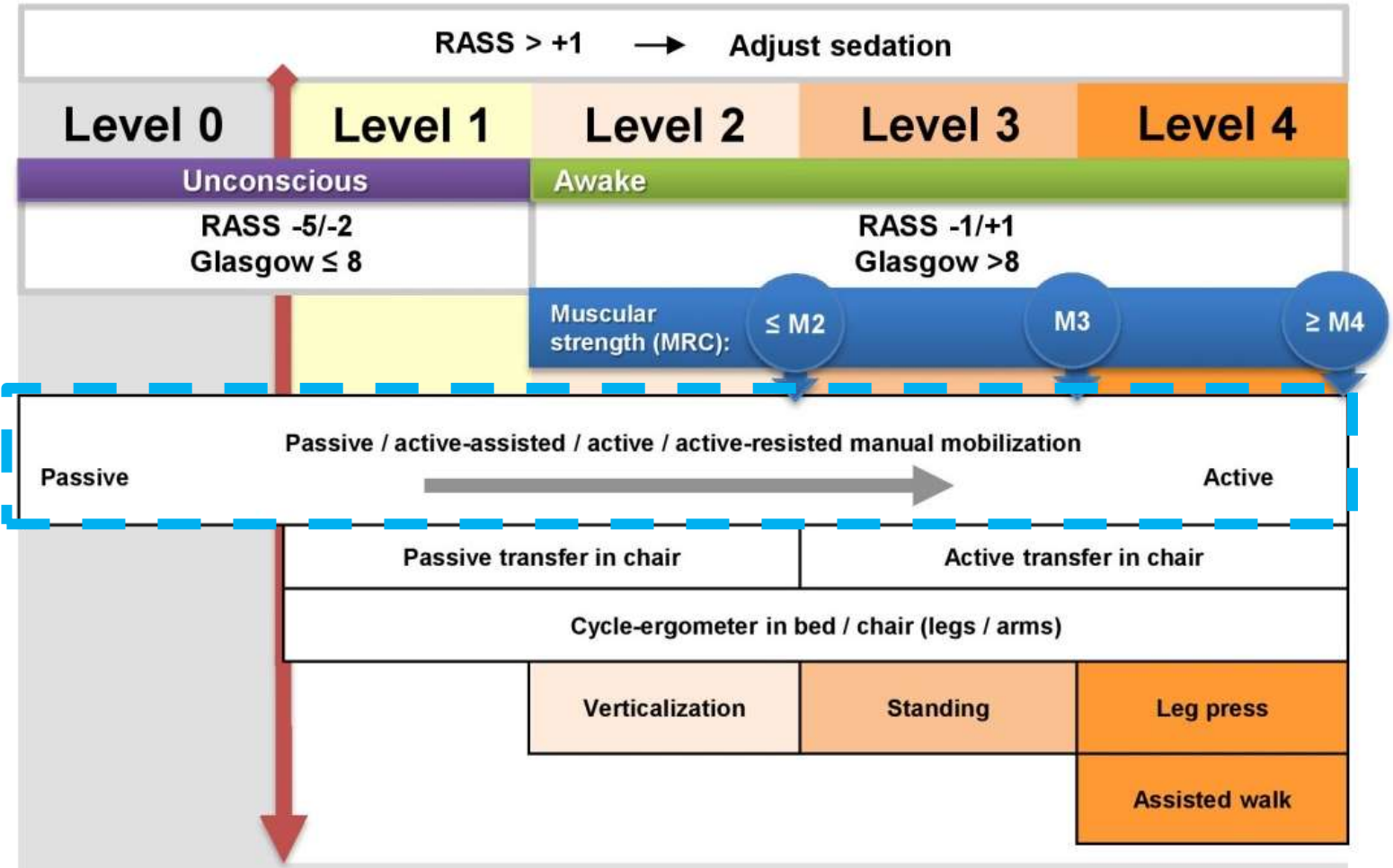

Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Passive / active-assisted / active / active-resisted manual mobilization

