

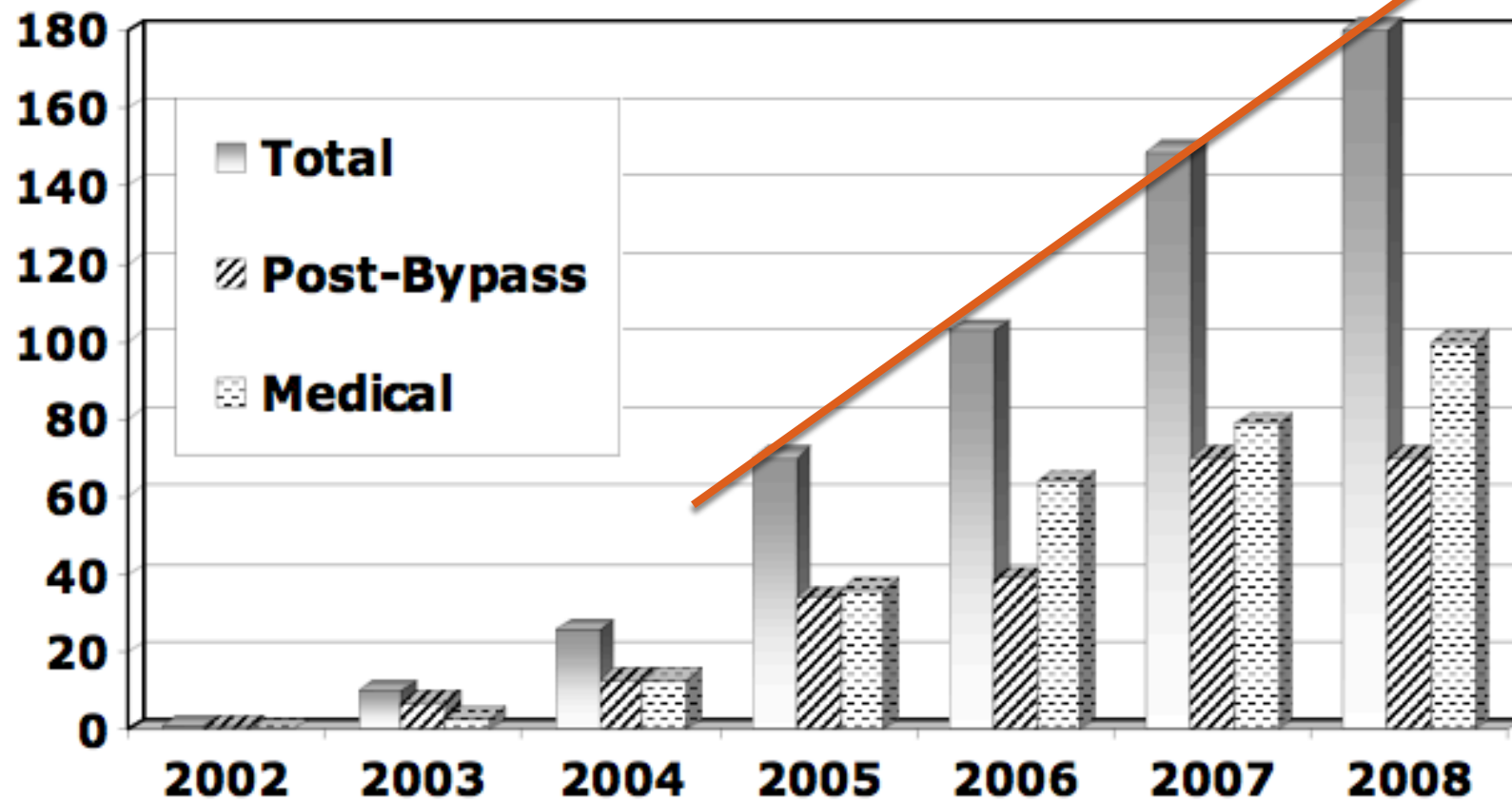
L'ECMO UNE THERAPIE EN PLEIN ESSOR

Mathieu De Ryckere
Infirmier SISU

Soins Intensifs CUB Hôpital Erasme
Administrateur SIZ-Nursing

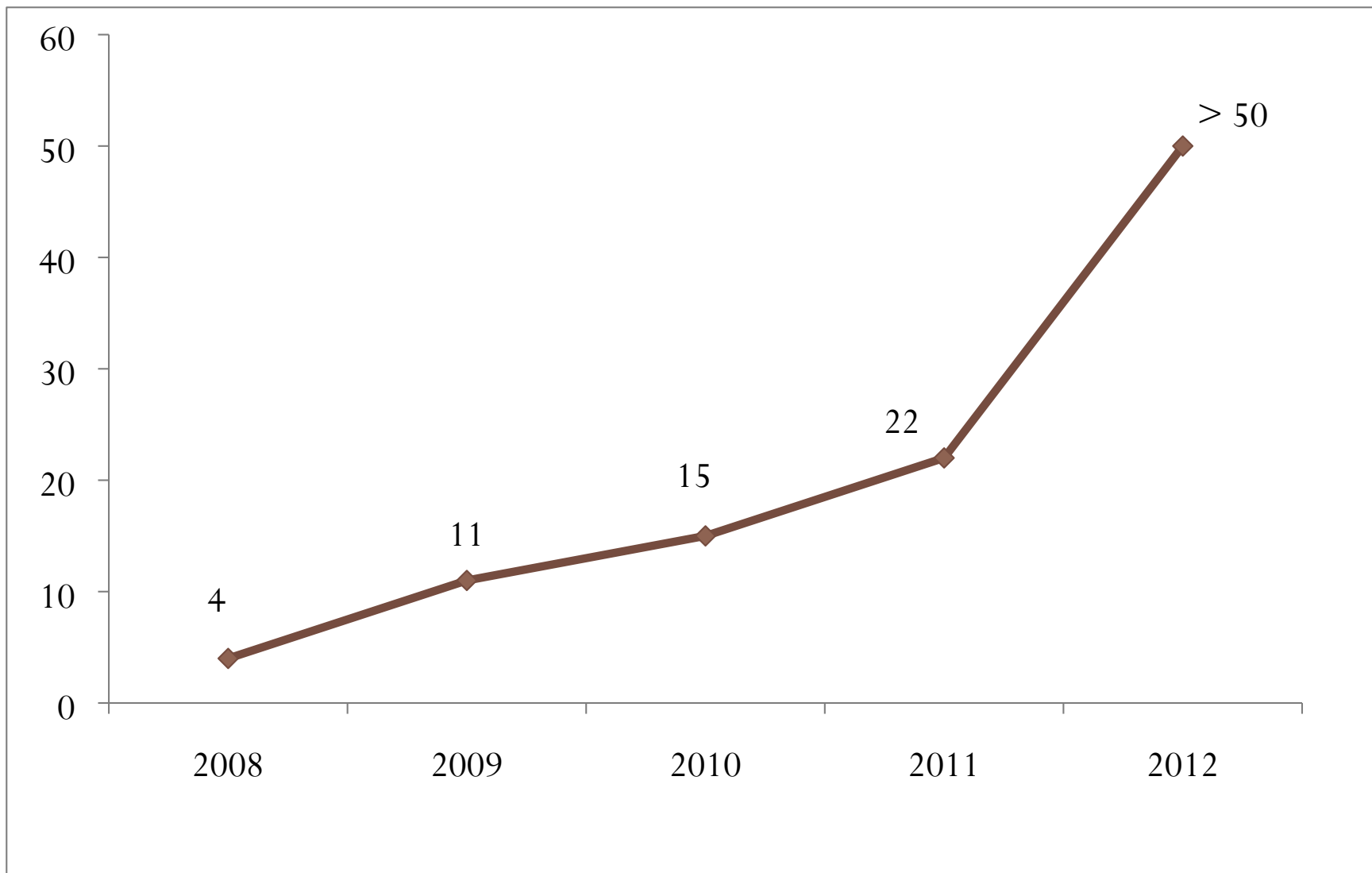
31^{ème} symposium SIZ-Nursing
18 avril 2013

ECMO: Essor dans les années 2000



ECMO at la Pitié A.COMBES

ECMO hôpital Erasme



ECMO ?

