To tube or not to tube ?

To tube or not to tube ?

Dr. Yacine Tandjaoui-Lambiotte
Pneumologie & Infectiologie
CH Delafontaine, 93200 St Denis

SPIF
25/03/2023

Conflits d’intérêt

Conflit interne & Intérêt pour le sujet

Pneumologue

&

Réanimateur

Conflits d'intérêt

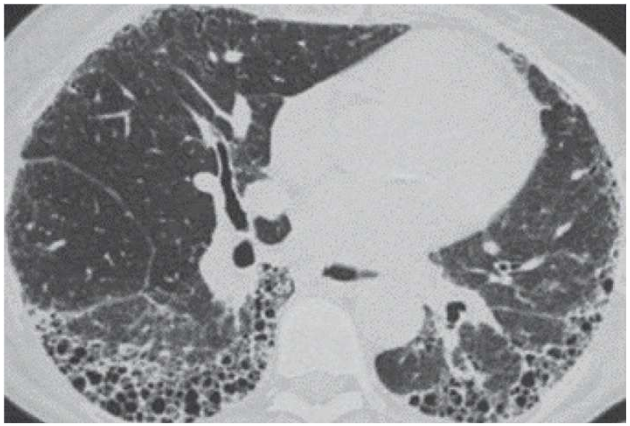
- Consultant dans le monde de la santé numérique et digitale
- Medical Advisor de la société Quantiq
- Directeur médical de la société STANE
- Board pharma = Ø
- Symposium pharma = Ø
- Inscription congrés scientifiques = oui (ADEP & ASTEN)
- Transport pour congrès scientifiques = oui (ADEP & ASTEN)

Insuffisant respiratoire : c’est quoi?

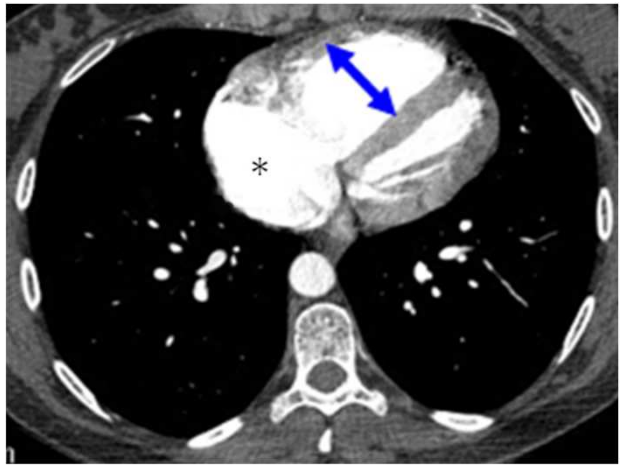
BPCO

Neuromusculaire

« Fibroses »