Passive → Active

Early mobilization protocol

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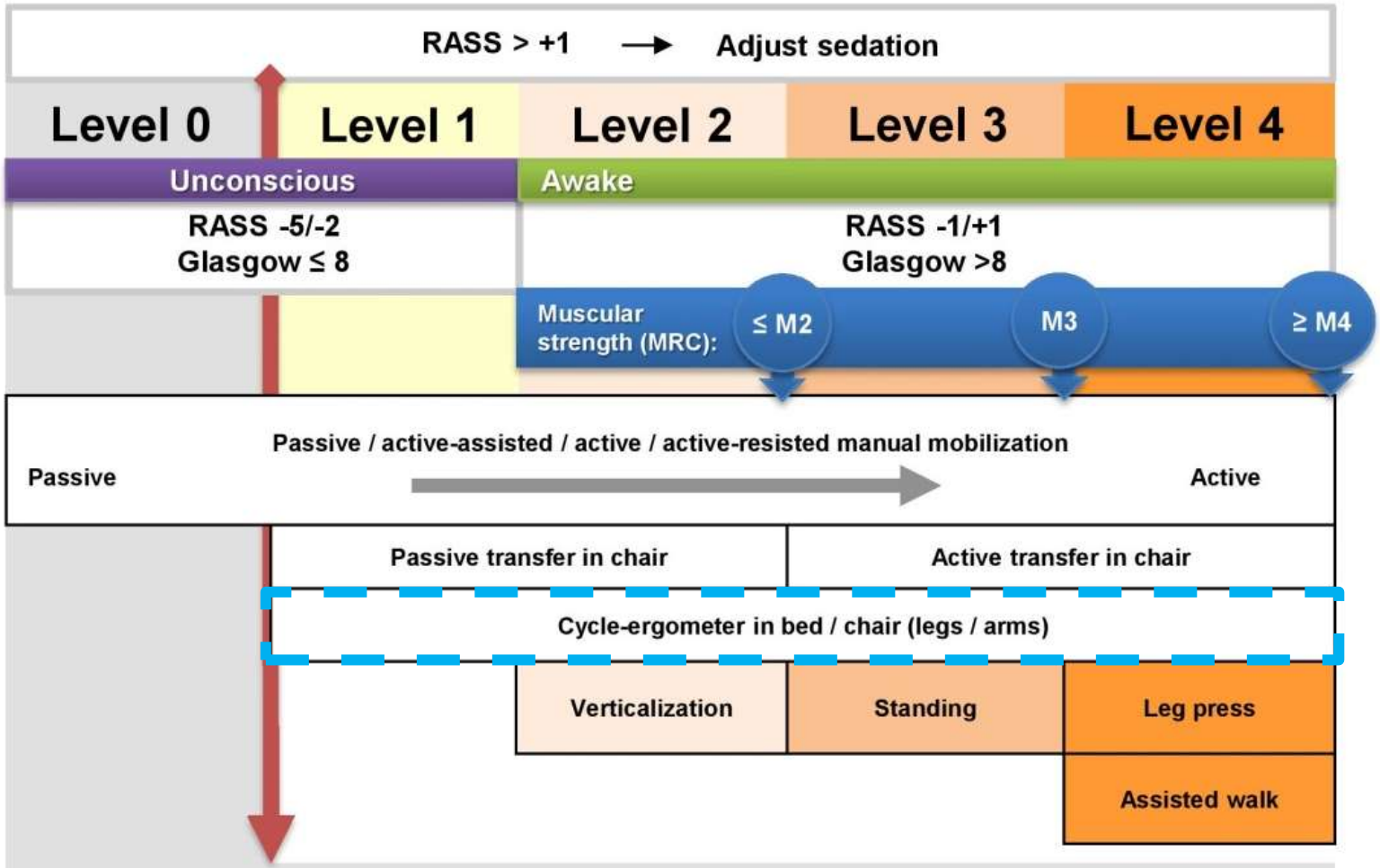

Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Cycle-ergometer in bed / chair (legs / arms)


RECK
puissance en actif [W]
~2.0
resist. 2
MOTOmed
viva2
start/stop

Cycle-ergometer in bed / chair (legs / arms)