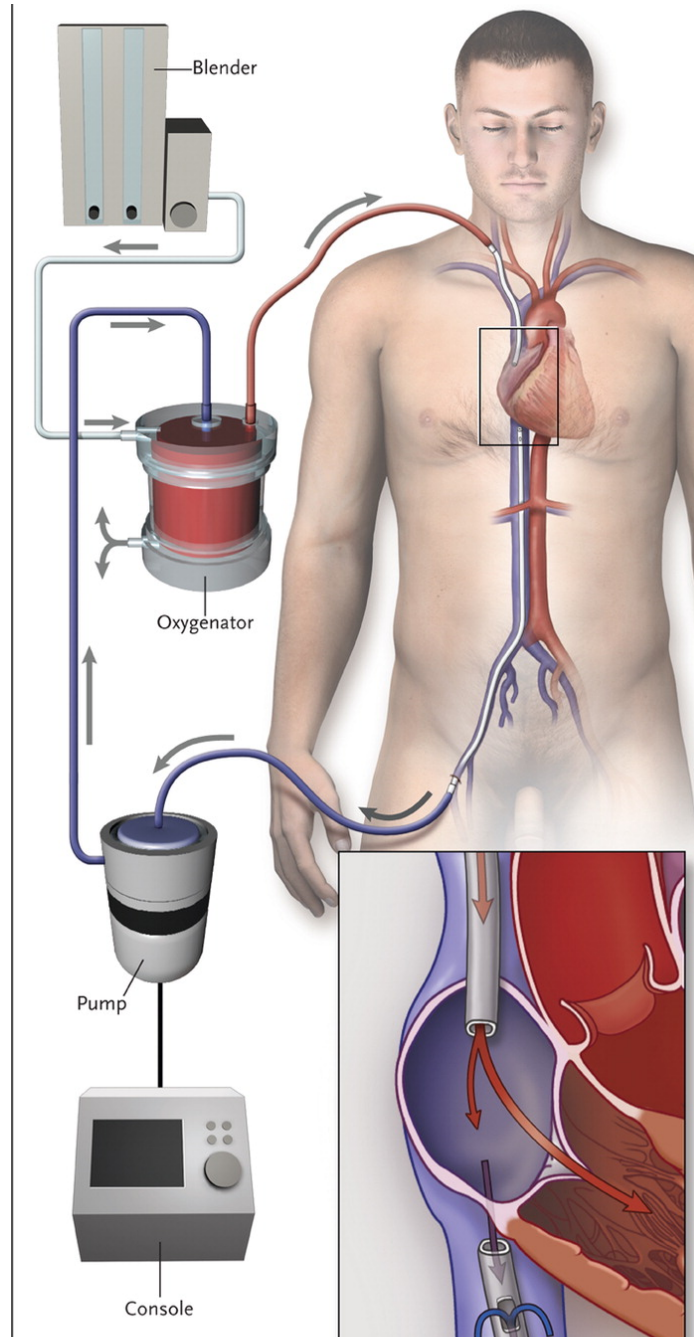
Extra Corporeal Membrane Oxygenation

Mélangeur

Oxygénateur

Pompe

Console

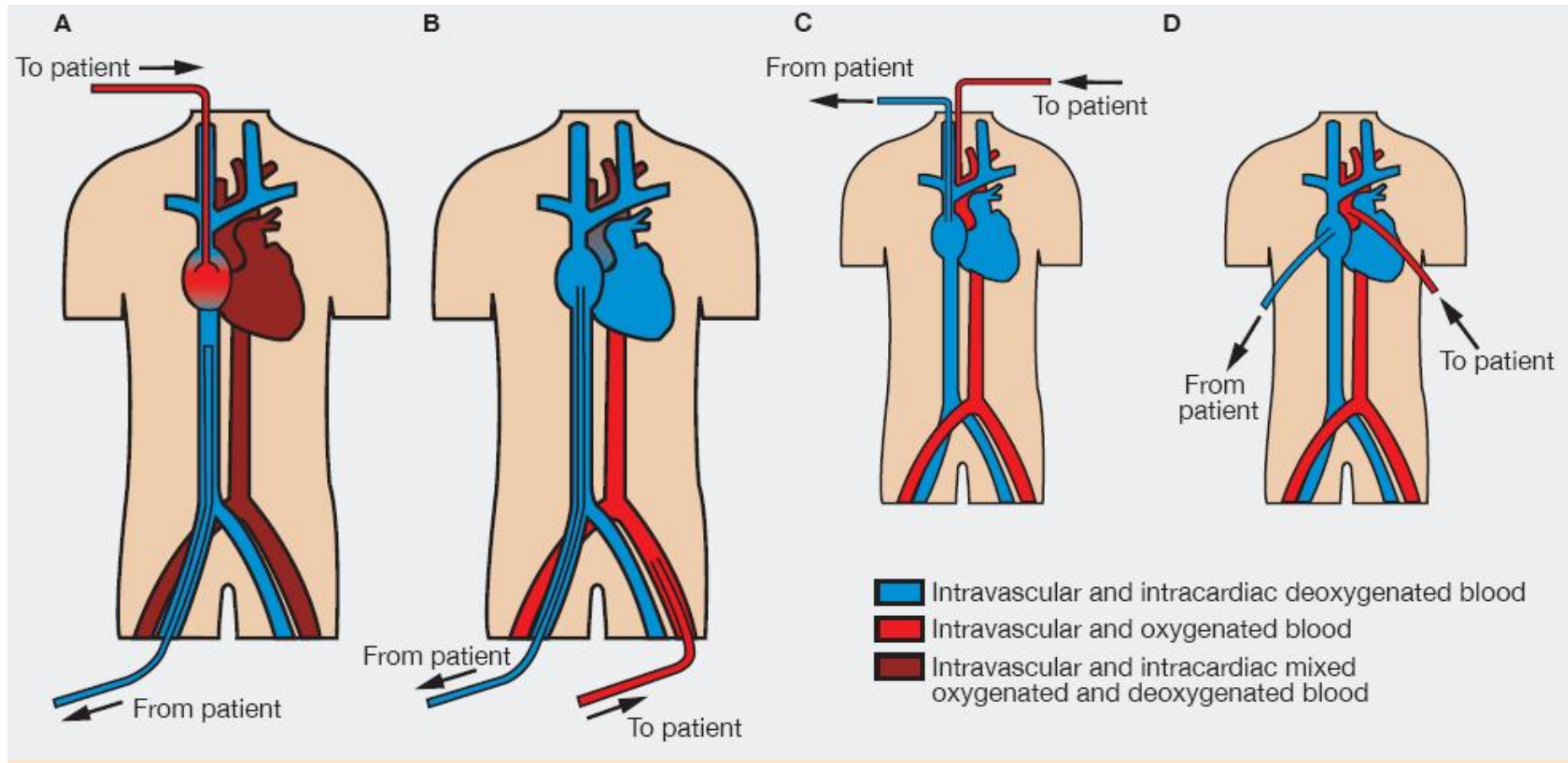


VV

VA

VA (carotide)

VA (centrale)



