



A NEW CLASSIFICATION FOR PATIENTS WEANING FROM MECHANICAL VENTILATION

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BACKGROUND

Weaning from mechanical ventilation :

- covers the entire process of liberating the patient from mechanical support and from the endotracheal tube.

- the weaning period may represent up to 40-50% of the overall ventilation period

- contributes to major complications, length of ICU stay and cost of ICU care

BACKGROUND

Weaning from mechanical ventilation

J-M. Boles^{*}, J. Bion[#], A. Connors[¶], M. Herridge⁺, B. Marsh[§], C. Melot^f, R. Pearl^{**},
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Statement of the Sixth International Consensus Conference on Intensive Care Medicine

2007

Classification for weaning from mechanical ventilation (MV) in three groups (simple, difficult and prolonged weaning) based on number, timing and results of spontaneous breathing trials (SBTs) and extubation outcomes.

TABLE 3 Classification of patients according to the weaning process

Group/category	Definition
Simple weaning	Patients who proceed from initiation of weaning to successful extubation on the first attempt without difficulty
Difficult weaning	Patients who fail initial weaning and require up to three SBT or as long as 7 days from the first SBT to achieve successful weaning
Prolonged weaning	Patients who fail at least three weaning attempts or require >7 days of weaning after the first SBT

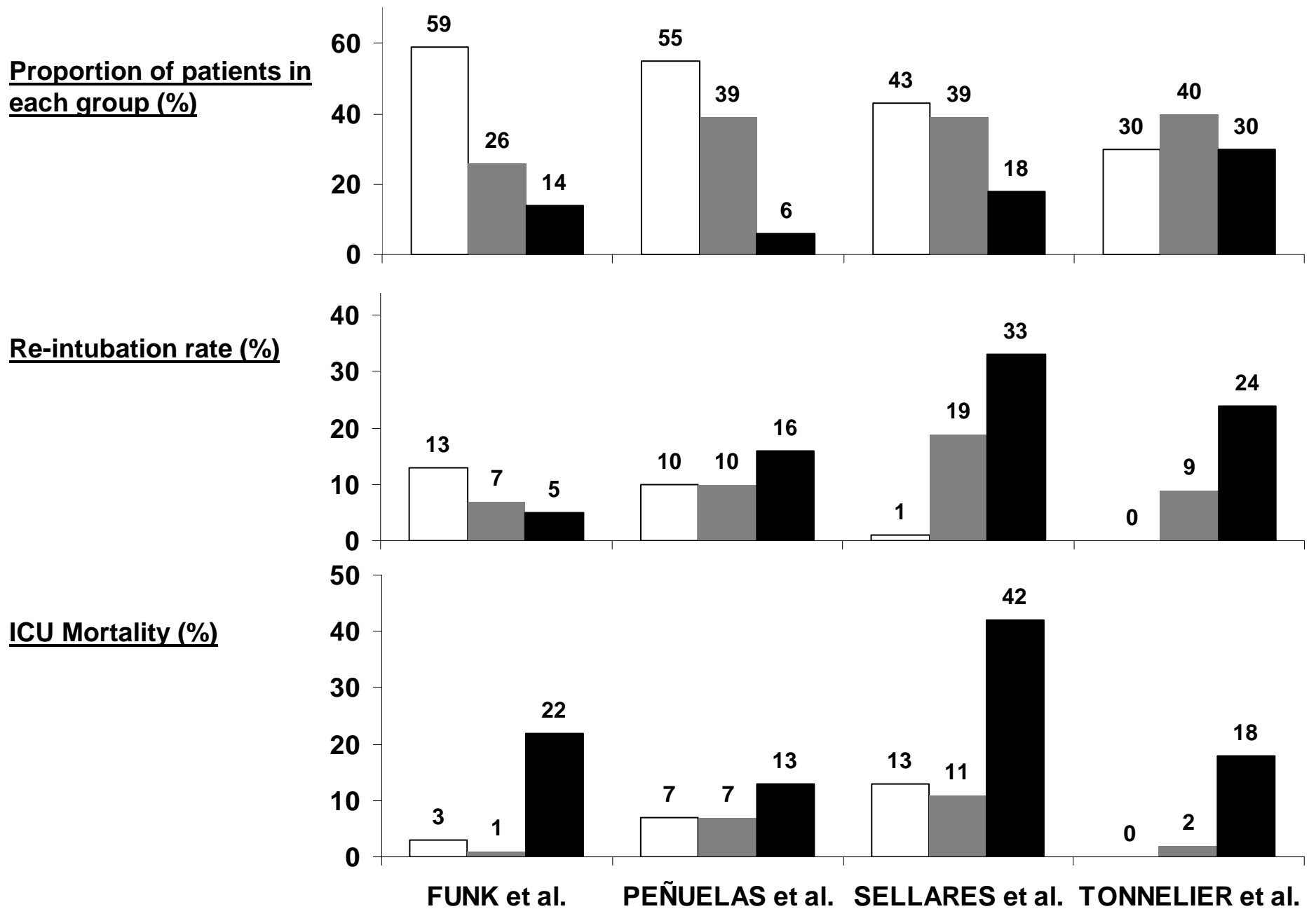
SBT: spontaneous breathing trial.