Early mobilization protocol

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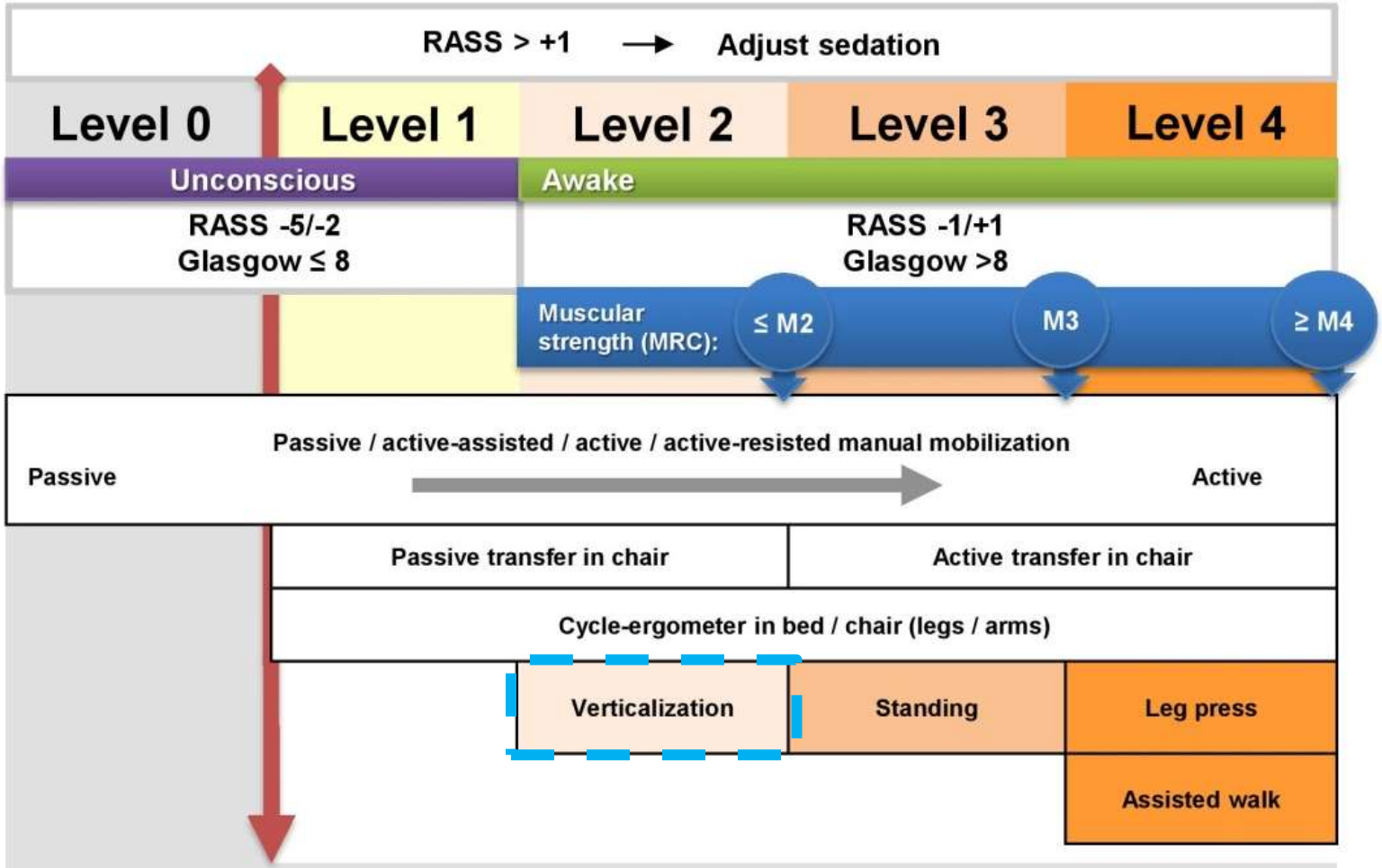