ECMO

=

Charge de travail élevée

Taux complications élevé

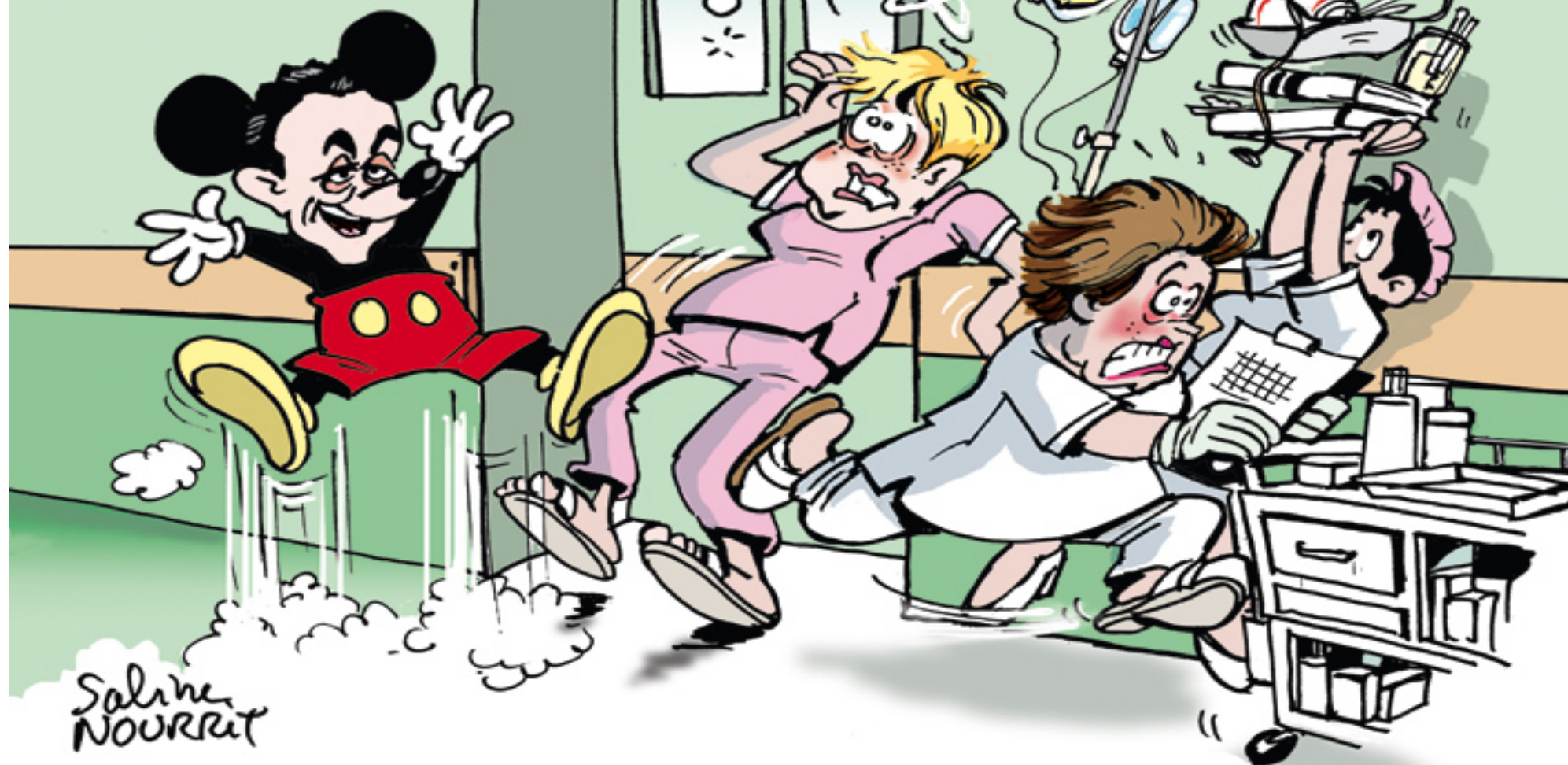
Taux de décès élevé



**TRAVAILLEZ
PLUS !**

**SIFFLEZ EN
TRAVAILLANT...**

VOUS CROYEZ QUE
C'EST LE BURN OUT ?
... J'AI L'IMPRESSION
DE VOIR MICKEY
DANS LE SERVICE !



y en a marre !!!



L'ECMO

EST-CE VRAIMENT UTILE ???

LES CHIFFRES !



Online article and related content
current as of April 25, 2009.

Extracorporeal Life Support: The University of Michigan Experience

Robert H. Bartlett; Dietrich W. Roloff; Joseph R. Custer; et al.

JAMA. 2000;283(7):904-908 (doi:10.1001/jama.283.7.904)

INDICATION	n	SURVIE
Détresse respiratoire	146	56%
Cardiaque	31	33%

ECLS Registry Report

International Summary

January, 2013



Overall Outcomes

	<i>Total Patients</i>	<i>Survived ECLS</i>		
Adult				
Respiratory	3,761	2,400	64%	56%
Cardiac	2,884	1,581	55%	33%
ECPR	876	325	37%	

Extracorporeal Life Support Management

<http://www.elsonet.org/index.php/registry/statistics/limited.html>

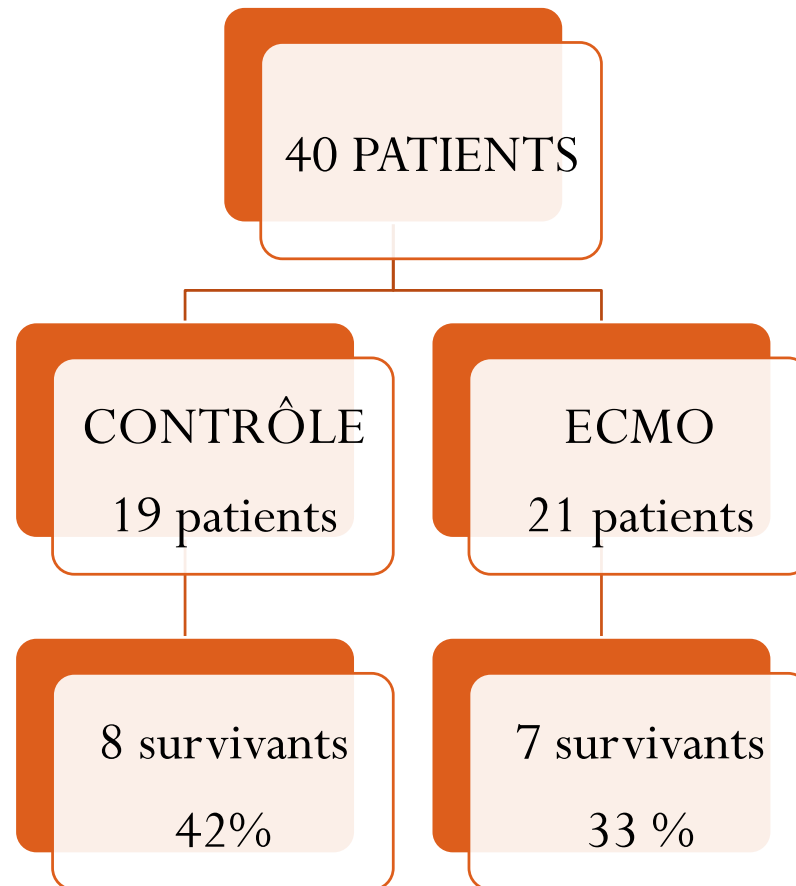
L'ECMO V-V



AMERICAN JOURNAL OF

Respiratory and
Critical Care Medicine®

Randomized Clinical Trial of Pressure-Controlled Inverse
Ratio Ventilation and Extracorporeal CO₂ Removal for
Adult Respiratory Distress Syndrome
MORRIS et al. 1994



P = 0.08

PAS DE VENTILATION PROTECTIVE DANS GROUPE ECMO

THE LANCET

Efficacy and economic assessment of conventional ventilatory support versus extracorporeal membrane oxygenation for severe adult respiratory failure (CESAR): a multicentre randomised controlled trial

Giles J Peek, Miranda Mugford, Ravindranath Tiruvoipati, Andrew Wilson, Elizabeth Allen, Mariamma M Thalanany, Clare L Hibbert, Ann Truesdale, Felicity Clemens, Nicola Cooper, Richard K Firmin, Diana Elbourne, for the CESAR trial collaboration