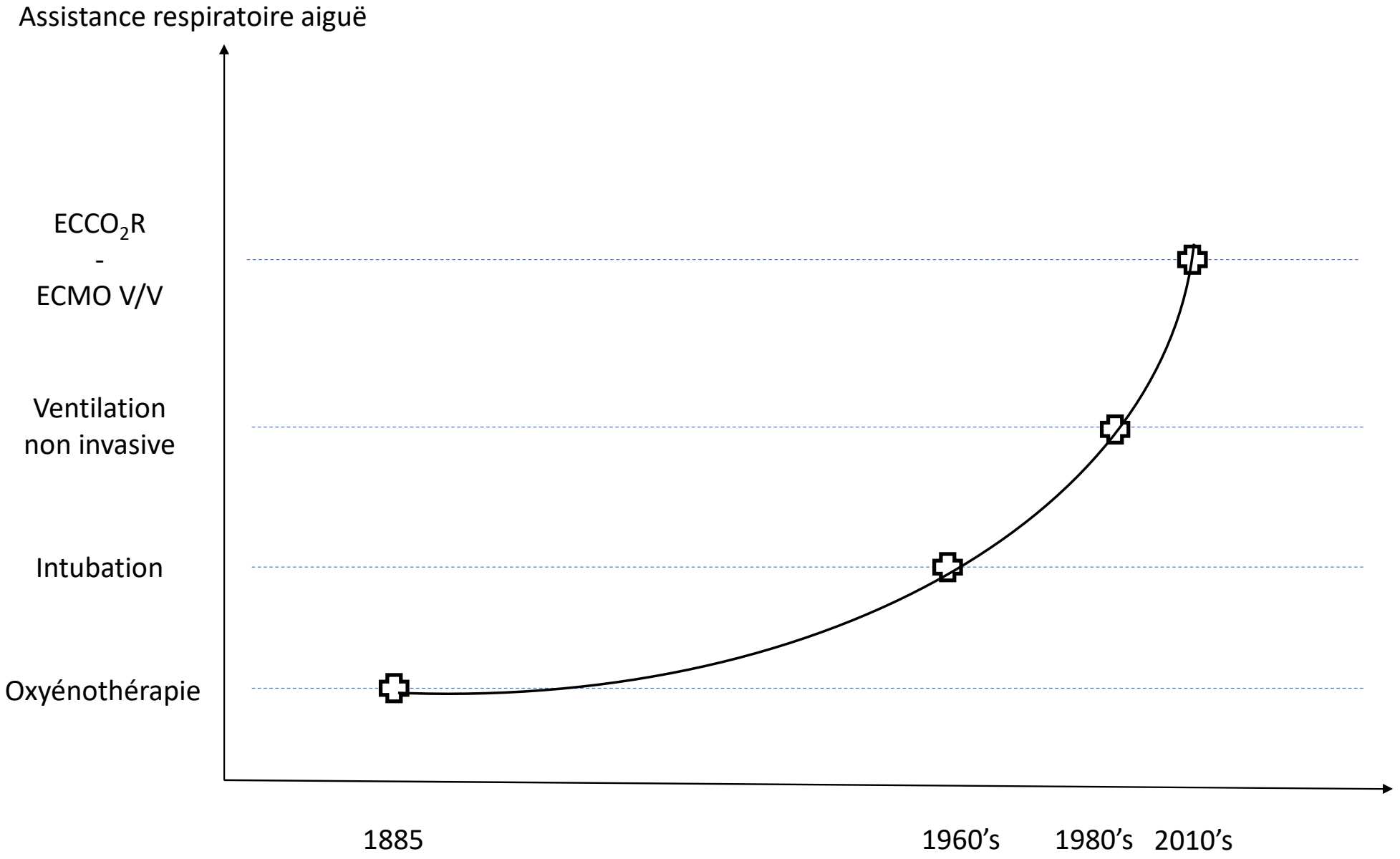


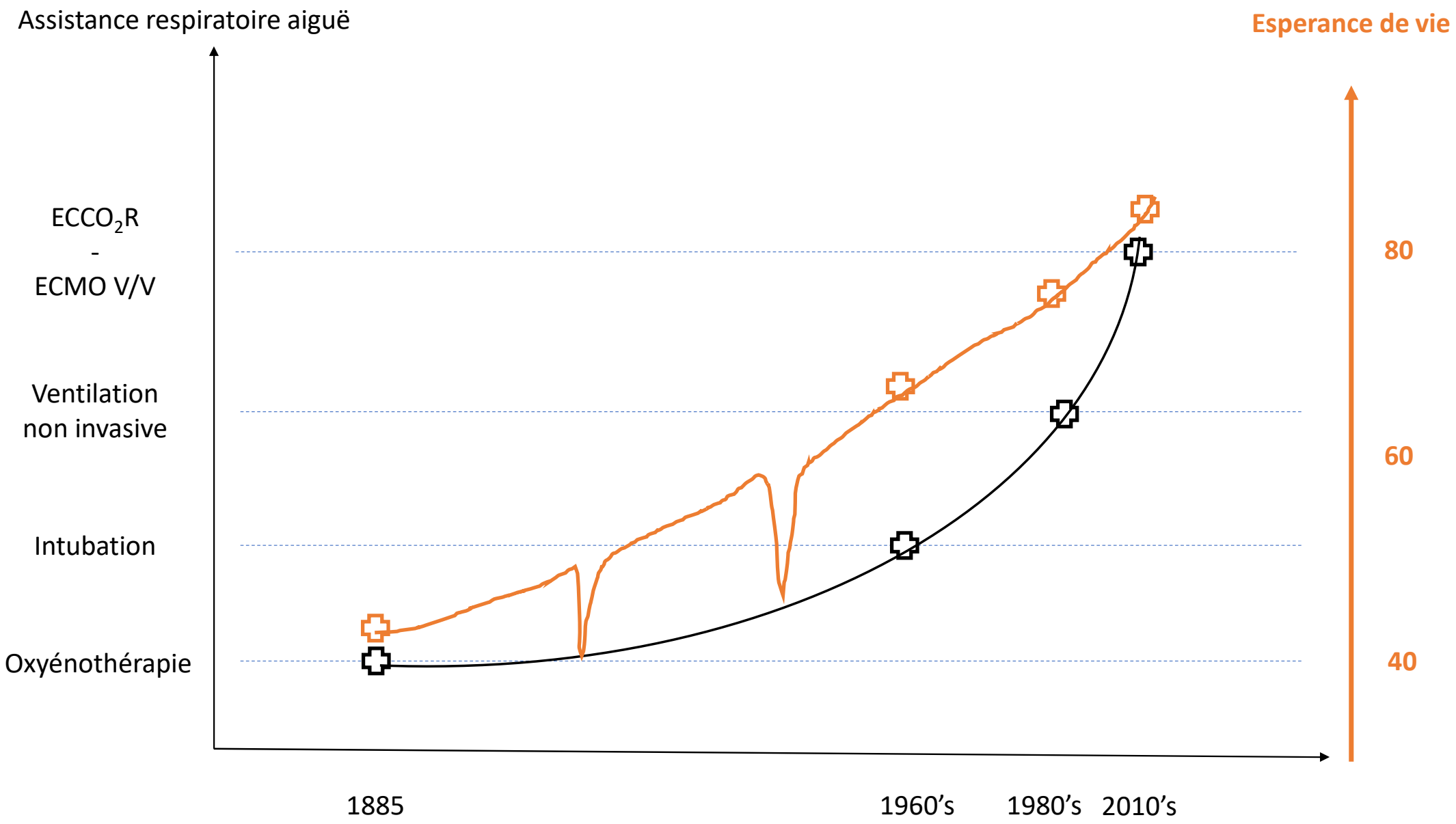
HTAP

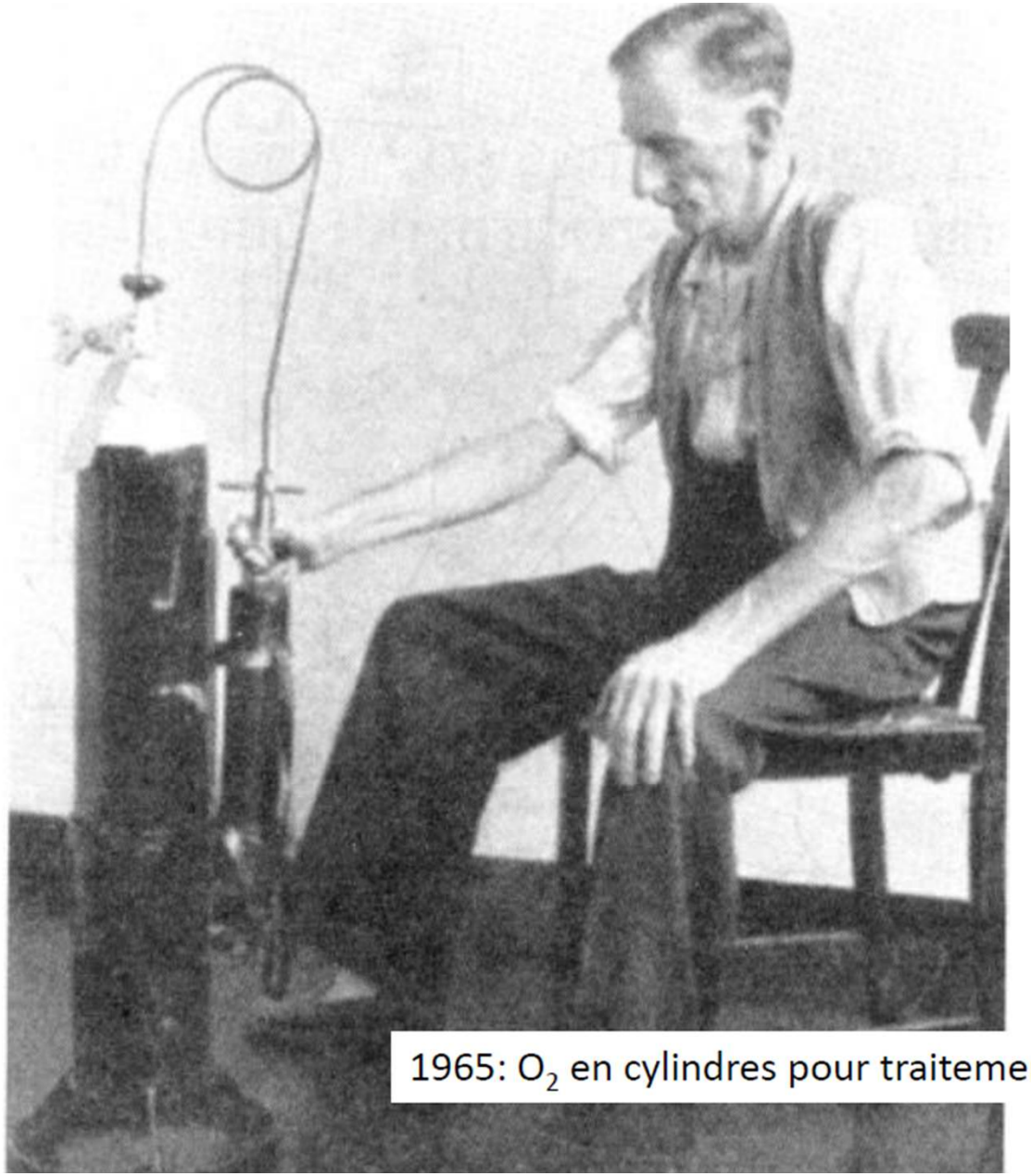


Insuffisant respiratoire : c’est quoi (pour un non pneumologue) ?

Oxygénothérapie de longue durée


Assistance respiratoire aiguë
ECCO2R
-
ECMO V/V
Ventilation
non invasive
Intubation
Oxyénothérapie
1885
1960's
1980's
2010's


Assistance respiratoire aiguë
Esperance de vie
ECCO2R
-
ECMO V/V
Ventilation
non invasive
Intubation
Oxyénothérapie
80
60
40
1885
1960's
1980's
2010's



1965: O_2 en cylindres pour traitement au long cours

Modification de prise en charge de l'hypoxémie réfractaire depuis 2000:

The New England

Journal of Medicine

6 mL/kg

The NEW ENGLAND JOURNAL of MEDICINE

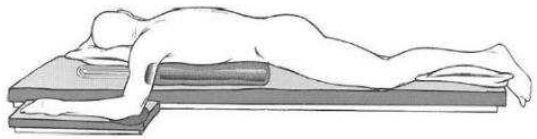
ESTABLISHED IN 1812 SEPTEMBER 16, 2010 VOL. 363 NO. 12

Neuror

THE ACUT

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 6, 2013 VOL. 368 NO. 23



Prone P

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 4, 2015 VOL. 372 NO. 23

High-Flow Oxygen through Nasal Cannula in Acute Hypoxemic Respiratory Failure

Modification de prise en charge de l'hypercapnie symptomatique depuis 2000:

The New England
Journal of Medicine

Volume 333 SEPTEMBER 28, 1995 Number 13

NONINVASIVE VEN

LAURENT BROCHARD

CHEST

Original Research

COPD

A Novel Extracorporeal CO_2 Removal System

Results of a Pilot Study of Hypercapnic Respiratory Failure in Patients With COPD

Nausherwan K. Burki, MD, PhD, FCCP; Raj Kumar Mani, MD, FCCP;

The New York Times

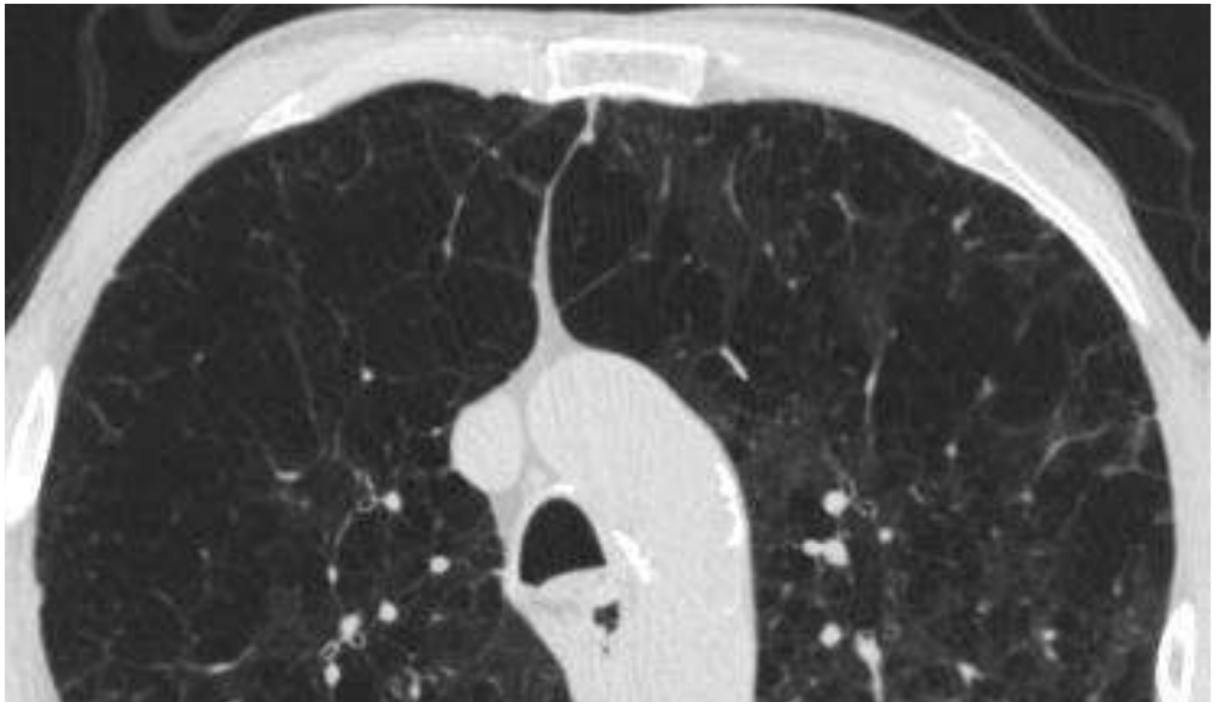
Breathing Tubes Fail to Save Many Older Patients

One-third of patients over age 65 die in the hospital after they are put on ventilators. Doctors are beginning to wonder if the procedure should be used so often.

By Paula Span

June 22, 2018

BPCO



Hypercapnie au premier plan

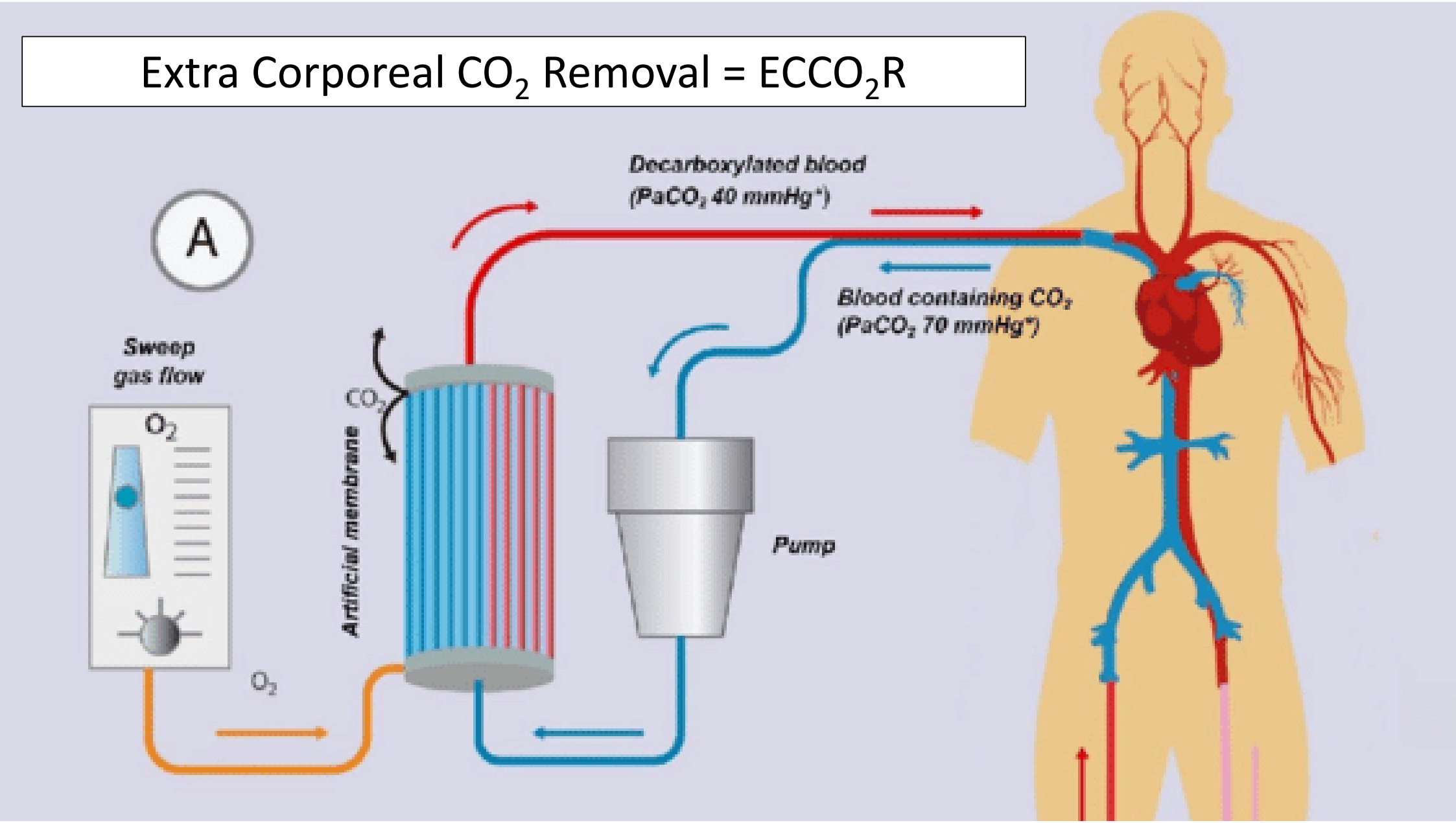
Avant ≈ 2015

- Intubation si échec VNI

- Penser à l'intubation = penser à la trachéotomie

?