Contraindications of early mobilization *(level 1 to 4)*

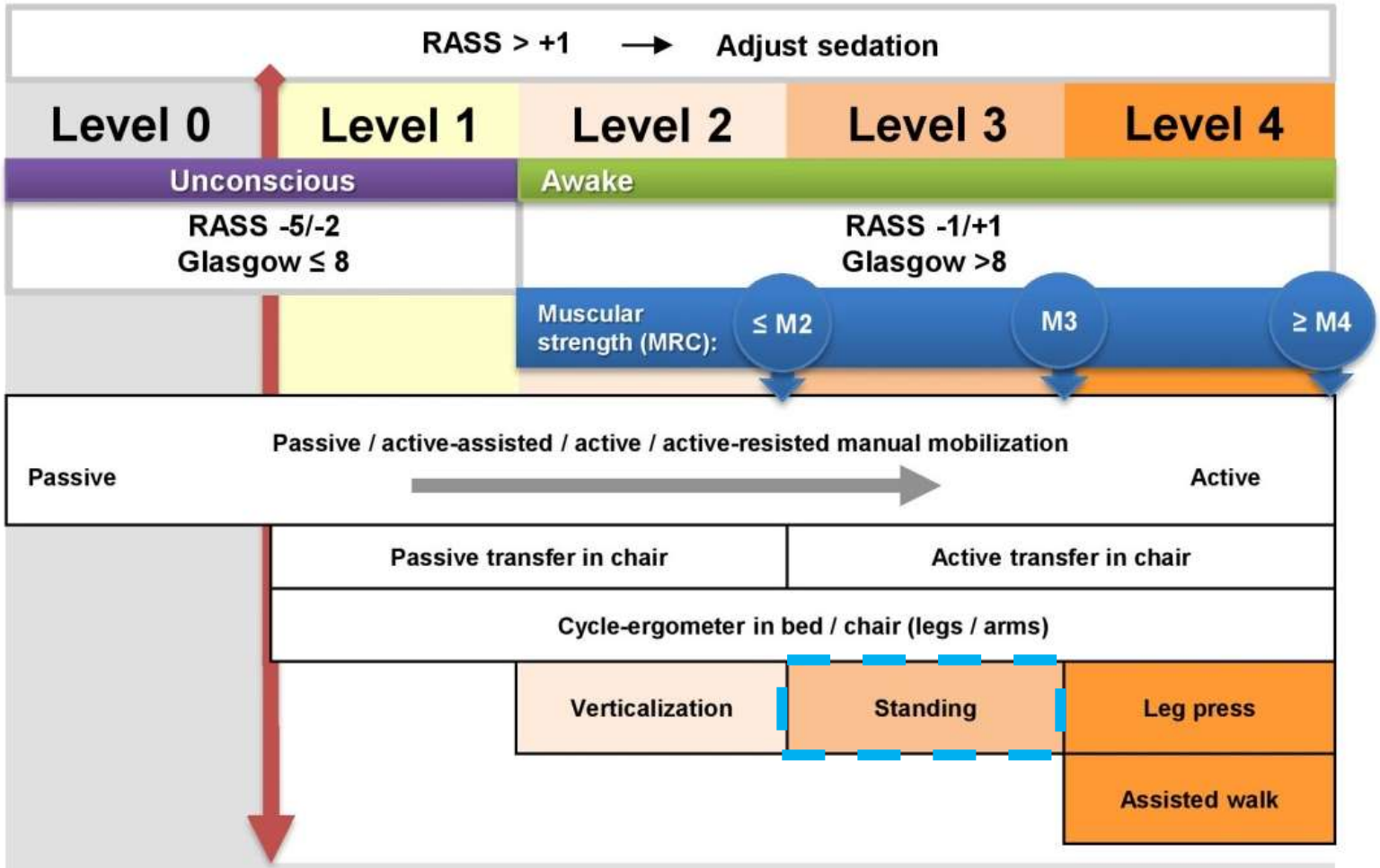
Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Verticalization

Verticalization

Early mobilization protocol

M. Patri, CE. Hickmann, E. Bialais, J. Dugernier, P-F Laterre , J. Roeseler
Intensive care unit, Saint Luc university hospital, Brussels.



Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Standing

Early mobilization protocol

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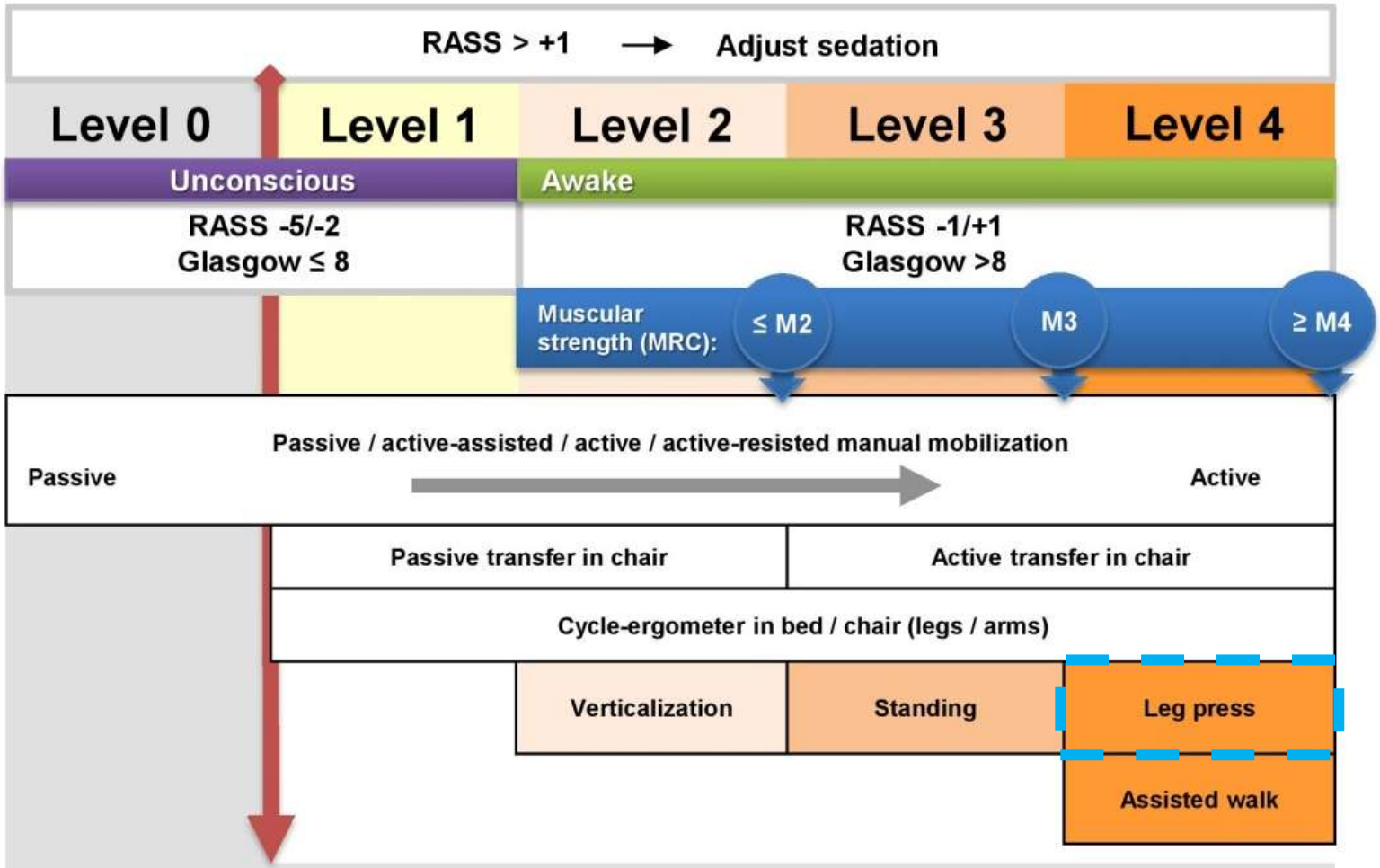
Intensive care unit, Saint Luc university hospital, Brussels.