2009

*Ann Truesdale, Felicity Clemens, Nicola Cooper, Richard K Firmin, Diana Elbourne, for the CESAR trial collaboration
Giles J Peek, Miranda Mugford, Ravindranath Tiruvoipati, Andrew Wilson, Elizabeth Allen, Mariamma M Thalanany, Clare L Hibbert*

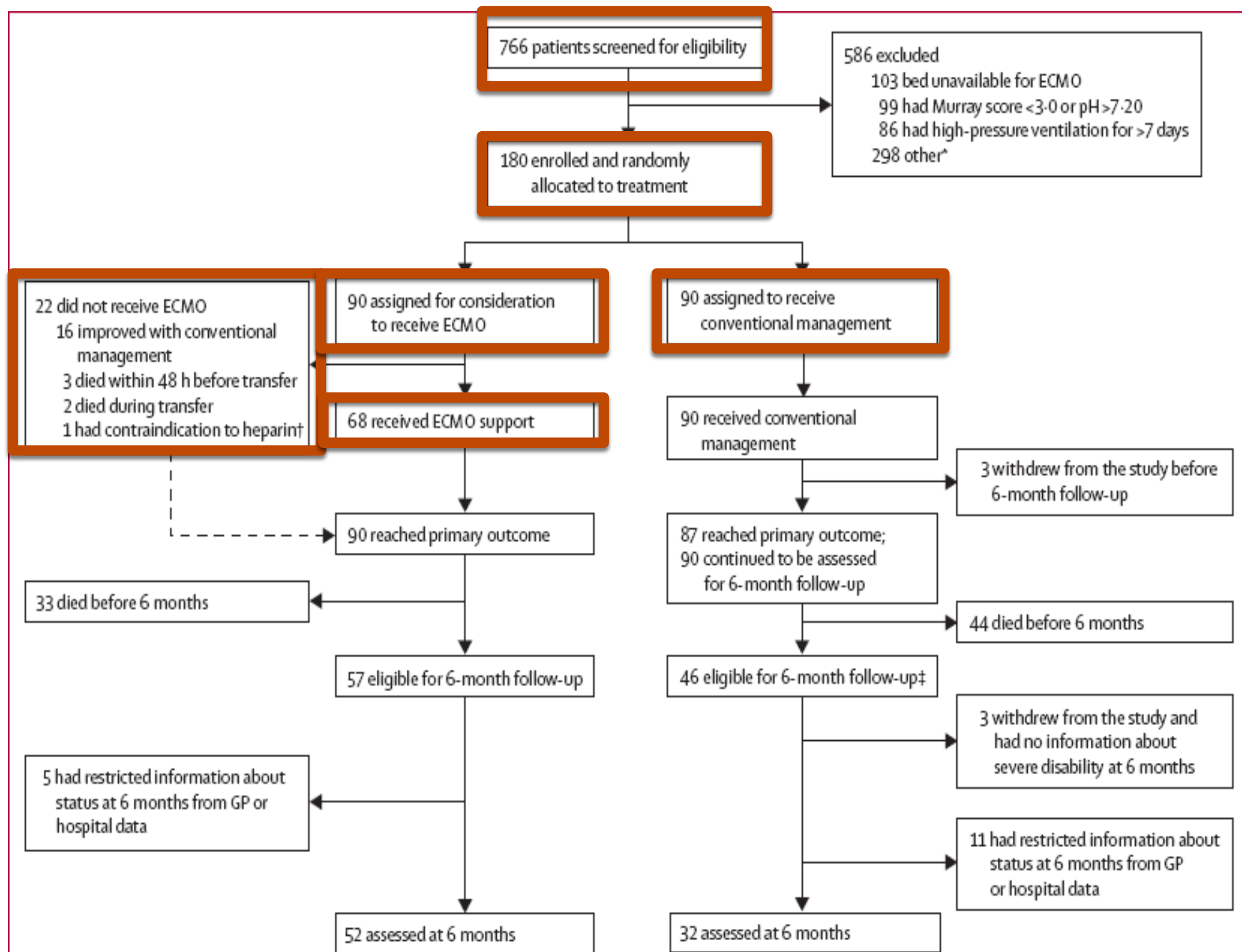
**Conventional Ventilation or
ECMO for
Severe
Adult
Respiratory Failure**



CESAR

- Etude multicentrique (103 hôpitaux)
- Contrôlée & randomisée
- Réalisée en UK
- Juillet 2001 à Août 2006

Patient Inclusion Criteria	Patient Exclusion Criteria
Adult patients (18 to 65 years of age).	Duration of high pressure and/or high FiO_2 ventilation >7 days.
Severe, but potentially reversible, respiratory failure.	Intra cranial bleeding.
Murray score >3.0, or uncompensated hypercapnoea with a pH <7.20	Any other contraindication to limited heparinization.
	Patients who are moribund and have any contraindication to continuation of active treatment.



CESAR

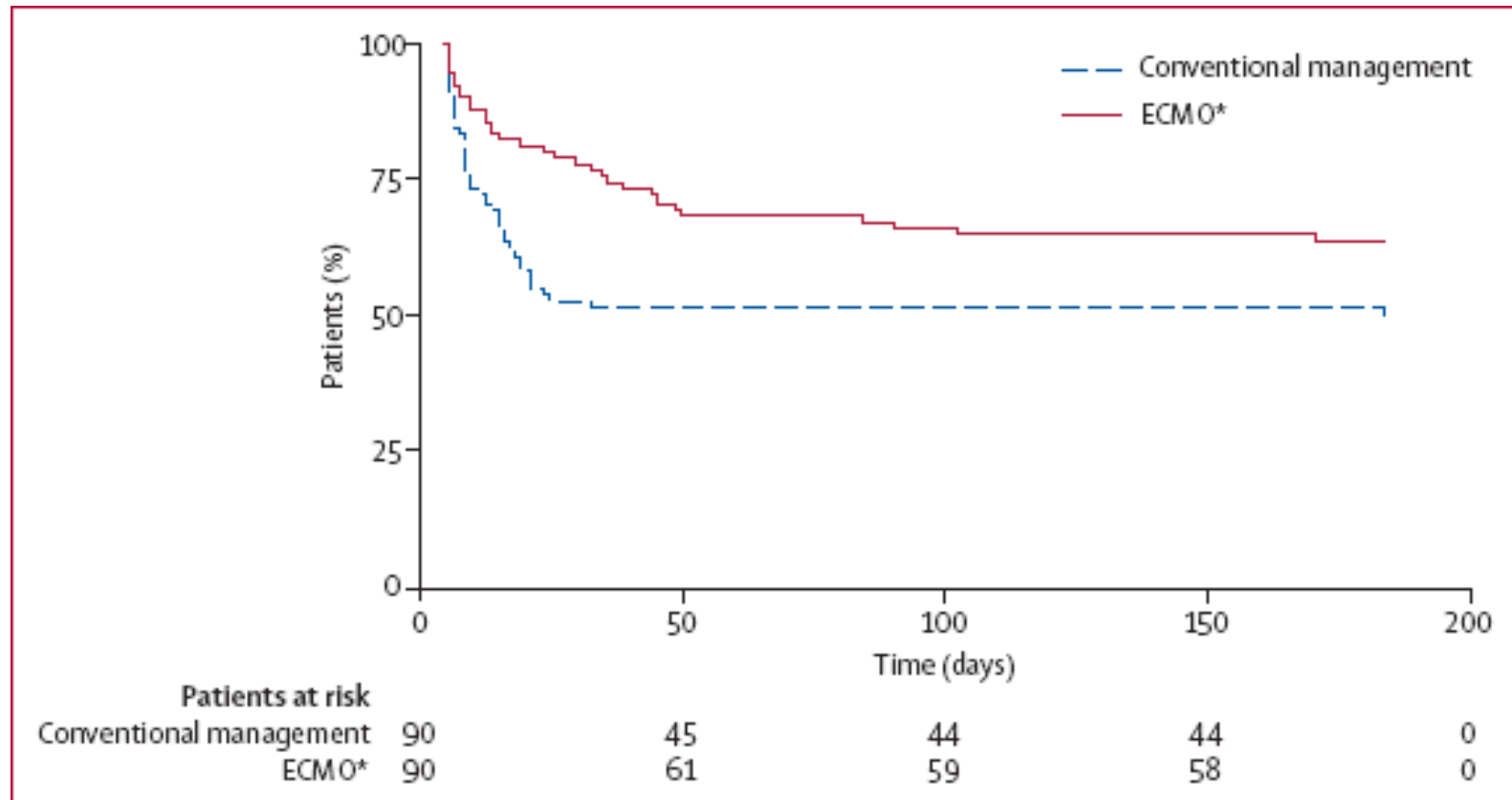


Figure 2: Kaplan-Meier survival estimates

ECMO=extracorporeal membrane oxygenation. *Patients were randomly allocated to consideration for treatment by ECMO, but did not necessarily receive this treatment.