Extra Corporeal CO_2 Removal = $ECCO_2R$



Aucun essai randomisé $ECCO_2R$ dans BPCO

Critical care

BMJ Open Respiratory Research

Extracorporeal CO_2 removal in acute exacerbation of COPD unresponsive to non-invasive ventilation

Mathilde Azzi ,[1] Jerome Aboab,[1] Sophie Alviset,[1] Daria Ushmorova,[1] Luis Ferreira,[1] Vincent Ioos ,[1] Nathalie Memain,[1] Tazime Issoufaly,[1] Mathilde Lermuzeaux,[1] Laurent Laine,[1] Rita Serbouti,[2] Daniel Silva[1]

Etude rétrospective à Saint Denis sur 26 patients BPCO admis en réanimation en échec de VNI

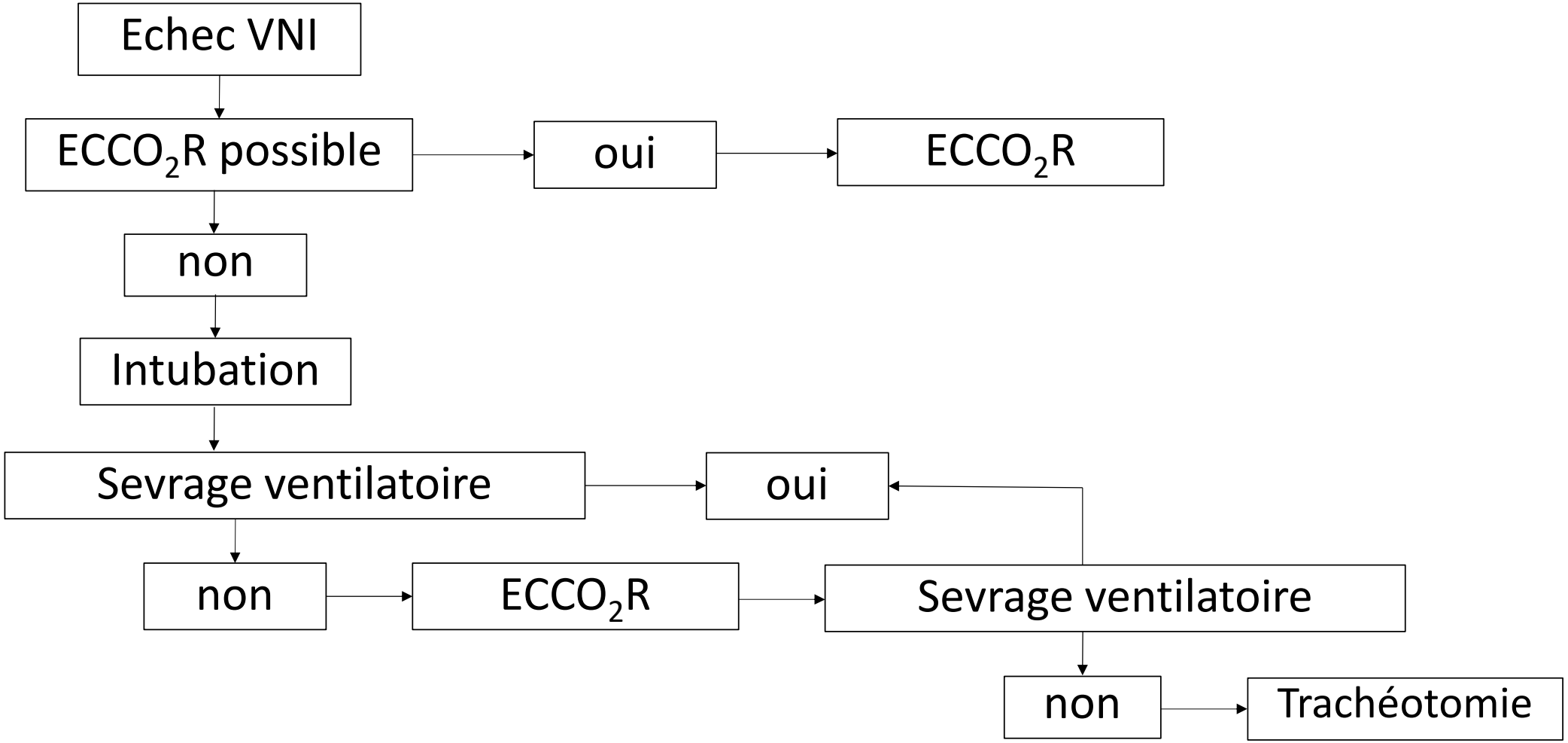
Table 3 Effectiveness

	$ECCO_2R$ group (n=26)	Control group (n=25)	P value
Length of stay			
Days in ICU	18±14	30±43	0.18
Days in hospital	29±22	49±53	0.54
Mortality			
During ICU	2 (8)	7 (28)	0.12
28-day mortality	3 (12)	4 (16)	0.63
90-day mortality	4 (15)	7 (28)	0.26

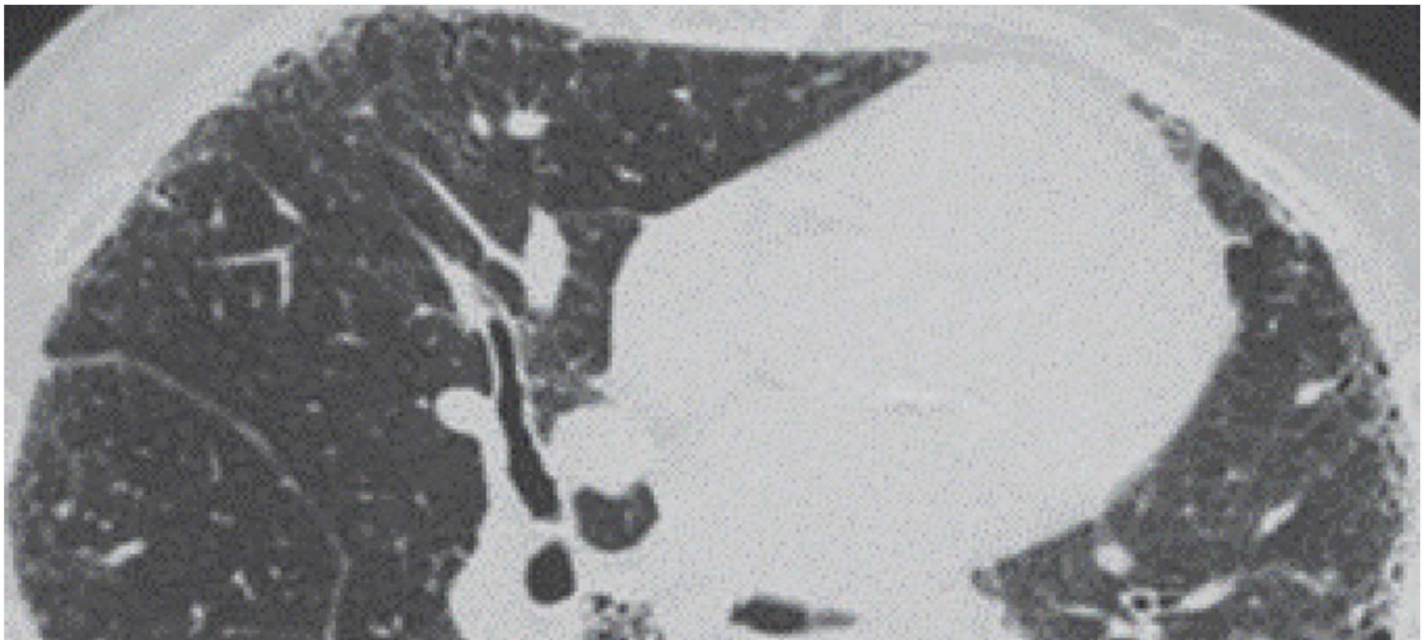
Table 2 Main objective

	$ECCO_2R$ group (n=26)
$ECCO_2R$ failure (intubation OR 90-day mortality)	5 (19)
Intubation rate	4 (15)
Due to $ECCO_2R$ complication	1 (3)
Due to hypoxemia	0
After $ECCO_2R$ weaning	3 (11)

Détresse respiratoire hypercapnique BPCO depuis ≈ 2015



« Fibroses »



Hypoxémie au premier plan

Intensive Care Med (2001) 27: 1868–1874
DOI 10.1007/s00134-001-1150-0

ORIGINAL

Thierry Fumeaux
Claudia Rothmeier
Philippe Jolliet

Outcome of mechanical ventilation for acute respiratory failure in patients with pulmonary fibrosis

Conclusions: In this study mechanical ventilation for acute respiratory failure in pulmonary fibrosis patients was associated with a 100% mortality, despite aggressive therapeutic and diagnostic procedures.