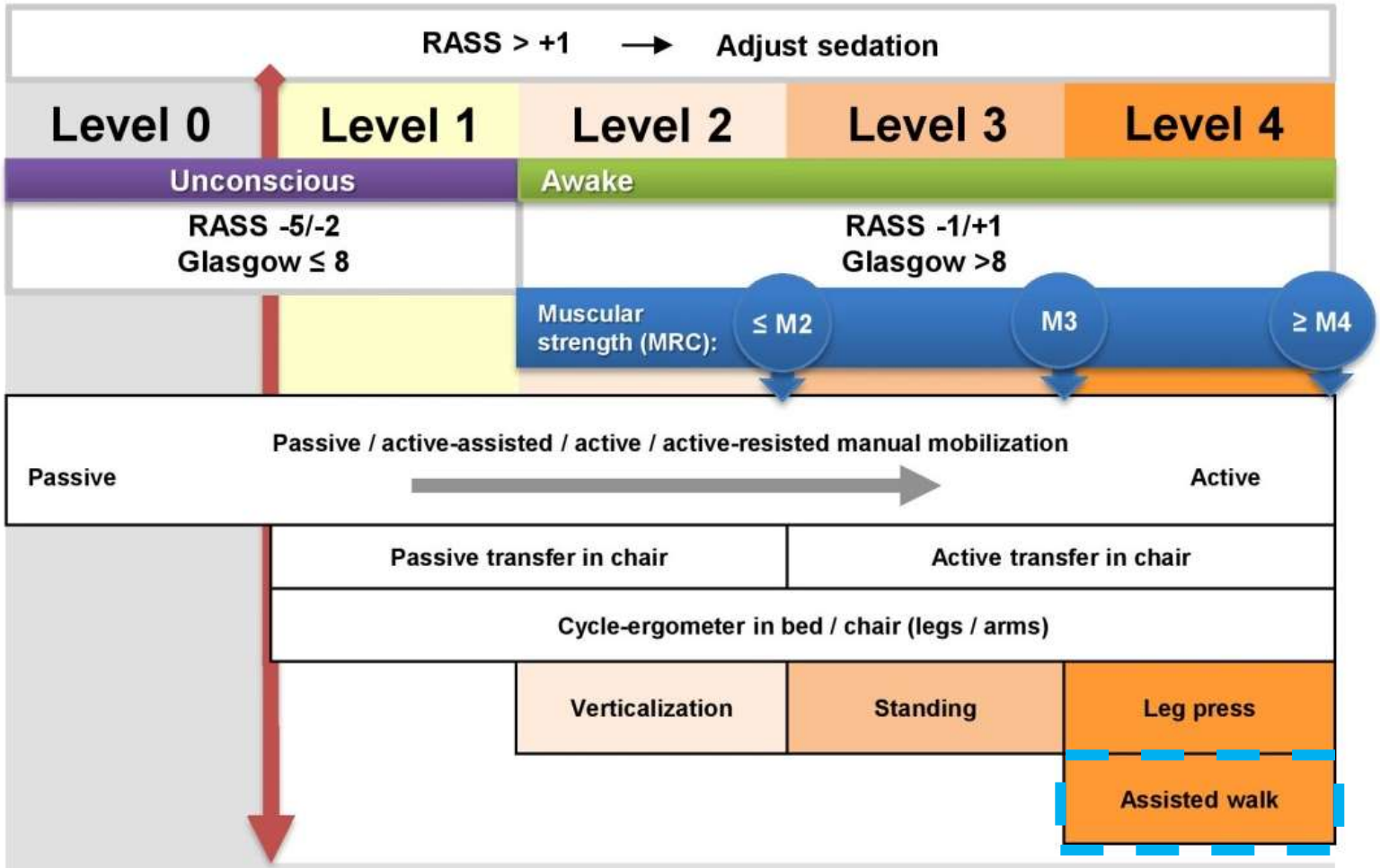
Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Leg press

Early mobilization protocol

M. Patri, CE. Hickmann, E. Bialais, J. Dugernier, P-F Laterre , J. Roeseler
Intensive care unit, Saint Luc university hospital, Brussels.



Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Assisted walk

Assisted walk

Early mobilization protocol

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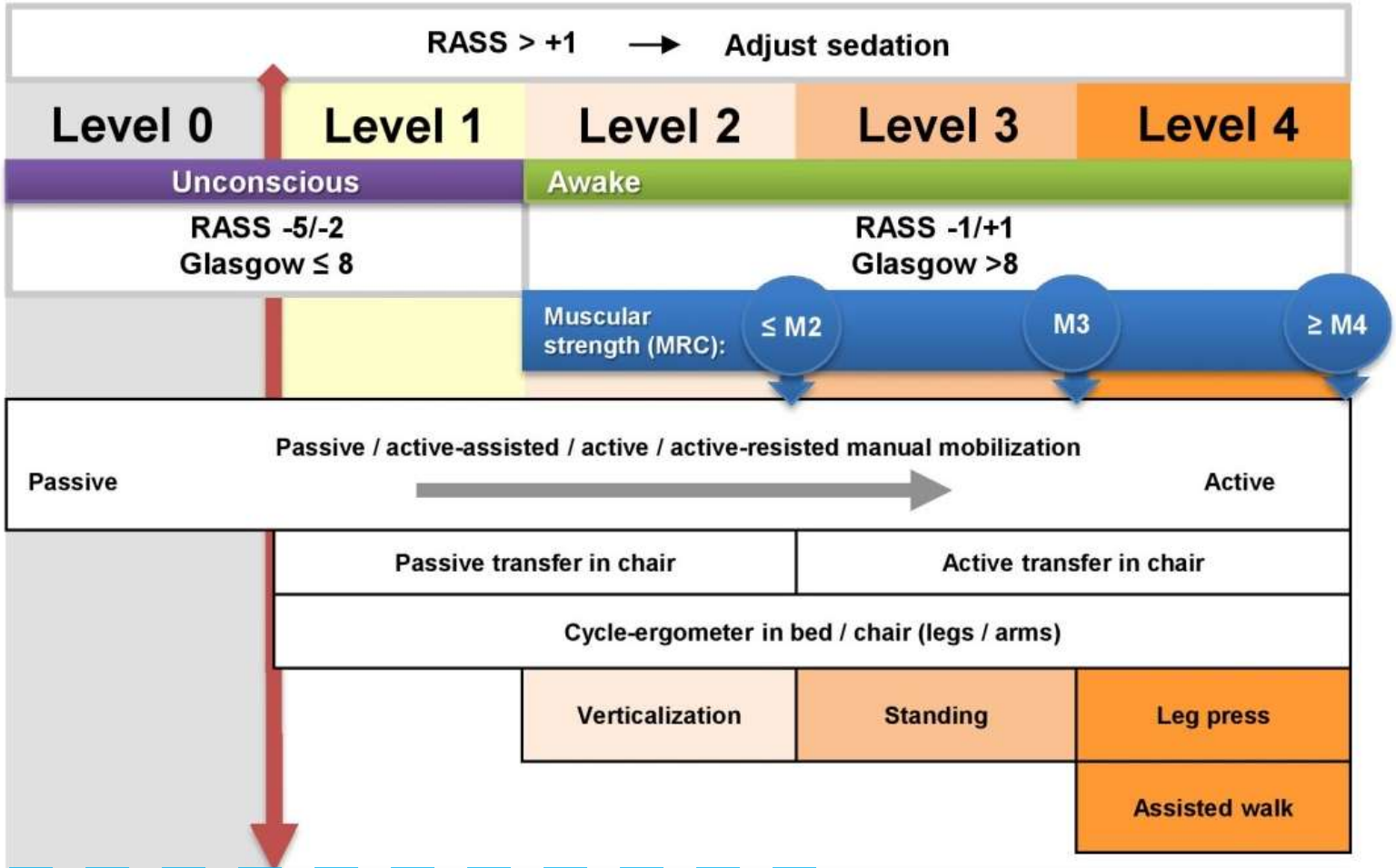

Contraindications of early mobilization *(level 1 to 4)*

Acute myocardial infarction (confirmed by ECG)
Active bleeding
Increased intracranial pressure with major instability
Spine or pelvis instable fracture
Therapy withdrawal

Hodgson et al. Critical Care (2014) 18:658
DOI 10.1186/s13054-014-0658-y

CRITICAL CARE

RESEARCH Open Access

Expert consensus and recommendations on safety criteria for active mobilization of mechanically ventilated critically ill adults

Carol L Hodgson[1,2*], Kathy Stiller[3], Dale M Needham[4], Claire J Tipping[2], Megan Harrold[5], Claire E Baldwin[6,7], Scott Bradley[2], Sue Berney[8], Lawrence R Caruana[9], Doug Elliott[10], Margot Green[11], Kimberley Haines[8,12], Alisa M Higgins[1], Kirsi-Maija Kaukonen[1,13], Isabel Anne Leditschke[14,15], Marc R Nickels[16], Jennifer Paratz[17,18], Shane Patman[19], Elizabeth H Skinner[20,21], Paul J Young[22,23], Jennifer M Zanni[24], Linda Denehy[25] and Steven A Webb[1,26]

	Low risk of an adverse event. Proceed as usual according to each ICU's protocols and procedures.
	Potential risk and consequences of an adverse event are higher than green, but may be outweighed by the potential benefits of mobilization. The precautions or contraindications should be clarified prior to any mobilization episode. If mobilized, consideration should be given to doing so gradually and cautiously.
	Significant potential risk or consequences of an adverse event. Active mobilization should not occur unless specifically authorized by the treating intensive care specialist in consultation with the senior physical therapist and senior nursing staff.