6 mois (vivant sans handicap grave)
63 vs 47% $p = 0.03$

H1N1



Moronke A. Noah, MRCS

Referral to an Extracorporeal Membrane Oxygenation Center and Mortality Among Patients With Severe 2009 Influenza A(H1N1)

ECMO study database (1756 patients in 193 hospitals)

80 Patients referred, accepted, and transferred
to 4 ECMO centers (UK H1N1 ECMO registry)

1676 Potential non-ECMO-referred patients
recruited from 189 hospitals (Swift study)

1481 Excluded (applied sequentially)

1441 Not suitable for ECMO

448 Age <16 y or >70 y

447 Not mechanically ventilated

435 FiO_2 never ≥ 0.7 or ratio of
 PaO_2 to FiO_2 never ≤ 100 mm Hg

111 Severe chronic respiratory
dysfunction

2 Treated with ECMO at an undesignated
center

13 Referred but not accepted for transfer
for ECMO due to a presupposed lack
of benefit

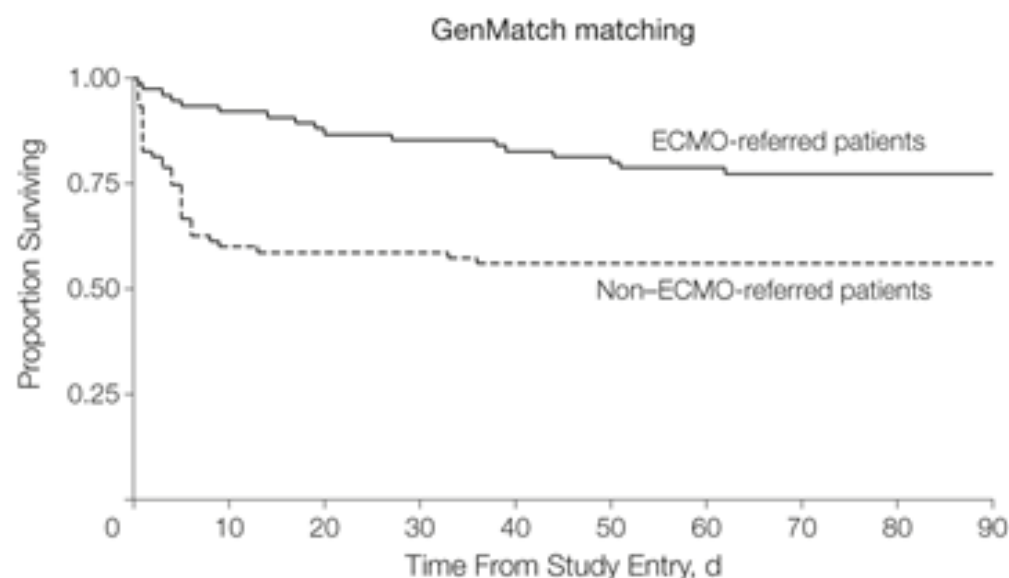
18 Missing data for matching

7 Missing data for primary outcome

195 Eligible non-ECMO-referred patients in 85 hospitals

59 Matched pairs after individual matching
75 Matched pairs after propensity score matching
75 Matched pairs after GenMatch matching

Referral to an Extracorporeal Membrane Oxygenation Center and Mortality Among Patients With Severe 2009 Influenza A(H1N1)



	No. of Deaths/ Total No. of Patients (%)		RR (95% CI)	P Value
	ECMO-Referred	Non-ECMO-Referred		
Matching method				
Propensity score	18/75 (24.0)	35/75 (46.7)	0.51 (0.31-0.84)	.008
GenMatch	18/75 (24.0)	38/75 (50.7)	0.47 (0.31-0.72)	.001
Individual	14/59 (23.7)	31/59 (52.5)	0.45 (0.26-0.79)	.006

ET LA QUALITE DE VIE ?

Efficacy and economic assessment of conventional ventilatory support versus extracorporeal membrane oxygenation for severe adult respiratory failure (CESAR): a multicentre randomised controlled trial 2009

	ECMO group (n=90)*	Conventional management group (n=90)
Alive at 6 months or discharged alive	57 (63%)	46 (51%)
EQ-5D		
Follow-up information available	57 (63%)	40 (44%)
<u>Problems with mobility</u>		
None	30 (33%)	19 (21%)
Some	26 (29%)	19 (21%)
Confined to bed	0	2 (2%)
Data missing	1 (1%)‡	0
<u>Problems with self care</u>		
None	42 (47%)	26 (29%)
Some problems washing or dressing	13 (14%)	11 (12%)
Unable to wash or dress	2 (2%)	2 (2%)
Data missing	1 (1%)‡	1 (1%)§
Follow-up information available	52 (58%)	33 (37%)
<u>Problems with usual activities</u>		
None	21 (23%)	10 (11%)
Some	25 (28%)	19 (21%)
Unable	6 (7%)	4 (4%)
<u>Pain or discomfort</u>		
None	23 (26%)	13 (14%)
Moderate	22 (24%)	18 (20%)
Extreme	7 (8%)	2 (2%)
<u>Anxiety or depression</u>		
None	23 (26%)	21 (23%)
Moderate	26 (29%)	9 (10%)
Extreme	3 (3%)	3 (3%)