Prognosis of Patients With Advanced Idiopathic Pulmonary Fibrosis Requiring Mechanical Ventilation for Acute Respiratory Failure*

Jean-Baptiste Stern, MD; Hervé Mal, MD; Odile Groussard, MD; Olivier Brugière, MD; Armelle Marceau, MD; Gilles Jebrak, MD; and Michel Fournier, MD

Conclusions: Our data support the general belief that MV does not benefit IPF patients presenting with ARF. Initiation of MV in IPF patients is thus questionable and should, in our opinion, be restricted to patients in whom LTx can be performed within a few days after initiation of MV. *(CHEST 2001; 120:213–219)*

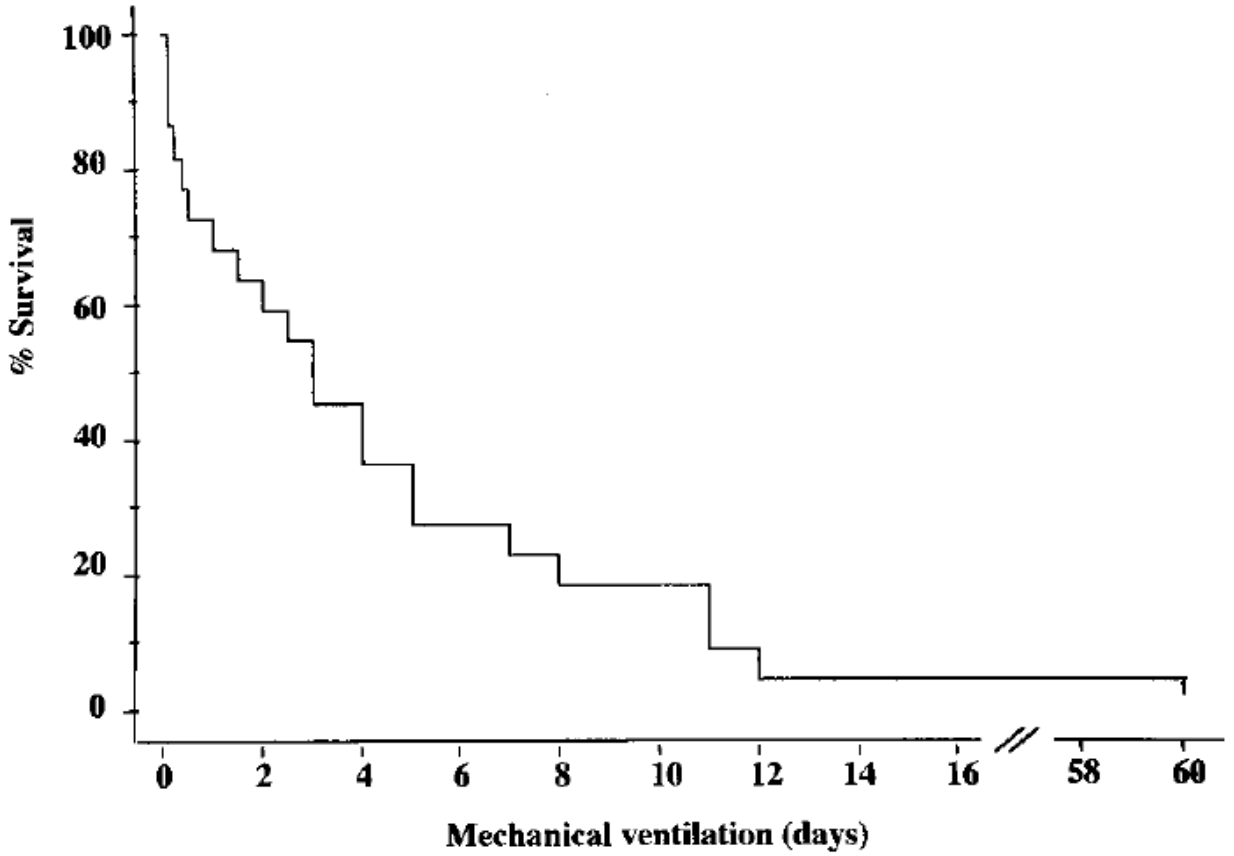
clinical investigations in critical care

Outcome of Patients With Idiopathic Pulmonary Fibrosis Admitted to the ICU for Respiratory Failure*

Sandra Blivet, MD; François Philit, MD; Jea Bruno Langevin, MD; Micheline Paret, MD; Dominique Robert, MD

Conclusion: The outcome of patients with IPF referred to the ICU for ARF was very poor and not improved by MV. Without a clearly identified reversible cause of ARF, these patients should not benefit from admission to the ICU. *(CHEST 2001; 120:209–212)*

FIGURE 1. Survival curve of patients with IPF who received MV.



Stern – Chest - 2001

INT J TUBERC LUNG DIS 25(3):199–205

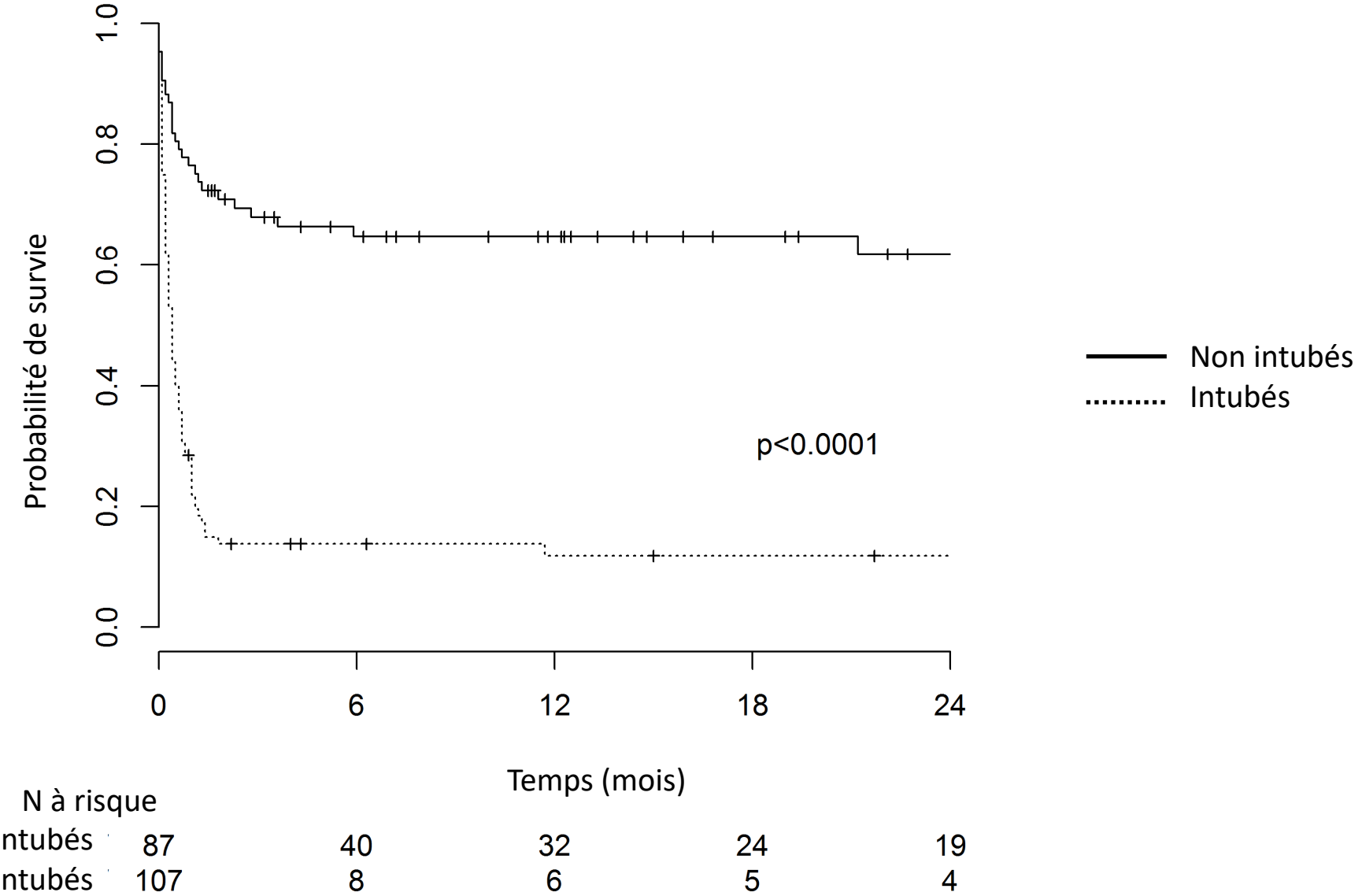
http://dx.doi.org/10.5588/ijtld.20.0706

Two-year follow-up of 196 interstitial lung disease patients after ICU stay

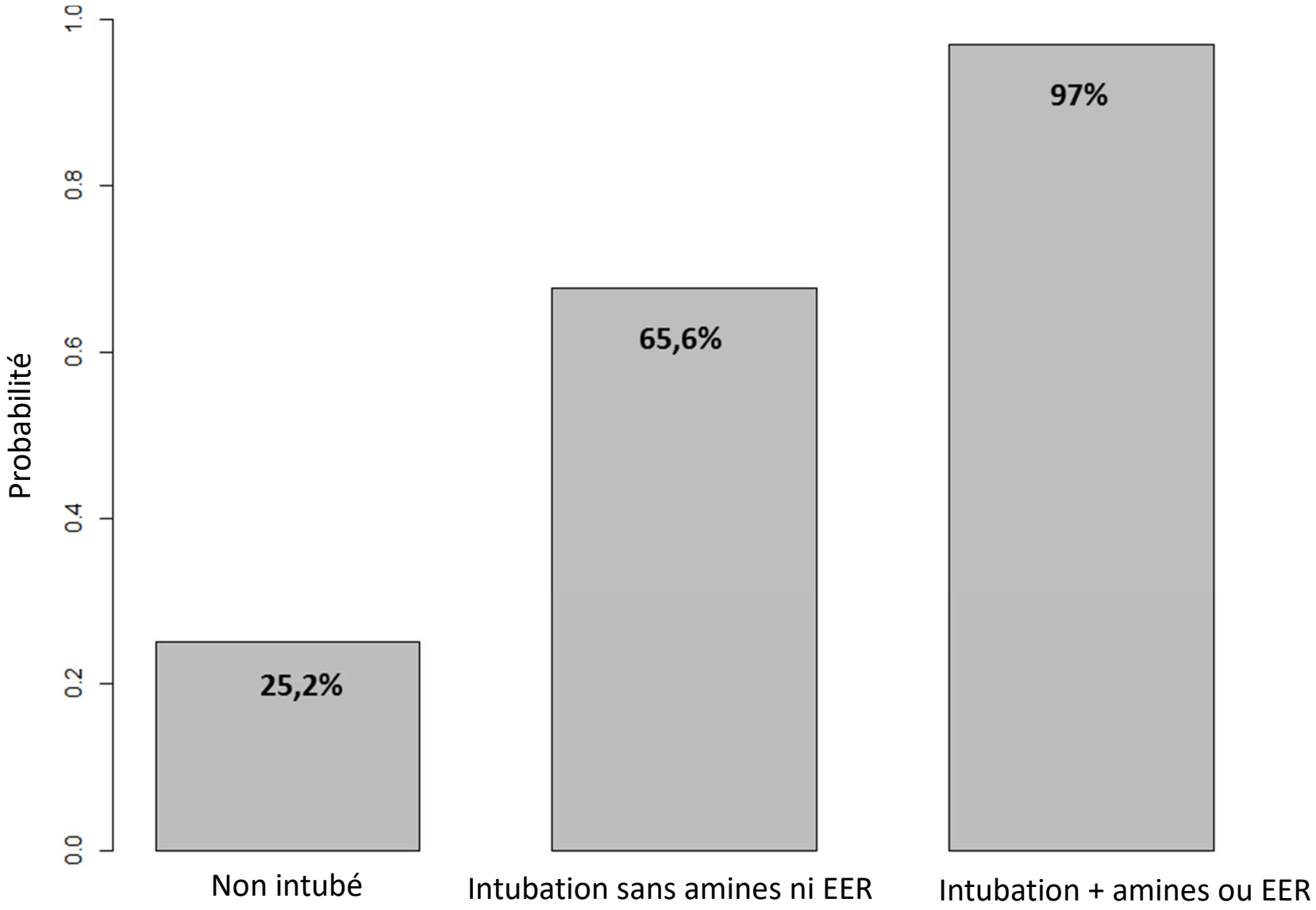
Y. Tandjaoui-Lambiotte,[1,2] F. Gonzalez,[1] M. Boubaya,[3] O. Freynet,[4] C. Clec'h,[1] N. Bonnet,[1,5] G. Van Der Meersch,[1] J. Oziel,[1] C. Huang,[1] Y. Uzunhan,[2,4,5] P-Y. Brillet,[5,7] F. Poirson,[1] O. Martin,[1,5] P. Ahmed,[1] N. Ebstein,[1,5] P. Karoubi,[1] S. Gaudry,[1,5,6] H. Nunes,[2,4,5] Y. Cohen[1,5,8]