Weaning from mechanical ventilation.

Three groups

- **1) Simple Weaning (first trial)**
 - **Early detection**
- **2) Difficult Weaning (more than 1 attempt, up to one week)**
 - **Reasons for failure**
- **3) Prolonged Weaning (more than 1 week or than three attempts)**
 - **Global management**

Simple weaning
 Difficult weaning
 Prolonged weaning



Weaning classification

- Extubation without SBT?
- Successful SBT without extubation?
- Self extubation?
- Early tracheostomy?
- NIV post extubation?
- Etc.



WIND study : Methods

A prospective observational survey was run in 36 intensive care units in France, Spain and Switzerland, over a three month period.

All patients requiring intubation and MV were enrolled and followed until ICU discharge.

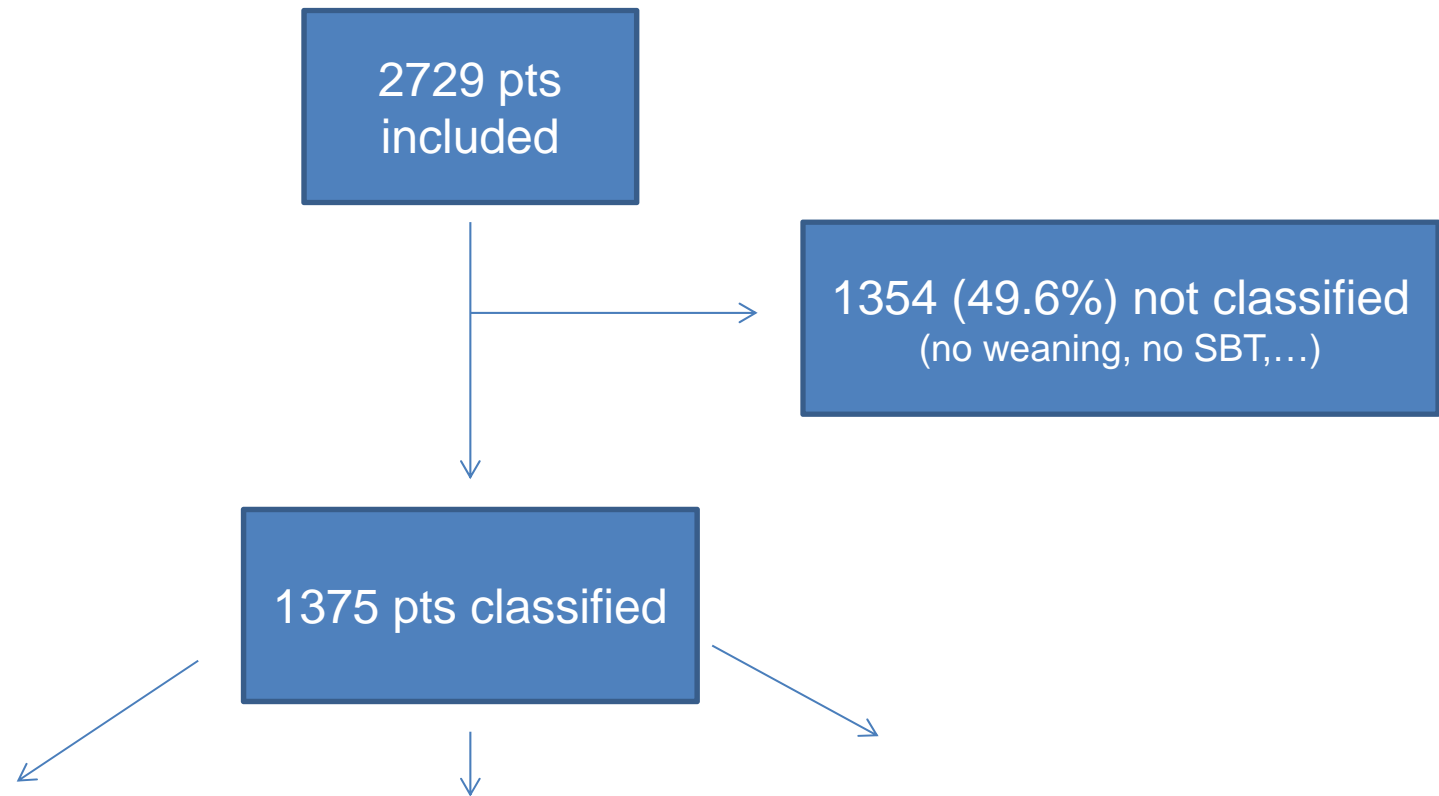
Modality of MV, results of SBTs*, extubations and outcome were collected daily allowing their classification according the three previously described weaning groups.