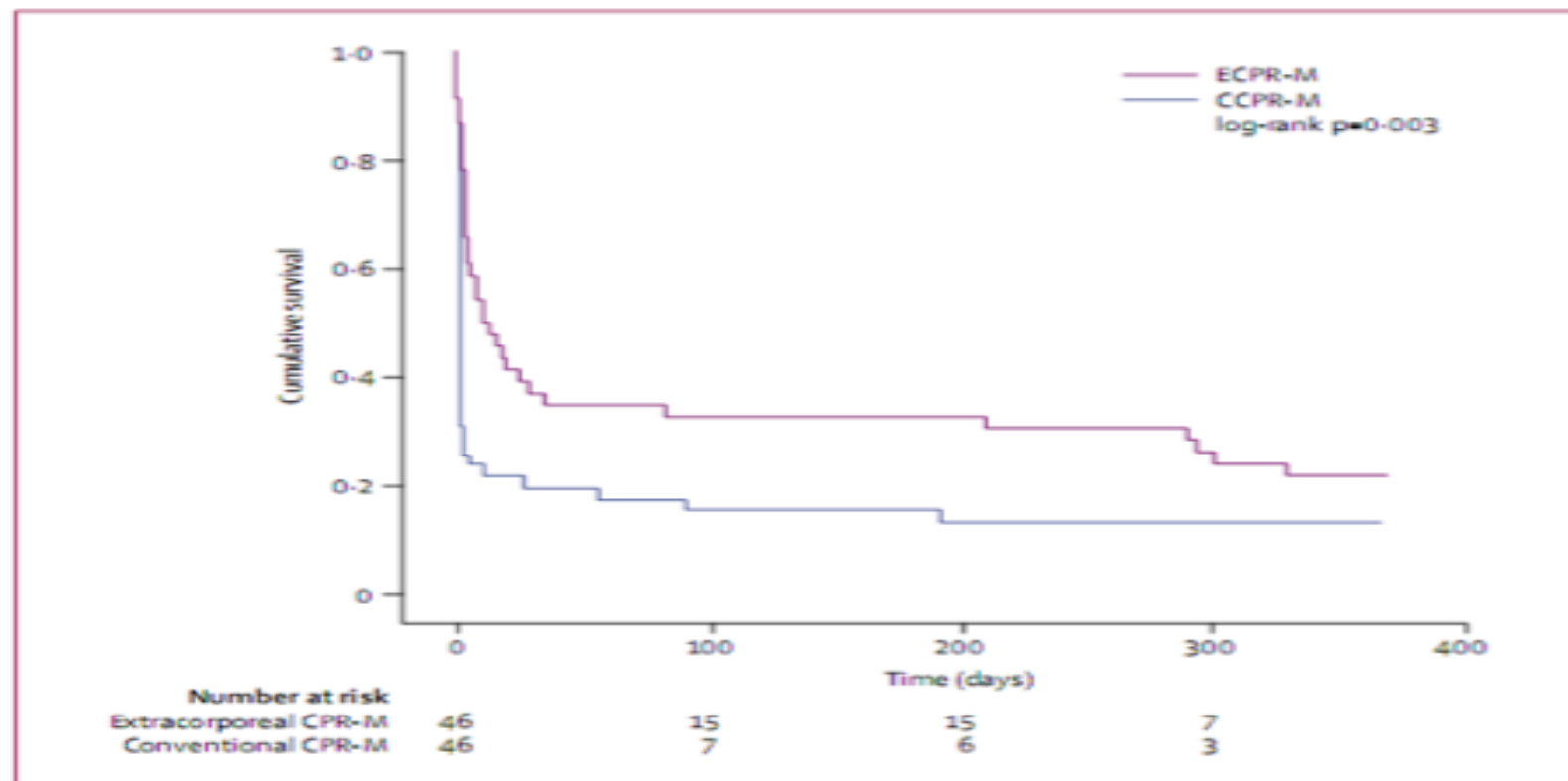
L'ECMO V-A dans l'arrêt cardiaque réfractaire

THE LANCET

Volume 372 August 2008, Pages 554–561

Cardiopulmonary resuscitation with assisted extracorporeal life-support versus conventional cardiopulmonary resuscitation in adults with in-hospital cardiac arrest: an observational study and propensity analysis

Yih-Shang Chen*, Jou-Wei Lin*, Hsi-Yu Yu, Wen-Je Ko, Jih-Shuin Jerng, Wei-Tien Chang, Wen-Jone Chen, Shu-Chien Huang, Nai-Hsin Chi, Chih-Hsien Wang, Li-Chin Chen, Pi-Ru Tsai, Sheoi-Shen Wang, Juey-Jen Hwang, Fang-Yue Lin



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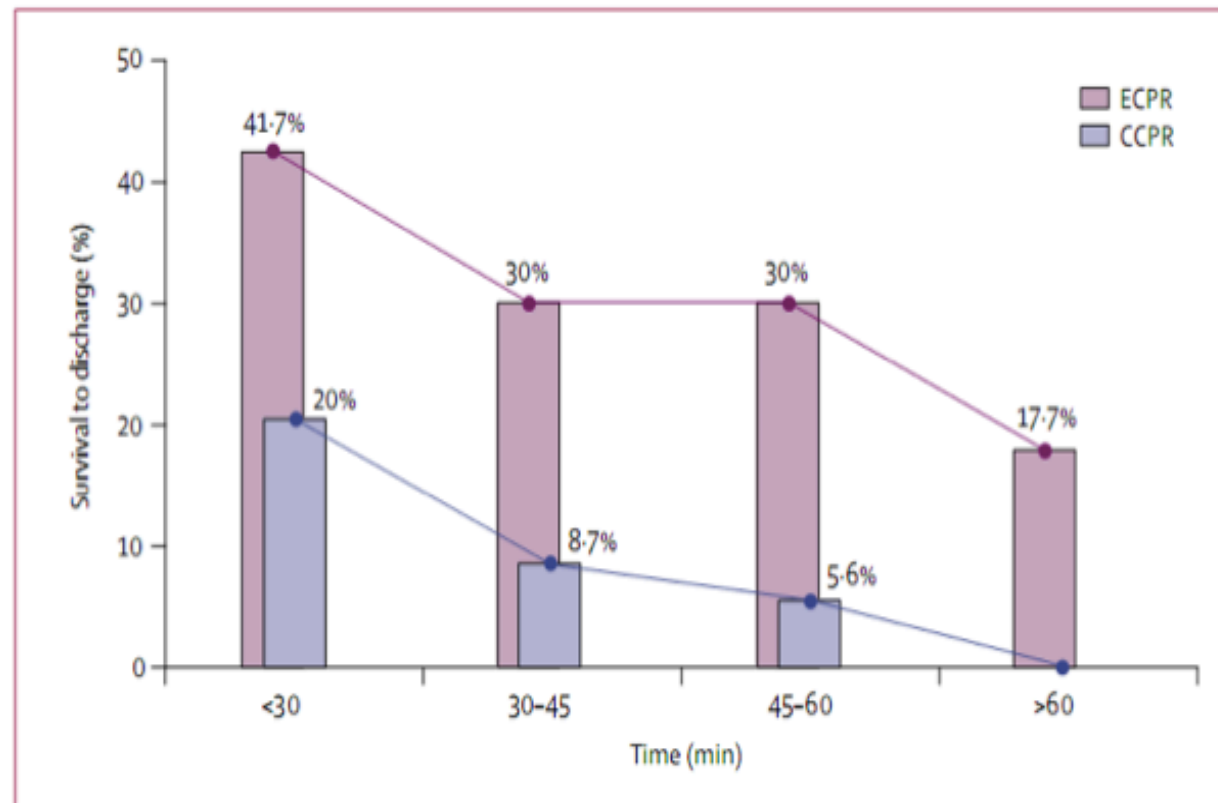


Figure 1: Relation between CPR duration and the survival rate to discharge

Cardiopulmonary resuscitation with assisted extracorporeal life-support versus conventional cardiopulmonary resuscitation in adults with in-hospital cardiac arrest: an observational study and propensity analysis