[1]Service de Réanimation Médico-Chirurgicale, Hôpital Avicenne, Assistance Publique-Hôpitaux de Paris, Bobigny,

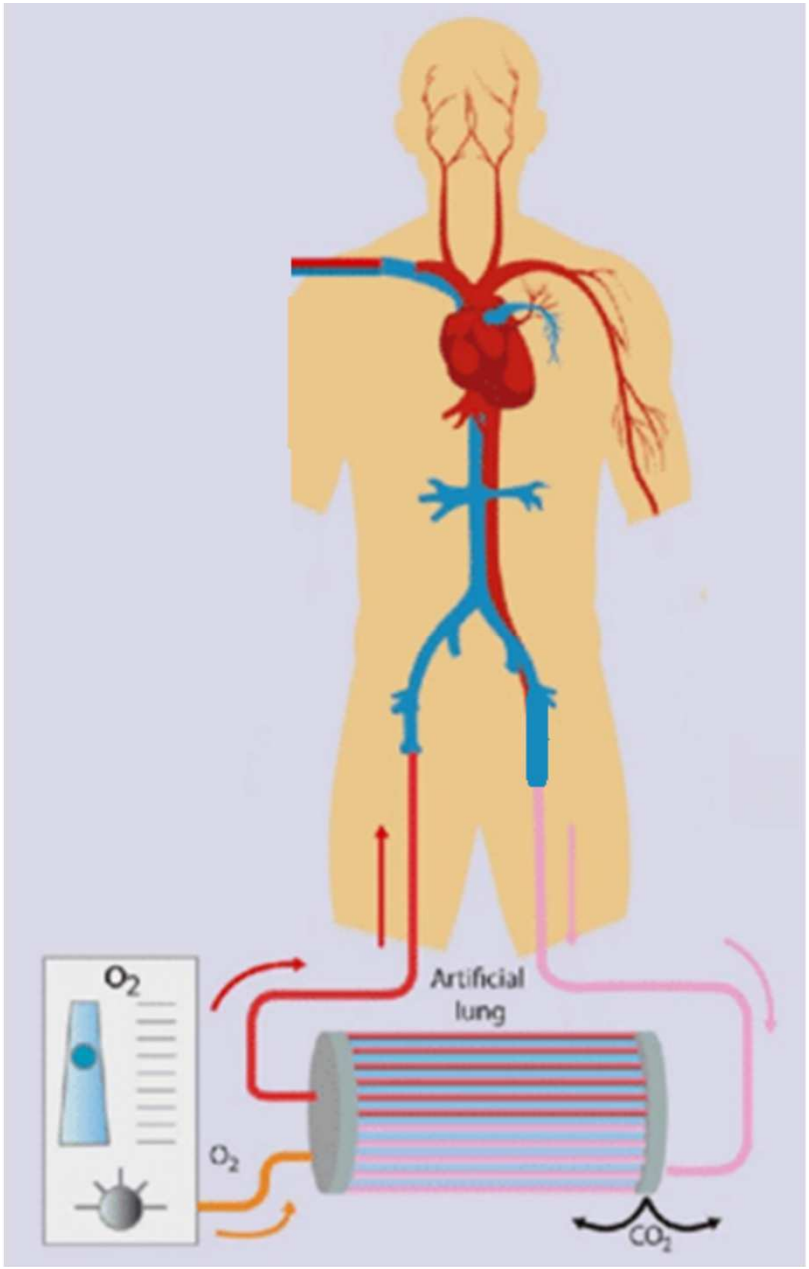
Survie à 2 ans des patients atteints de PID admis en réa selon le recours à l'intubation

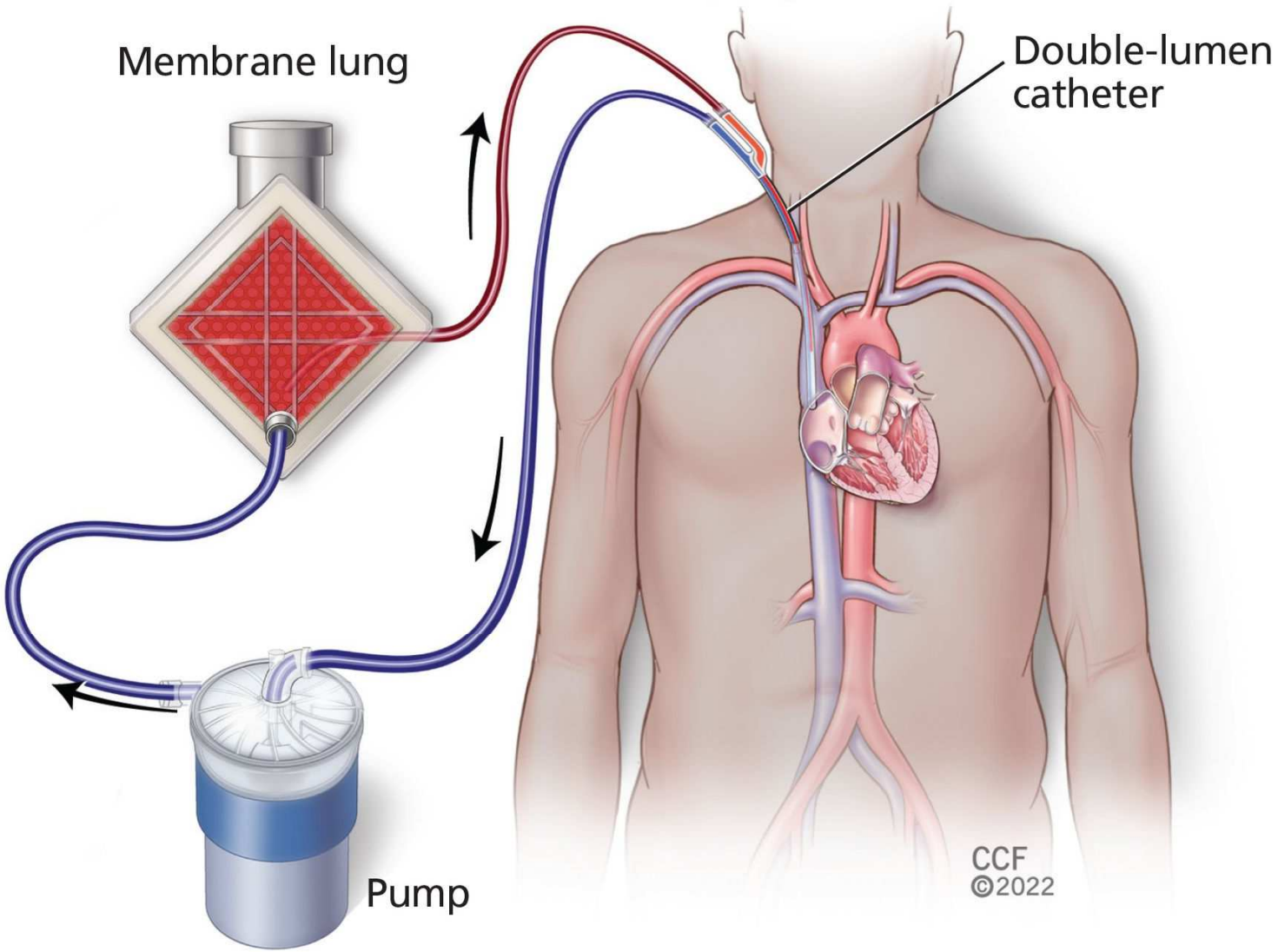


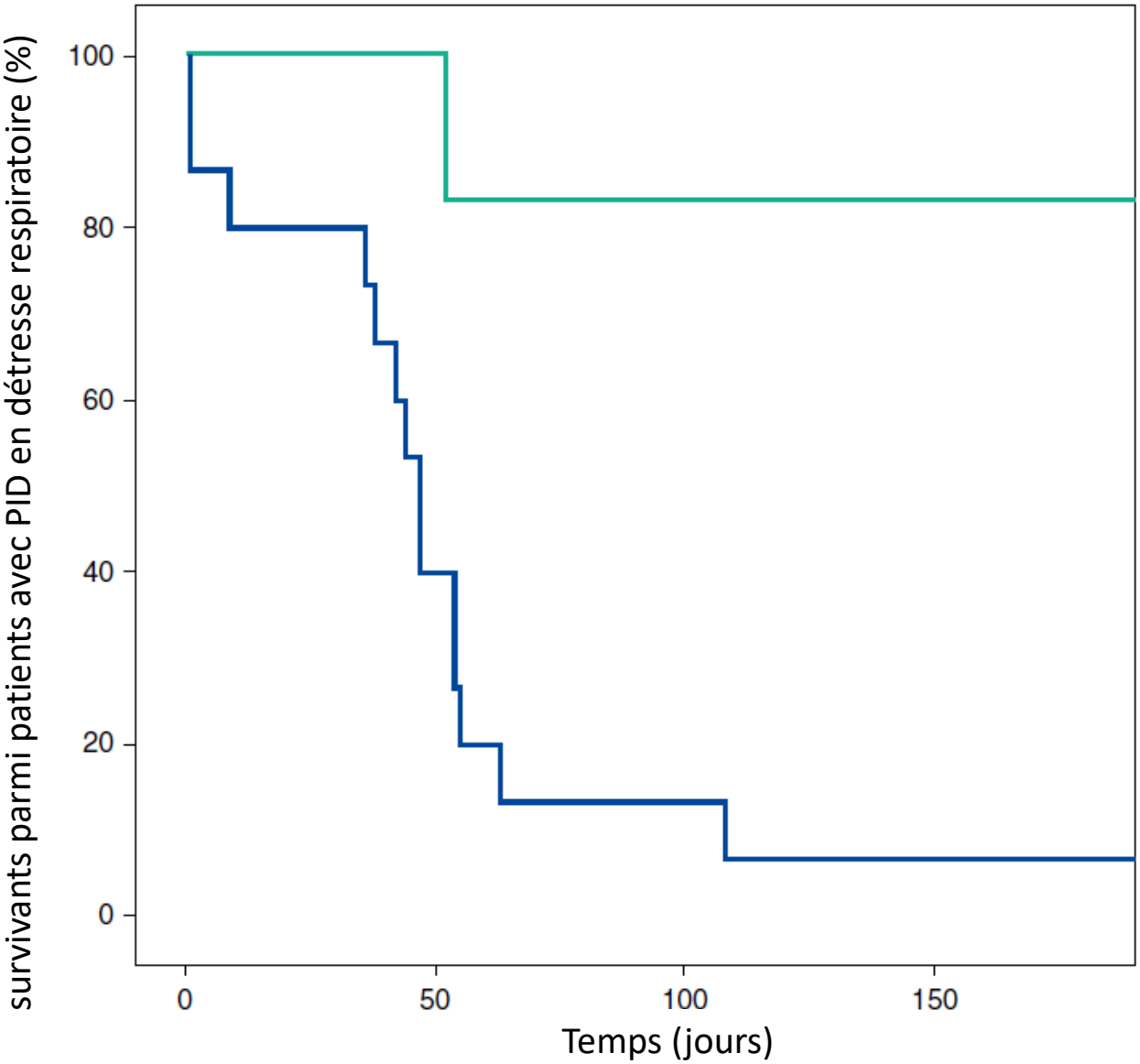
Mortalité hospitalière des patients atteints de PID admis en réa sans ECMO selon les suppléances d'organes