* SBT= all “tests” used to decide extubation

Flow chart according to 2007 Consensus Conference

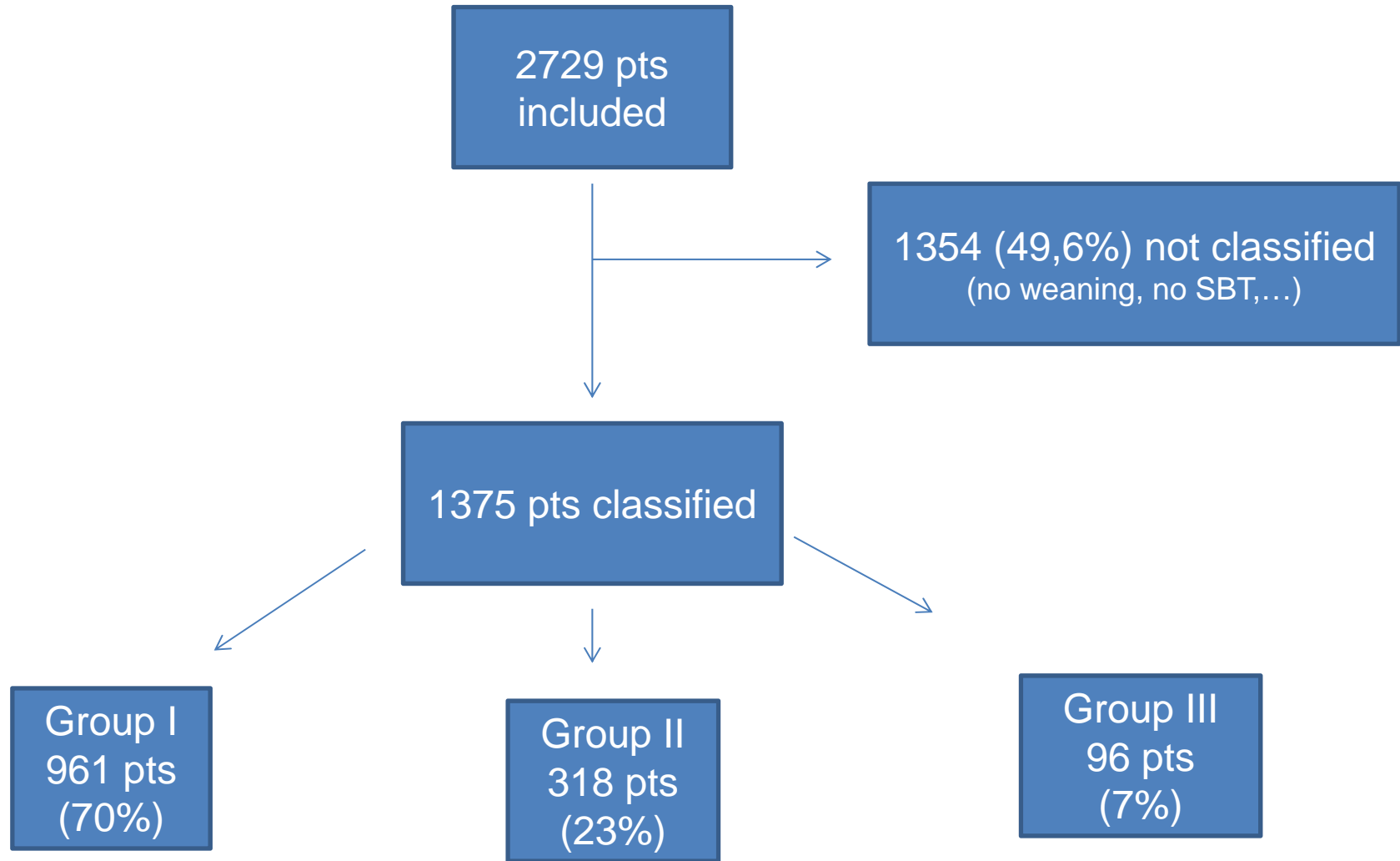
2729 pts
included

Flow chart according to 2007 Consensus Conference



50% of screened patients could not be classified using the previous classification for numerous reasons: no SBT performed before planned extubation, successful self extubation without SBT, early tracheotomy for other reason than weaning, NIV...

Flow chart according to 2007 Consensus Conference



50% of screened patients could not be classified using the previous classification for numerous reasons: no SBT performed before planned extubation, successful self extubation without SBT, early tracheotomy for other reason than weaning, NIV...

We thus proposed **a new classification** with these definitions :

Weaning attempt : SBT
or planned and/or self extubation without SBT

Successful extubation : Planned or self extubation without death or reintubation within the next 7 days, whatever the use of post extubation NIV or not

Group 0 (no weaning process) = No weaning attempt or need for tracheostomy for other reason than weaning (prolonged neurological disease and/or for superior airway managements)

Group I (simple weaning) = First weaning attempt resulting in a successful extubation, within 1 day when weaning attempt corresponds to a SBT

Group II (difficult weaning) = Successful extubation within 2 to 7 days after the 1st weaning attempt and no more than 3 weaning attempts