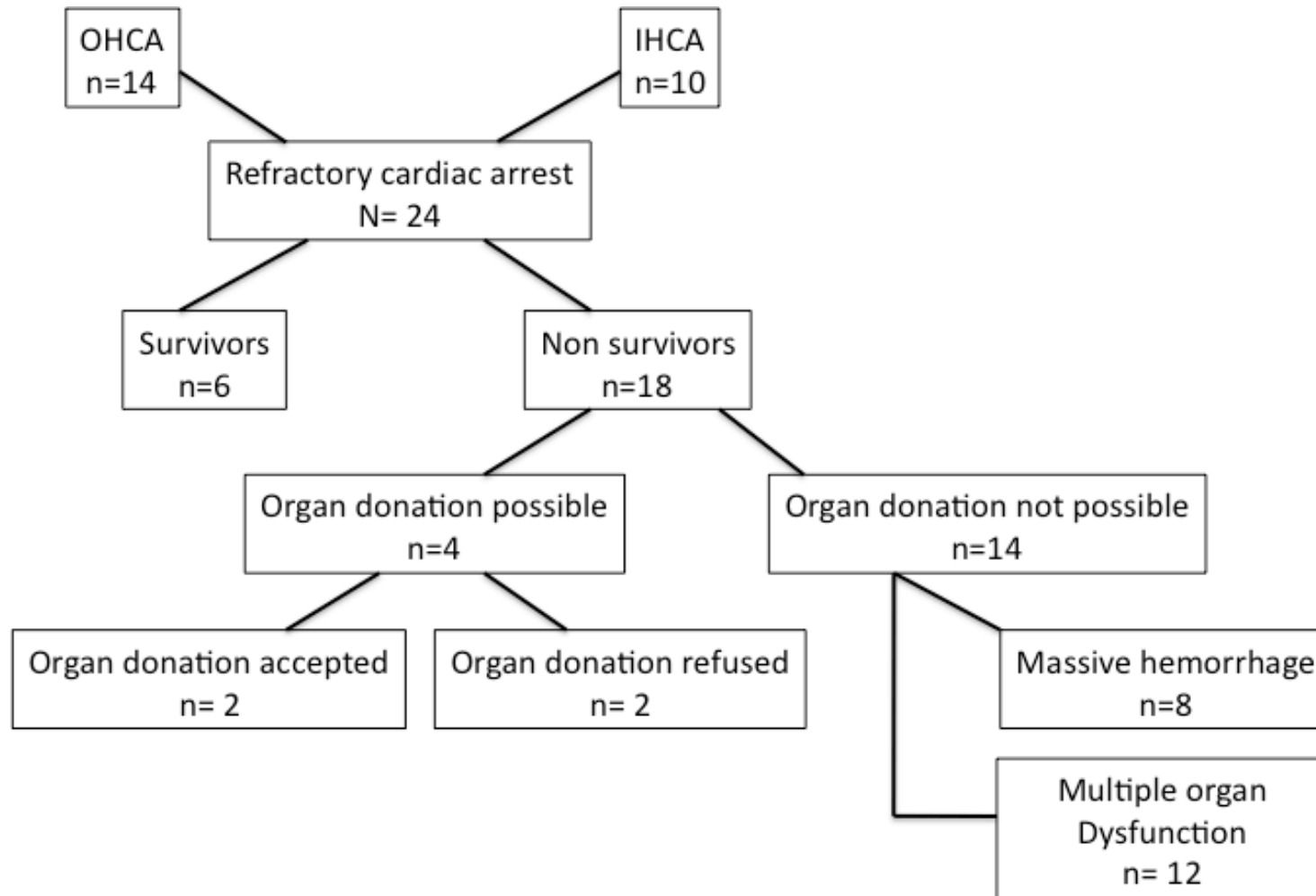
Yih-Shang Chen*, Jou-Wei Lin*, Hsi-Yu Yu, Wen-Je Ko, Jih-Shuin Jerng, Wei-Tien Chang, Wen-Jone Chen, Shu-Chien Huang, Nai-Hsin Chi, Chih-Hsien Wang, Li-Chin Chen, Pi-Ru Tsai, Sheoi-Shen Wang, Juey-Jen Hwang, Fang-Yue Lin

	Extracorporeal CPR group N (%)	Conventional CPR group N (%)
N	59	113
Duration of extracorporeal membrane oxygenation (h)		
Mean (SD)	110 (128)	..
Median (range)	69 (2–771)	..
Weaned off extracorporeal membrane oxygenation	29 (49.2)	..
CPC status at discharge		
1 or 2*	14 (23.7)	12 (10.6)
OR (95% CI, p value)	2.6 (95% CI 1.1–6.7, p=0.02*)	2.6 (95% CI 1.1–6.7, p=0.02*)
CPC status at 1 year		
1 or 2	9 (15.3)	10 (8.9)
OR (95% CI, p value)	1.9 (95% CI 0.6–5.4, p=0.20)	1.9 (95% CI 0.6–5.4, p=0.20)

*p<0.05, m: month, CPC: Cerebral Performance Category score.

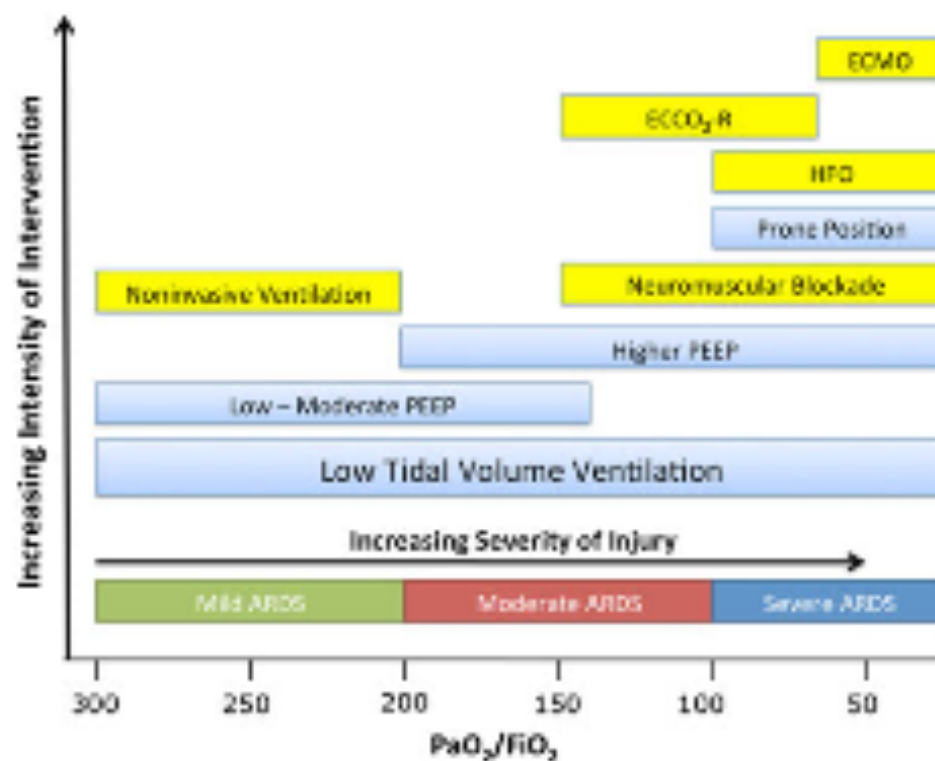
Table 3: Outcome of the extracorporeal CPR group and conventional CPR group

eCPR ERASME



Niall D. Ferguson
Eddy Fan
Luigi Camporota
Massimo Antonelli
Antonio Anzueto
Richard Beale
Laurent Brochard
Roy Brower
Andrés Esteban
Luciano Gattinoni
Andrew Rhodes
Arthur S. Slutsky
Jean-Louis Vincent
Gordon D. Rubenfeld
B. Taylor Thompson
V. Marco Ranieri

The Berlin definition of ARDS: an expanded rationale, justification, and supplementary material



Extracorporeal Life Support Organization (ELSO)