Extra Corporeal Membrane Oxygenation
= ECMO




Membrane lung
Double-lumen catheter
Pump
CCF
©2022



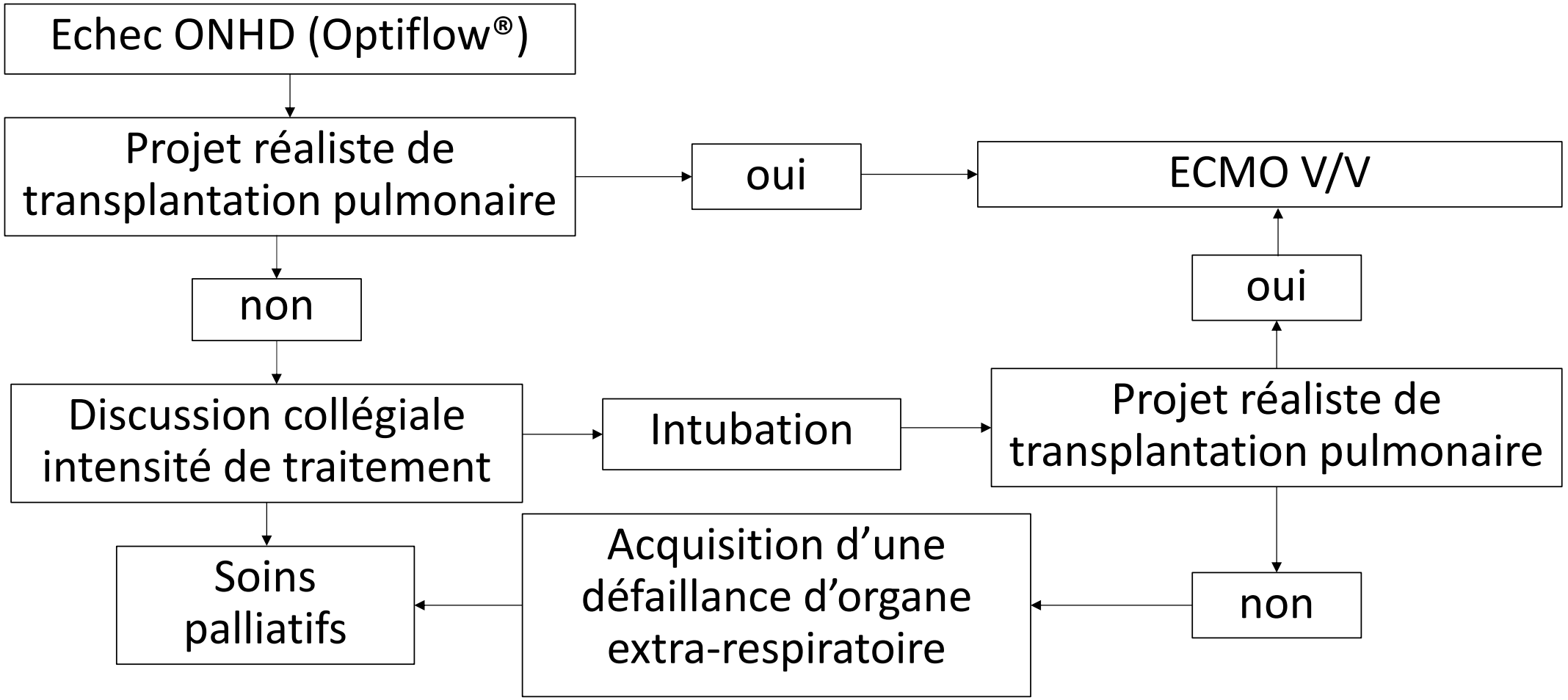
PID sous ECMO n=21

Transplantés: n=6

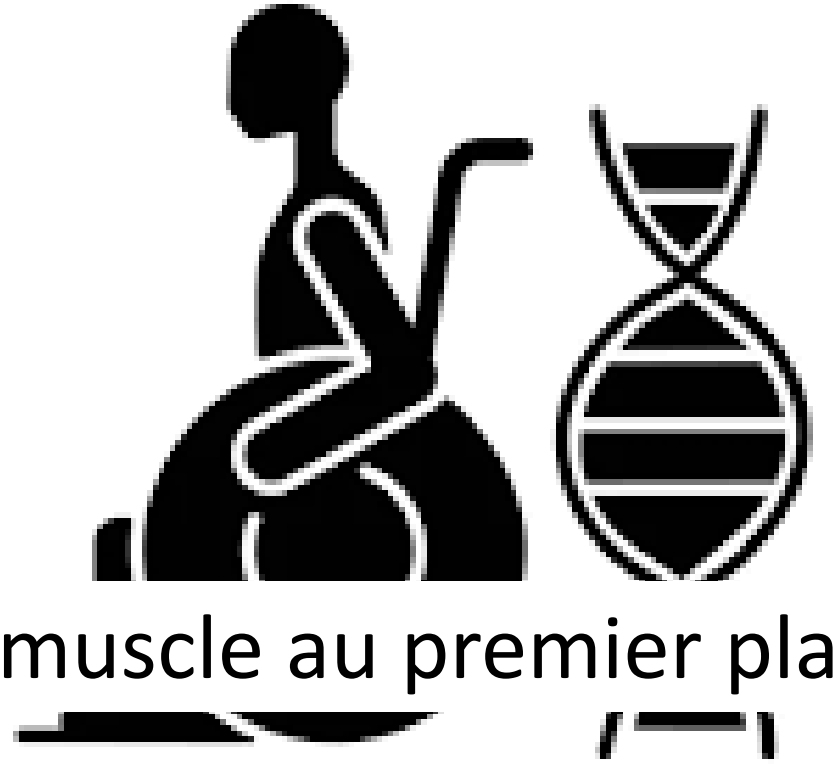
Non transplantés: n=15

Trudzinski, AJRCCM 2016

Détresse respiratoire hypoxémique « Fibroses » depuis ≈ 2020



Neuromusculaires



muscle au premier plan

Neurological Sciences (2020) 41:497–508
https://doi.org/10.1007/s10072-019-04163-0

REVIEW ARTICLE

Practical approach to respiratory emergencies in neurological diseases

Fabrizio Racca

Table 2 Neuromuscular disorders with chronic respiratory failure in infant-to-adult life

Rate of occurrence of respiratory failure	Diseases
Unavoidable	Duchenne muscular dystrophy (DMD) Amyotrophic lateral sclerosis (ALS) Some muscular dystrophies (e.g., sarcoglycanopathies) Some myofibrillar myopathies (e.g., HMERF)
Frequent	Spinal muscular atrophy type 2 (SMA2) Myotonic dystrophy type 1 (DM1) Late-onset Pompe disease (LOPD) Guillain–Barré syndrome (GBS) Myasthenia gravis (MG) Facioscapulohumeral muscular dystrophy (FSHD) Some congenital muscular dystrophies (e.g., Ullrich CMD) Some limb-girdle muscular dystrophies (LGMD) (e.g., calpainopathy, FKRP) Some congenital myopathies (e.g., centronuclear myopathy) Congenital myasthenic syndromes
Occasional	Becker muscular dystrophy (BMD) Some types of Charcot–Marie–Tooth disease (e.g., CMT type 1B and 4) Inflammatory myopathies Spinal muscular atrophy type 3 (SMA3) Some congenital myopathies Some mitochondrial diseases
Rare	Oculopharyngeal muscular dystrophy (OPMD) CMT Chronic inflammatory demyelinating polyneuropathy (CIDP)

Risk of unsuccessful noninvasive ventilation for acute respiratory failure in heterogeneous neuromuscular diseases: a retrospective study

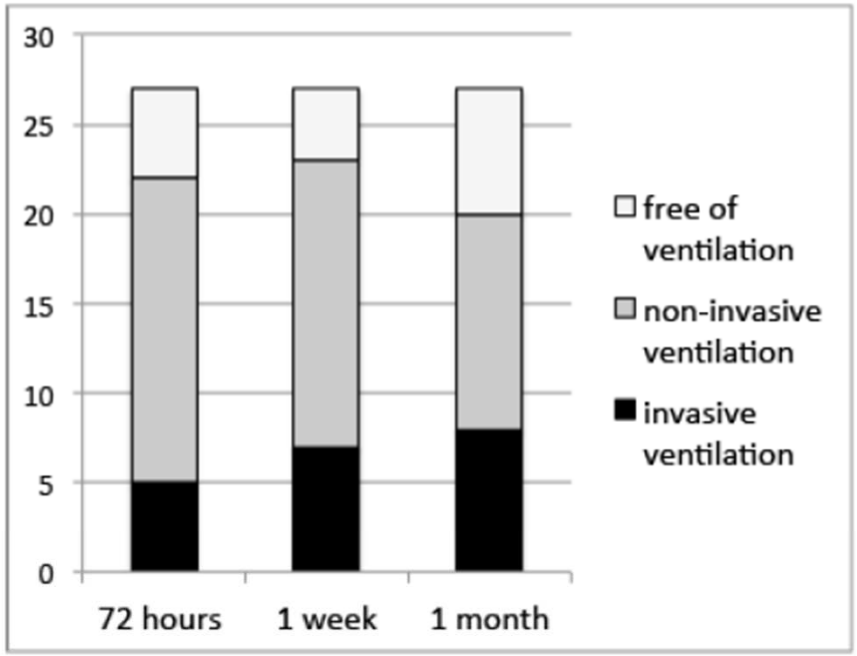


Figure 1. The number of patients with neuromuscular diseases who had acute respiratory failure and received continuous non-invasive mechanical ventilation (NIV) support, number of patients who required invasive ventilation, and that of patients who could discontinue NIV.