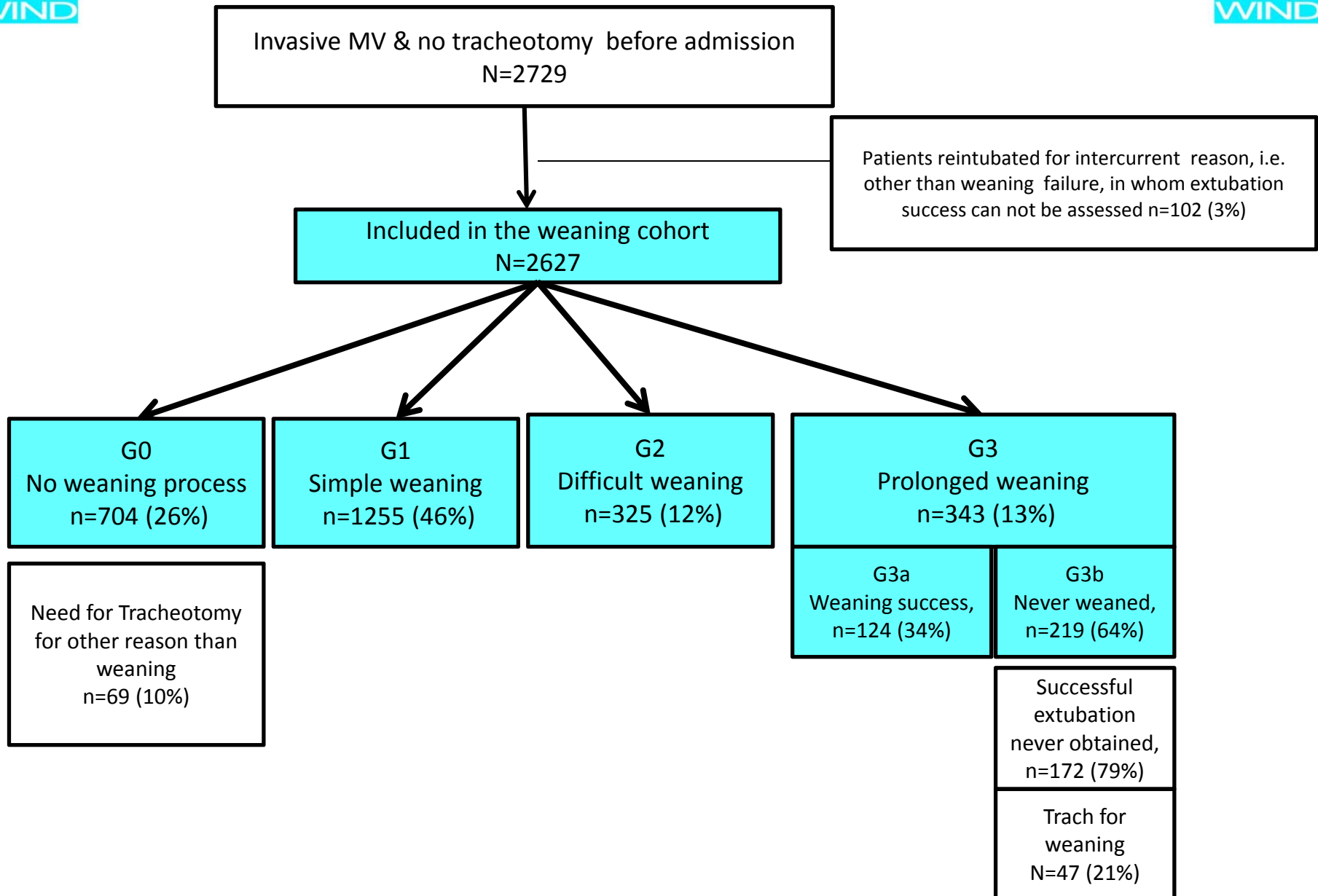
Group III (prolonged weaning) :

Group IIIa : Weaning success = Successful extubation >7d after 1st weaning attempt and/or after >3 weaning attempts

Group IIIb : Never weaned = At least 1 weaning attempt but successful extubation never obtained