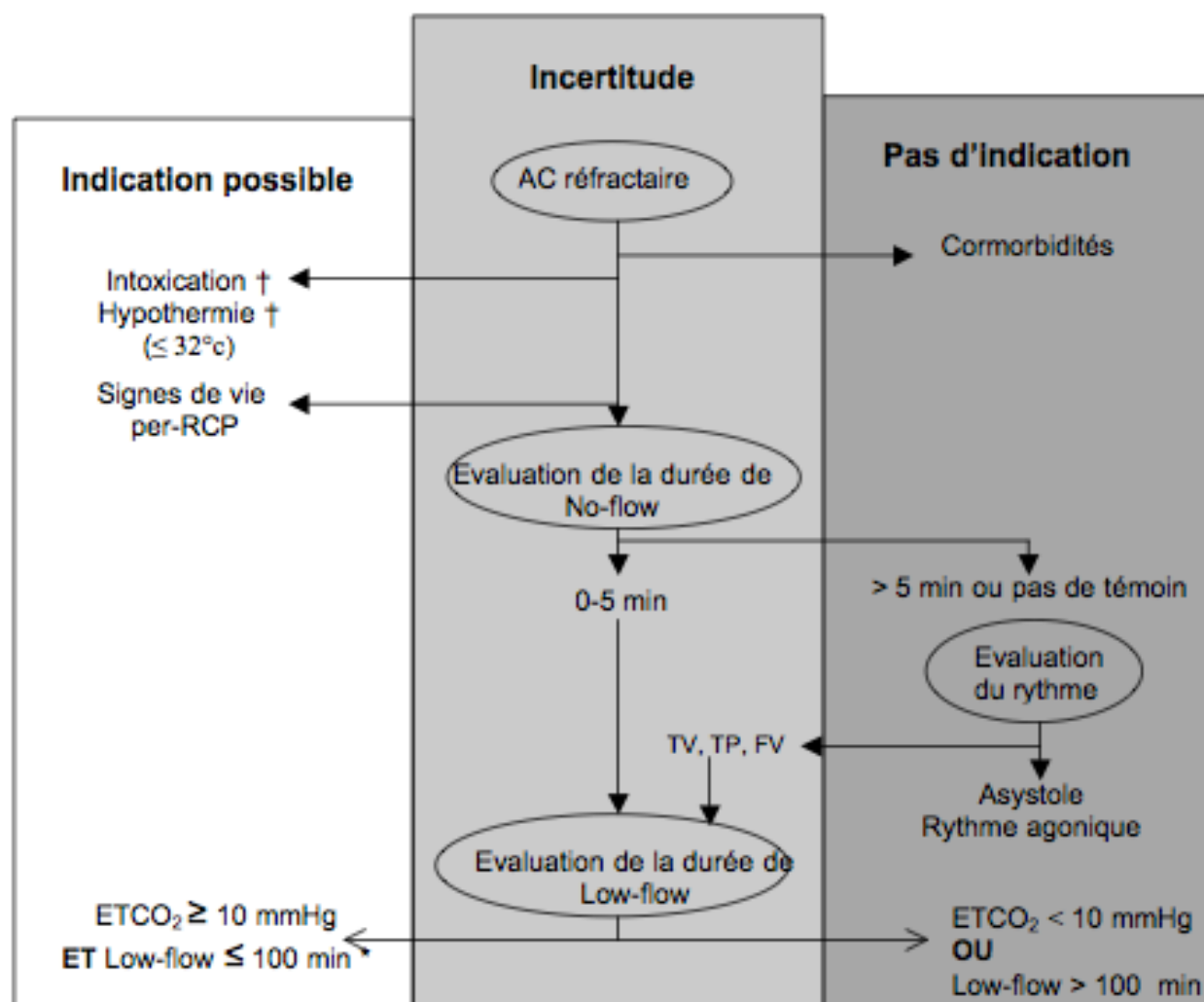


Adult respiratory failure cases

I Patient Condition

A. Indications

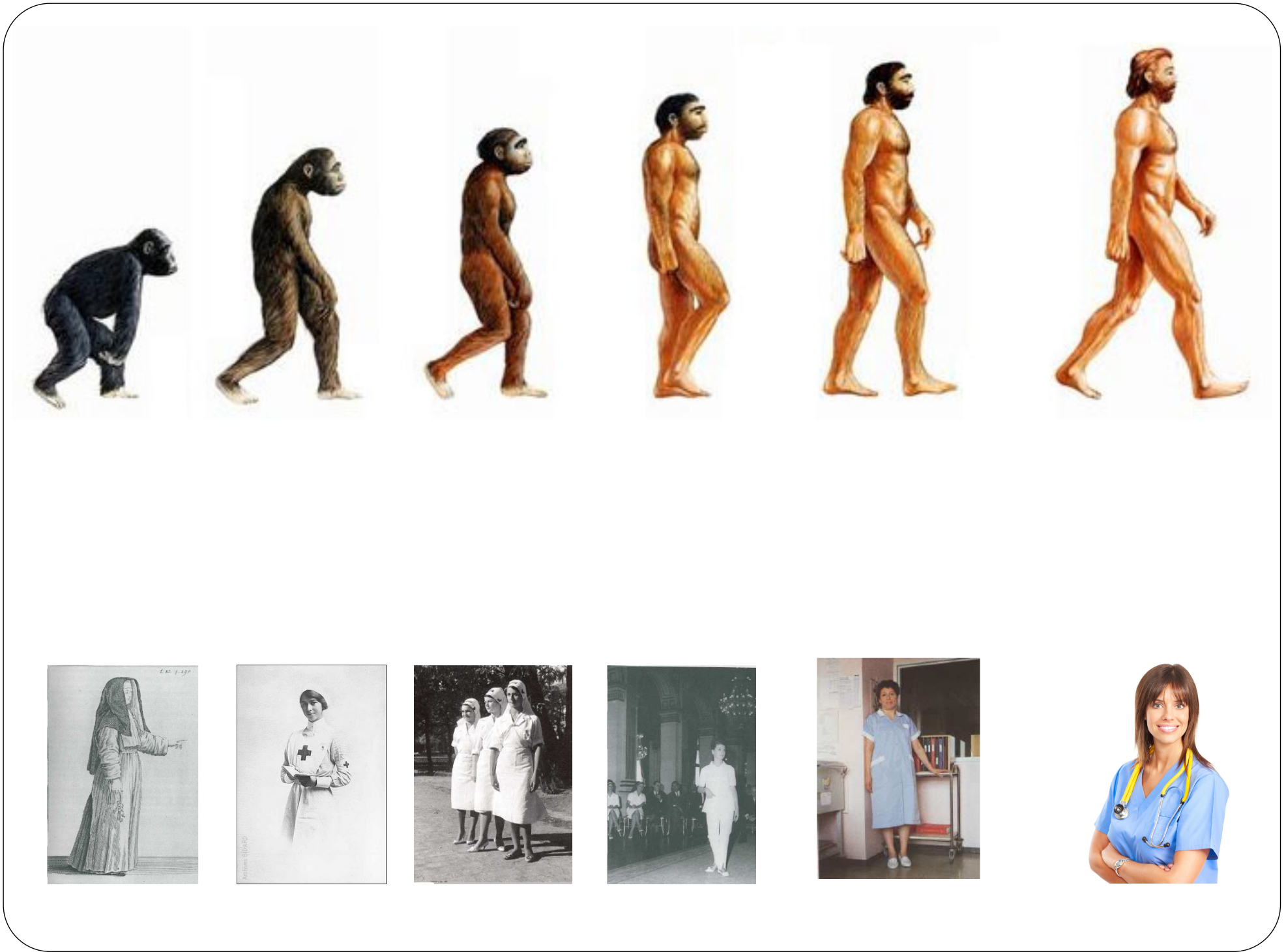
1. In hypoxic respiratory failure due to any cause (primary or secondary) ECLS should be considered when the risk of mortality is 50% or greater, and is indicated when the risk of 80% or greater.
 - a. 50% mortality risk can be identified by a $\text{PaO}_2/\text{FiO}_2 < 150$ on $\text{FiO}_2 > 90\%$ and/or Murray score 2-3
 - b. 80% mortality risk can be identified by a $\text{PaO}_2/\text{FiO}_2 < 80$ on $\text{FiO}_2 > 90\%$ and Murray score 3-4
2. CO_2 retention due to asthma or permissive hypercapnia with a $\text{PaCO}_2 > 80$ or inability to achieve safe inflation pressures ($\text{Pplat} \leq 30$ cm HO) is an indication for ECLS.
3. Severe air leak syndromes





**Take
home message*





TAKE HOME MESSAGE

- Oui, l'ECMO ça marche (v-v, Ecpr)
- Oui, ça sauve des vies...
- Oui, le nombre de patients va encore augmenter
- Complications seront toujours présentes
- L'habitude permet de les diminuer et de mieux les « gérer »
- Gérer les indications (rôle médical)
- Communication dans les équipes
 - Choix thérapeutiques
 - Questions éthiques
 - Débriefings quand ça se passe mal... mais aussi quand ça se passe bien

MERCI!
THANK YOU!