Kataoka - Neurol Int - 2017

MISE AU POINT

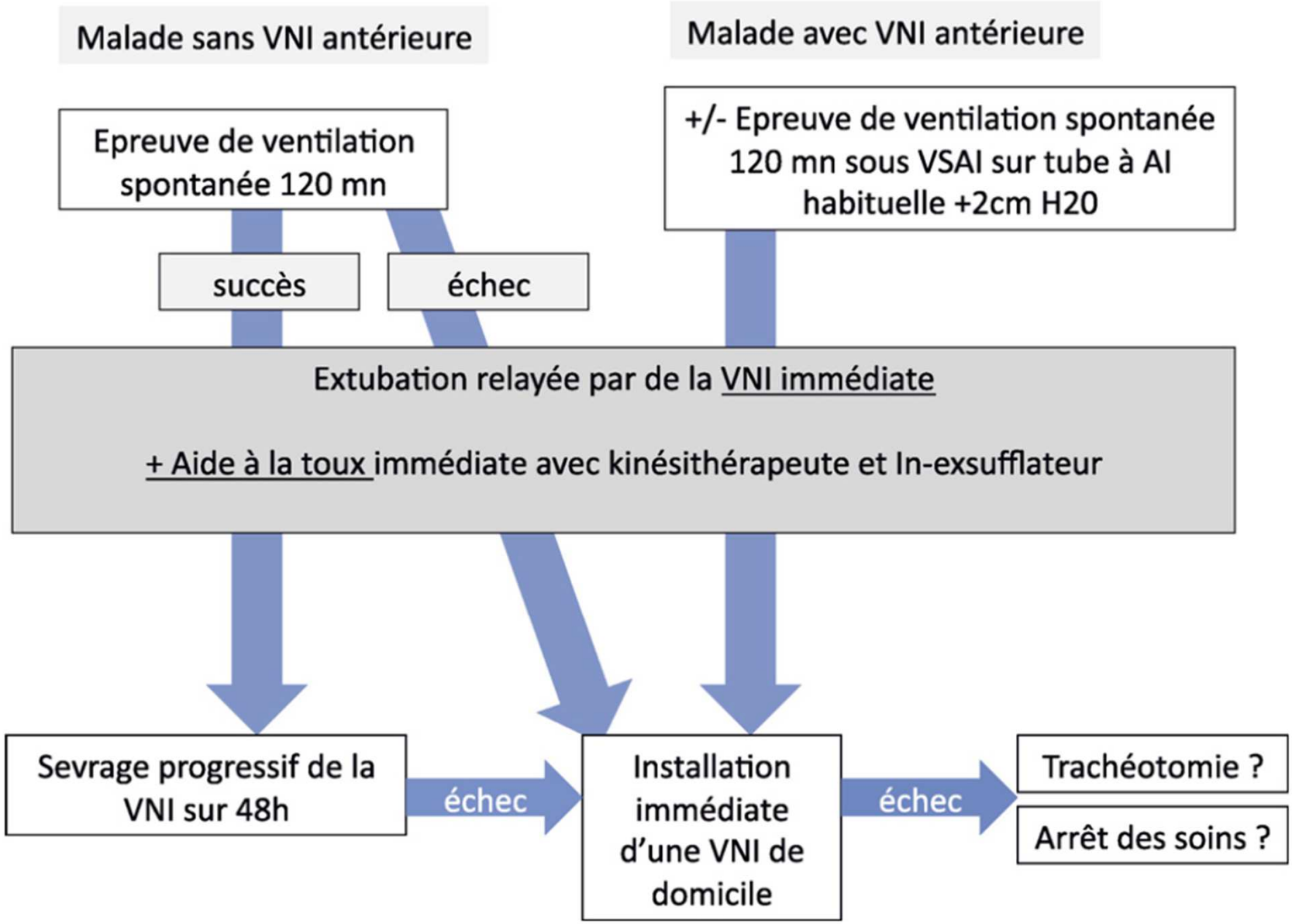
Particularités du sevrage de la ventilation mécanique chez les patients atteints de maladie neuromusculaire

Weaning of mechanical ventilation in neuromuscular diseases

J. Gonzalez-Bermejo[a,*,b], C. Morelot-Panzini[a,b], T. Similowski[a,b], A. Demoule[a,b]

[a] *Service de pneumologie et réanimation médicale, groupe hospitalier Pitié—Salpêtrière, 47 et 83, boulevard de l'Hôpital, Paris cedex 13, France*
[b] *ER10 UPMC, université Paris 6, Paris, France*

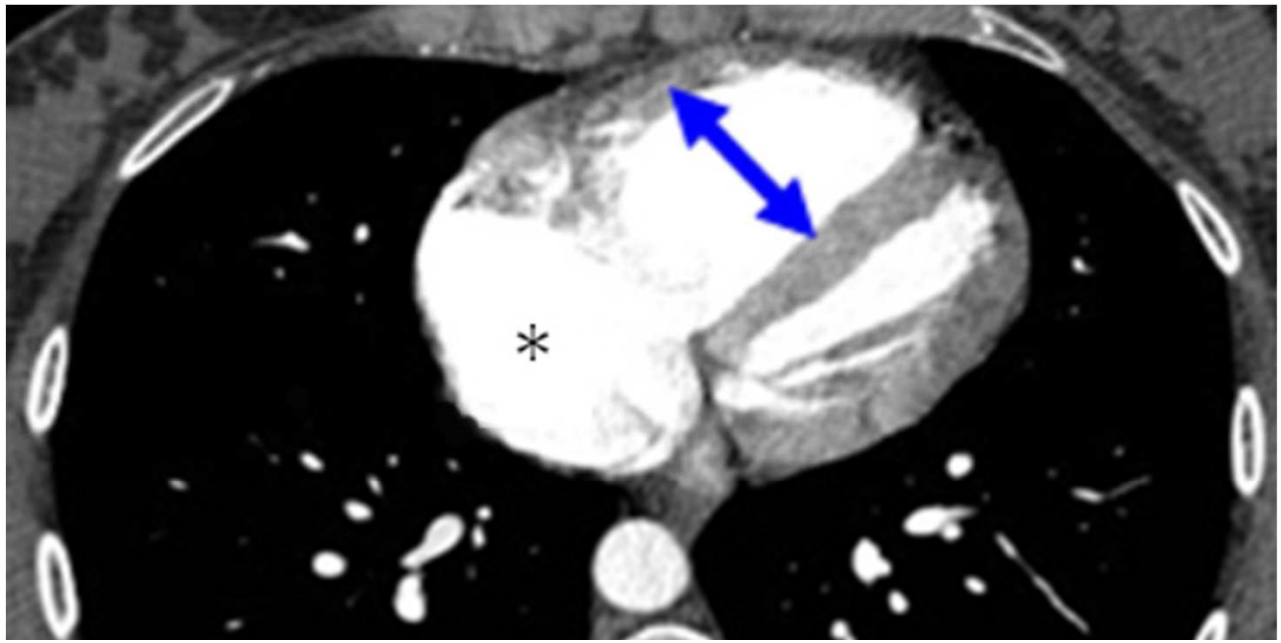
Reçu le 8 juin 2009 ; accepté le 14 juin 2009
Disponible sur Internet le 7 juillet 2009


Malade sans VNI antérieure
Malade avec VNI antérieure
Epreuve de ventilation spontanée 120 mn
+/- Epreuve de ventilation spontanée 120 mn sous VSAI sur tube à AI habituelle +2cm H20
succès
échec
Extubation relayée par de la VNI immédiate
+ Aide à la toux immédiate avec kinésithérapeute et In-exsufflateur
Sevrage progressif de la VNI sur 48h
échec
Installation immédiate d'une VNI de domicile
échec
Trachéotomie ?
Arrêt des soins ?

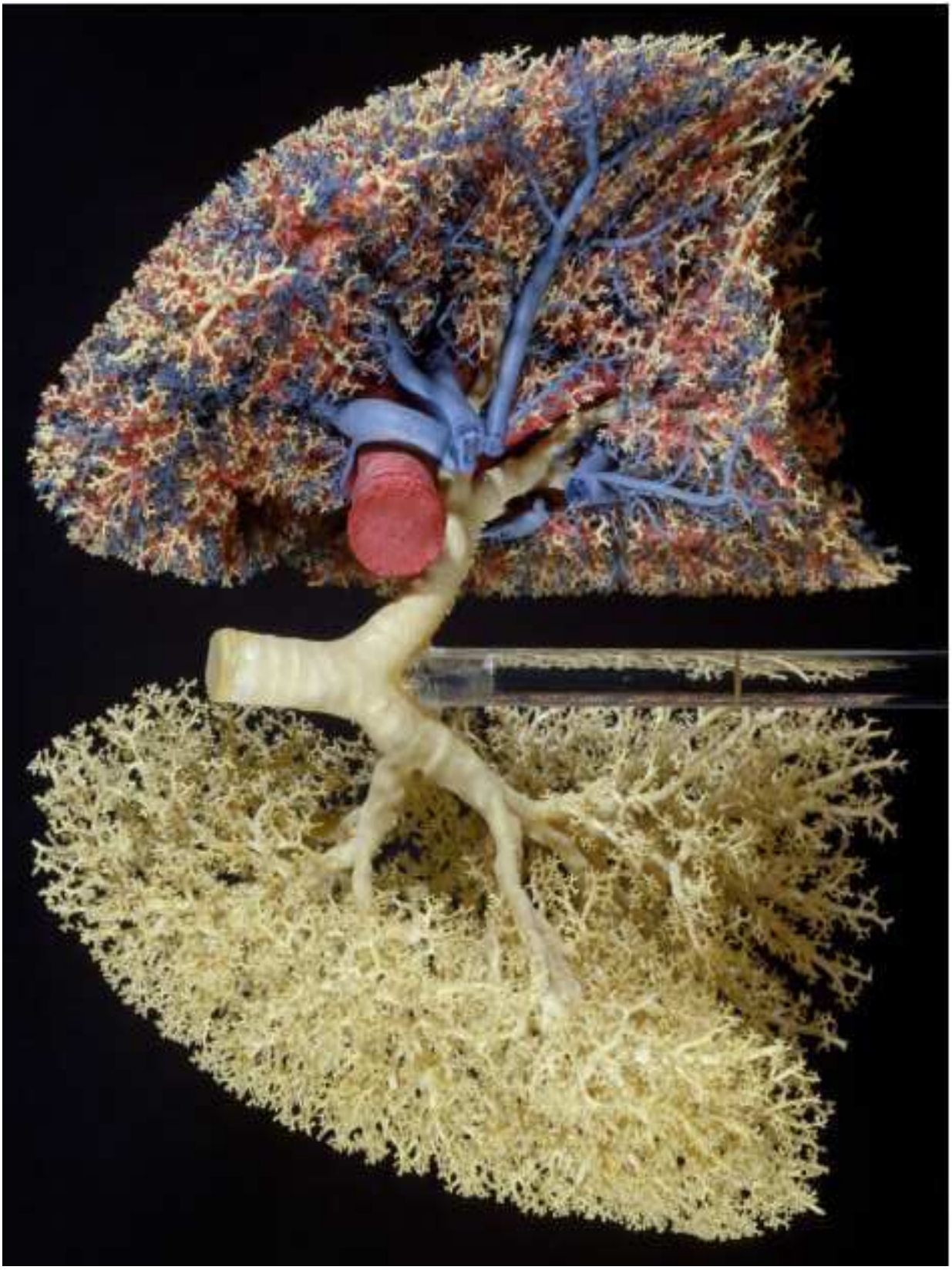
Intubation ? = Trachéotomie ?