RESPIRATORY CONSIDERATIONS	IN-BED EXERCISES	OUT-OF-BED EXERCISES
Intubation		
Endotracheal tube [a]		
Tracheostomy tube		
Respiratory parameters		
Fraction of inspired oxygen		
≤ 0.6		
> 0.6		
Percutaneous oxygen saturation		
≥ 90%		
< 90% [b]		
Respiratory rate		
≤ 30 bpm		
> 30 bpm		
Ventilation		
Mode HFOV		
PEEP		
≤ 10 cmH_2O		
> 10 cmH_2O		
Ventilator dysynchrony [c]		
Rescue therapies		
Nitric oxide		
Prostacyclin		
Prone positioning [d]		

a

Cardiovascular Considerations	In-bed exercises	Out-of-bed exercises
Blood pressure		
Intravenous antihypertensive therapy for hypertensive emergency [a]	🔴	🔴
MAP [b]:		
Below target range and causing symptoms	🟡	🔴
Below target range despite support (vasoactive and/or mechanical)	🟡	🔴
Greater than lower limit of target range while receiving no support or low level support	🟢	🟢
Greater than lower limit of target range while receiving moderate level support	🟡	🟡
Greater than lower limit of target range on high level support	🟡	🔴
Known or suspected severe pulmonary hypertension	🟡	🟡
Cardiac arrhythmias		
Bradycardia:		
Requiring pharmacological treatment (e.g., isoprenaline) or awaiting emergency pacemaker insertion	🔴	🔴
Not requiring pharmacological treatment and not awaiting emergency pacemaker insertion	🟡	🟡
Transvenous or epicardial pacemaker:		
Dependent rhythm	🟡	🔴
Stable underlying rhythm	🟢	🟢

b

Any stable tachyarrhythmia:		
Ventricular rate >150 bpm	🟡	🔴
Ventricular rate 120 to 150 bpm	🟡	🟡
Any tachyarrhythmia with ventricular rate < 120 bpm	🟢	🟢
Devices		
Femoral IABP [c]	🟢	🔴
ECMO:		
Femoral [c] or subclavian (not single bicaval dual lumen cannulae)	🟢	🔴
Single bicaval dual lumen cannulae inserted into a central vein	🟢	🟡
Ventricular assist device	🟢	🟢
Pulmonary artery catheter or other continuous cardiac output monitoring device	🟢	🟡
Other cardiovascular considerations		
Shock of any cause with lactate >4mmol/L	🟡	🟡
Known or suspected acute DVT/PE	🟡	🟡
Known or suspected severe aortic stenosis	🟢	🟡
Cardiac ischemia (defined as ongoing chest pain and/or dynamic EKG changes)	🟡	🔴

IABP = intra-aortic balloon pump; ECMO = extracorporeal membrane oxygenation; bpm = beats per minute; MAP = mean arterial pressure; DVT = deep vein thrombosis; PE = pulmonary embolus.

[a] This may be a yellow (pause) for in-bed activities if the blood pressure is within target range as documented by the medical team.

[b] Experienced ICU practitioners were considered to have good judgment about the impact of cardiovascular instability and low, medium or high levels of hemodynamic support, on the ability to exercise. However, in the case of uncertainty or lack of experience, it is recommended that the decision to mobilize a patient is discussed with appropriate experienced ICU staff. The target mean arterial pressure is determined by the treating ICU team.

[c] Cycling and hip flexion may be contraindicated in the leg where the IABP/ECMO is inserted. If so, in-bed exercises may need to be modified to limit hip flexion.


LEVOPHED

Optiflow
High FiO2

Going outside…