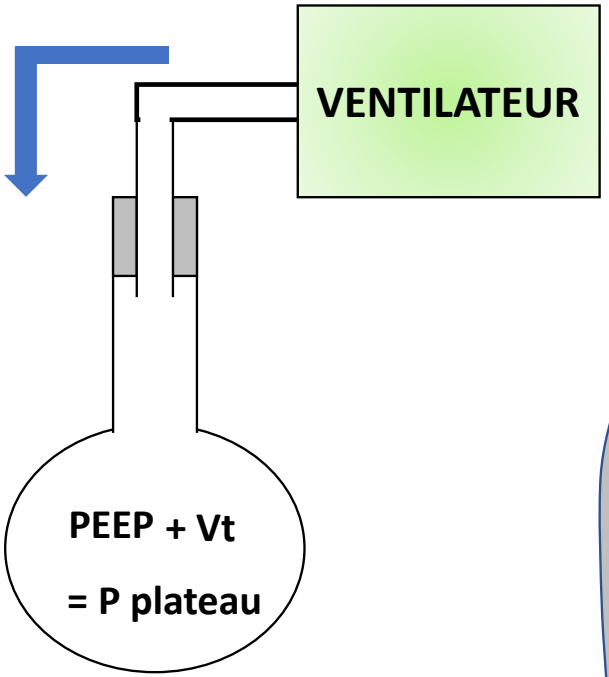
?

Hypertension pulmonaire



Hypoxémie & ventricule droit au premier plan



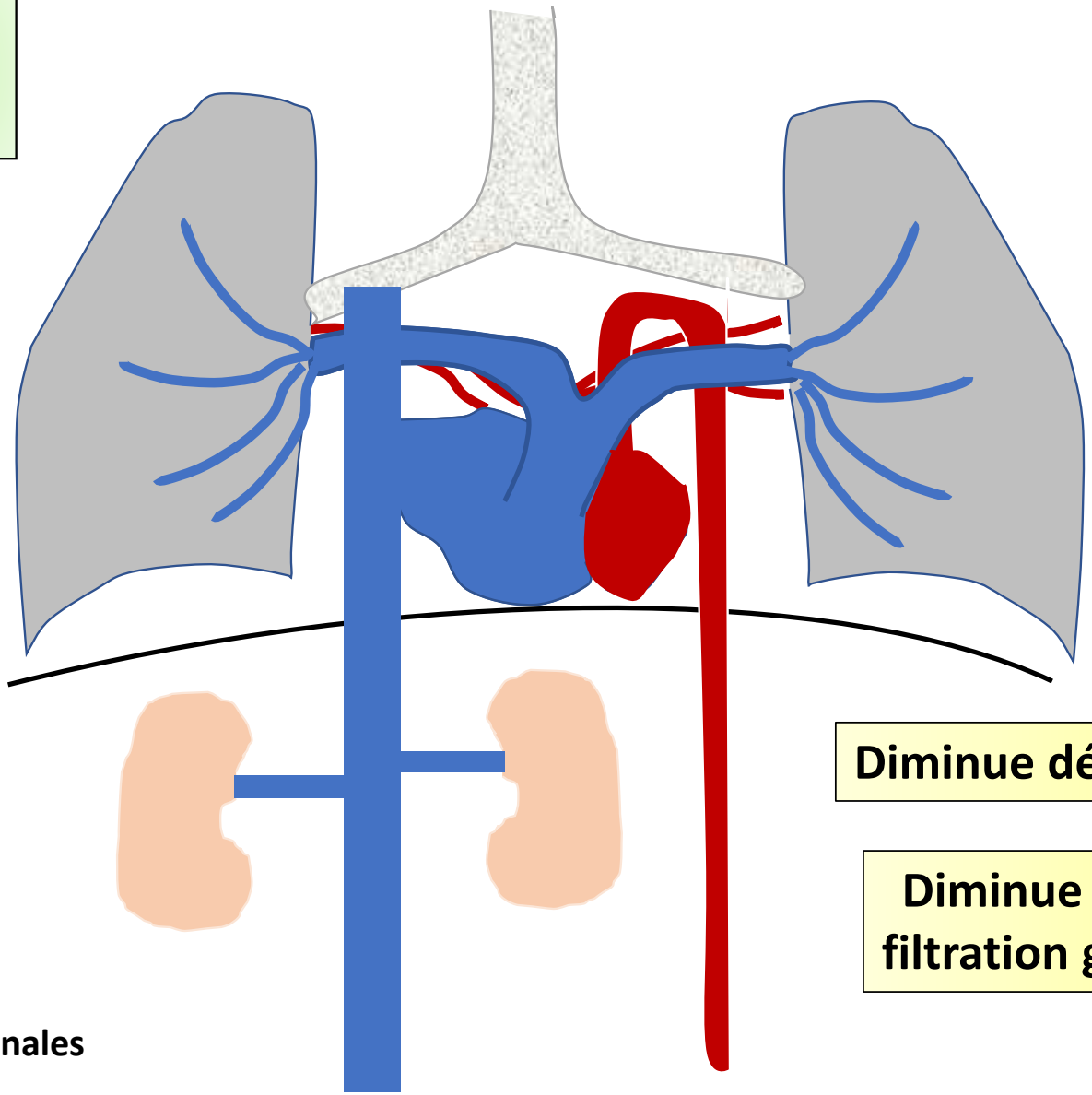


Pression positive intrathoracique

Diminue le retour veineux à OD
= diminue la précharge du VD

Augmente la pression dans AP
= augmente la post charge du VD

Augmente la pression dans Veines rénales
= créé de la congestion rénale



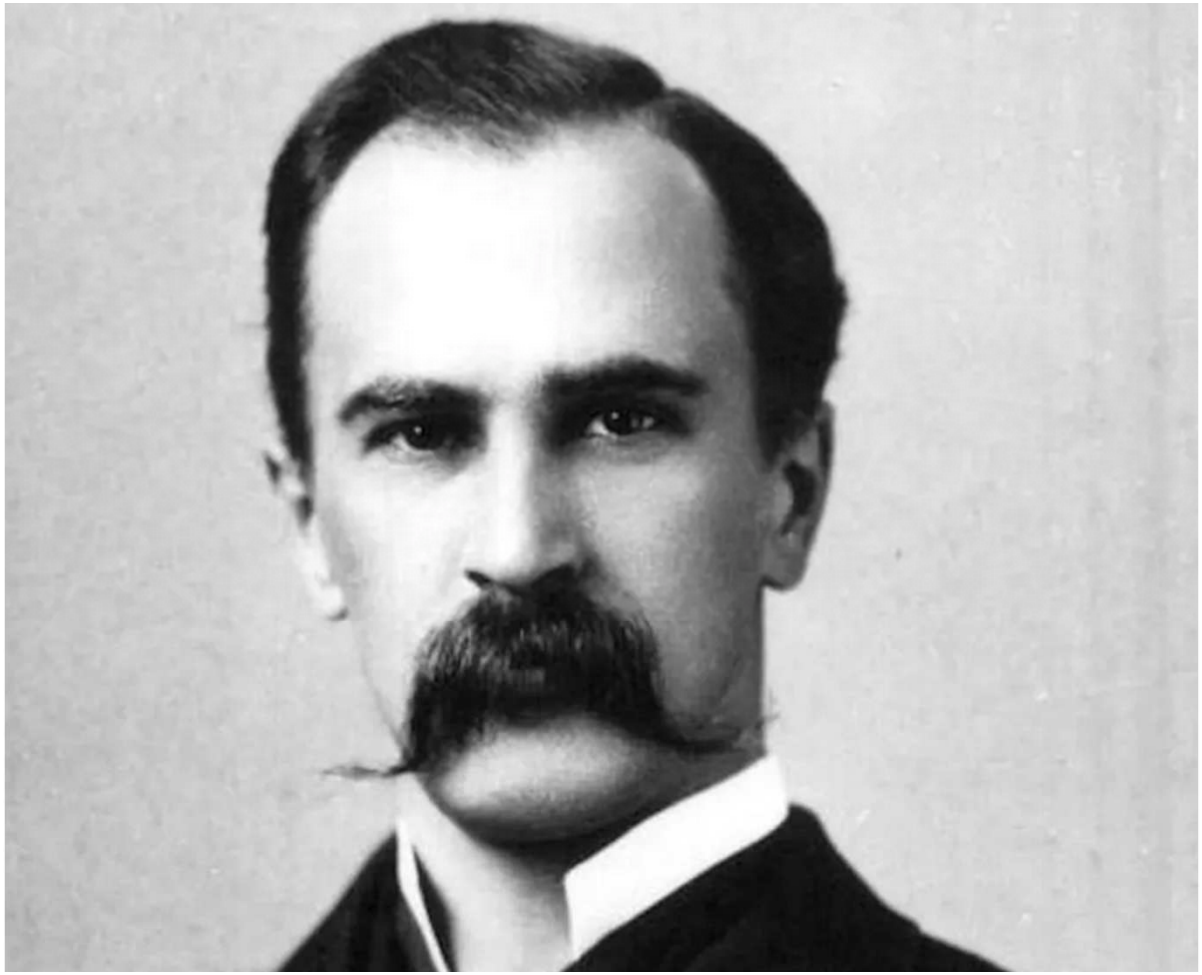
Diminue débit cardiaque

Diminue le débit de filtration glomérulaire

Intuber un cœur droit aigu

- Procédure à très haut risque, même chez sujet jeune
- Appeler à l'aide avant
- Se préparer à un arret circulatoire

- Se poser la question d'emblée de l'ECMO V/A (assisitance circulatoire)



« Le bon médecin traite la maladie, le grand médecin traite le patient qui a la maladie »

W. Osler (1845-1919)

- Le poumon et le cœur ne sont pas les seuls organes impactés par la ventilation

- Réserve physiologique = muscles

- Sarcopénie, dénutrition, autonomie, escarre participent de façon majeure à la décision ou non d'intubation

<u>Psoas</u>

Bon reflet de la masse musculaire globale

Atrophie majeure des psoas = réalité de la marche du patient ?

Messages clés

- Un patient insuffisant respiratoire ce n'est pas que du poumon
- Assistances extracorporelles de décarboxilation et d'oxygénation
- Se poser la question de l'intubation c'est se poser la question d'une trachéotomie ou d'une transplantation pulmonaire
- Discussion collégiale de limitation des thérapeutiques.