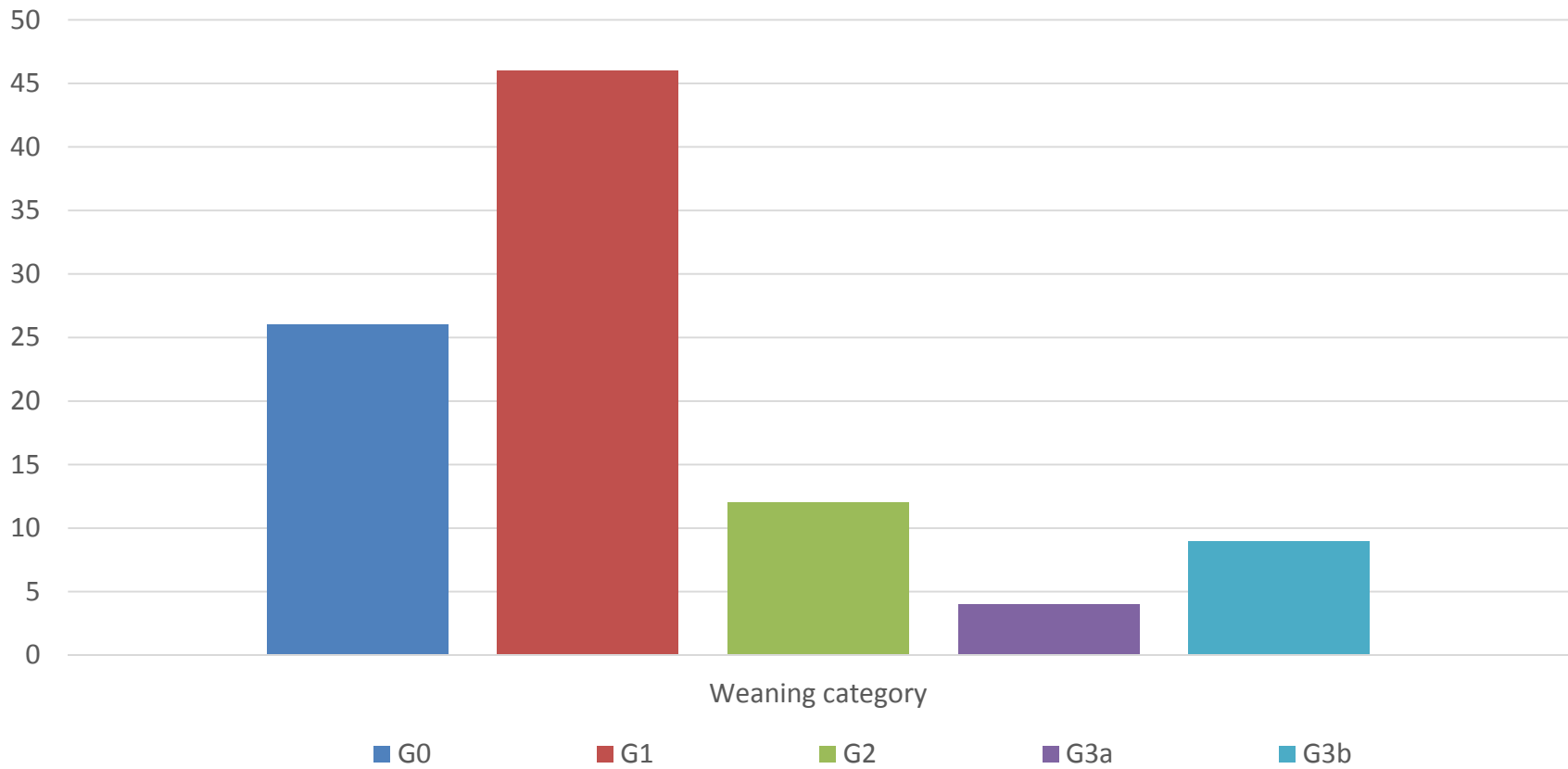


Flow chart new classification



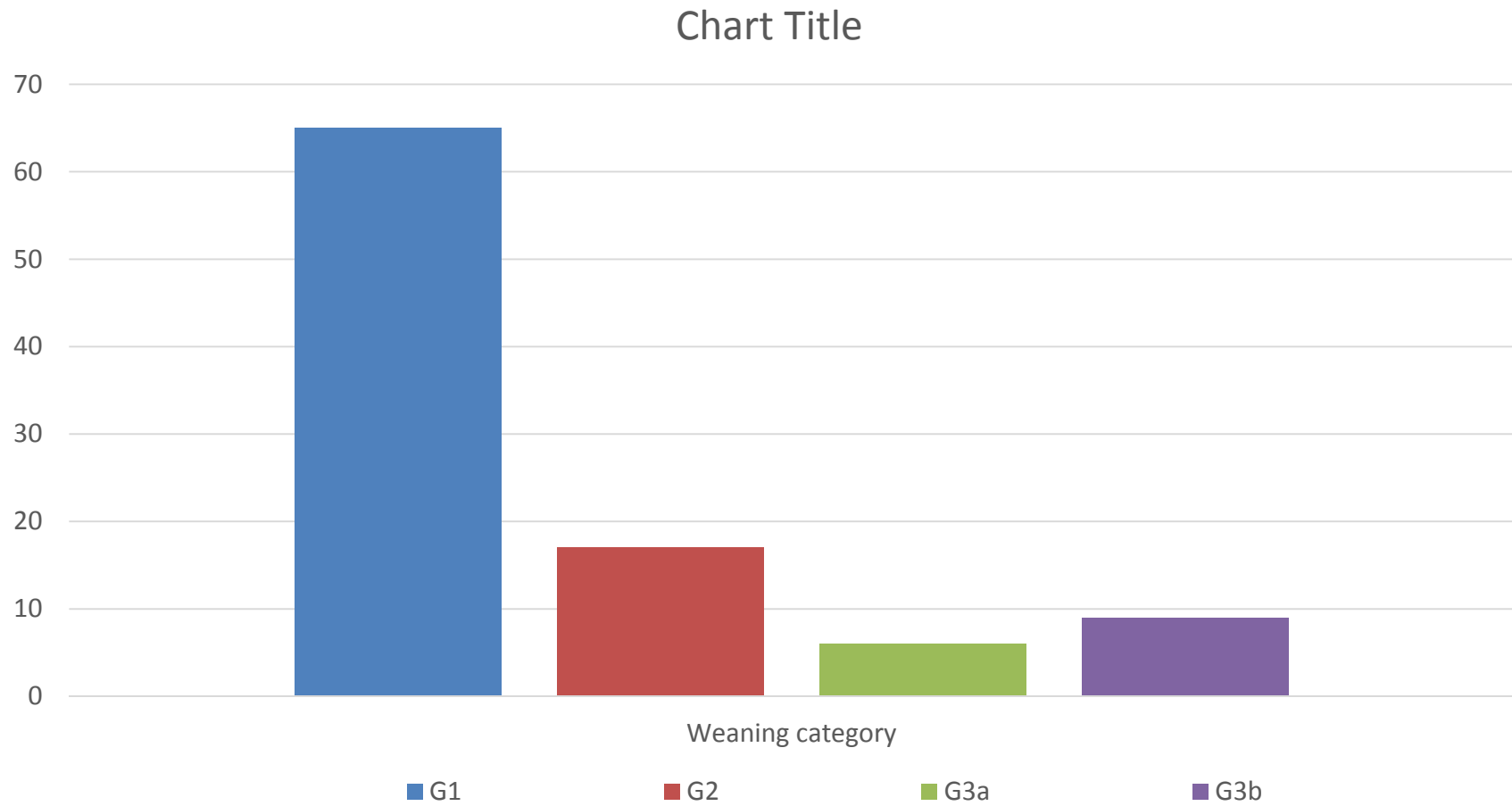
New Weaning Classification all patients

Chart Title

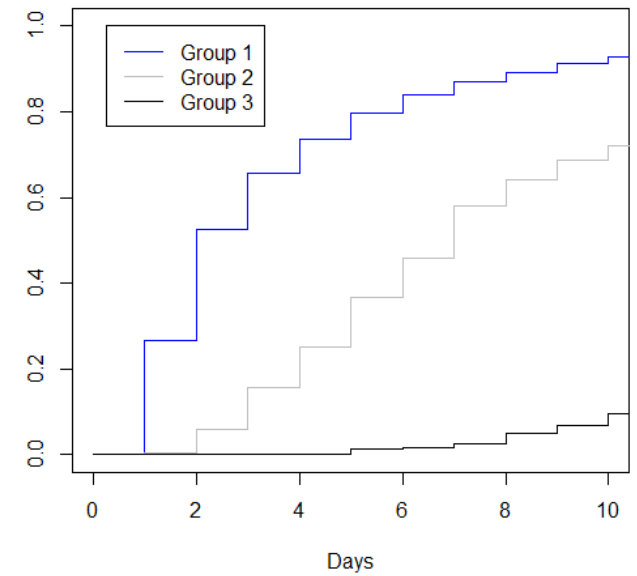
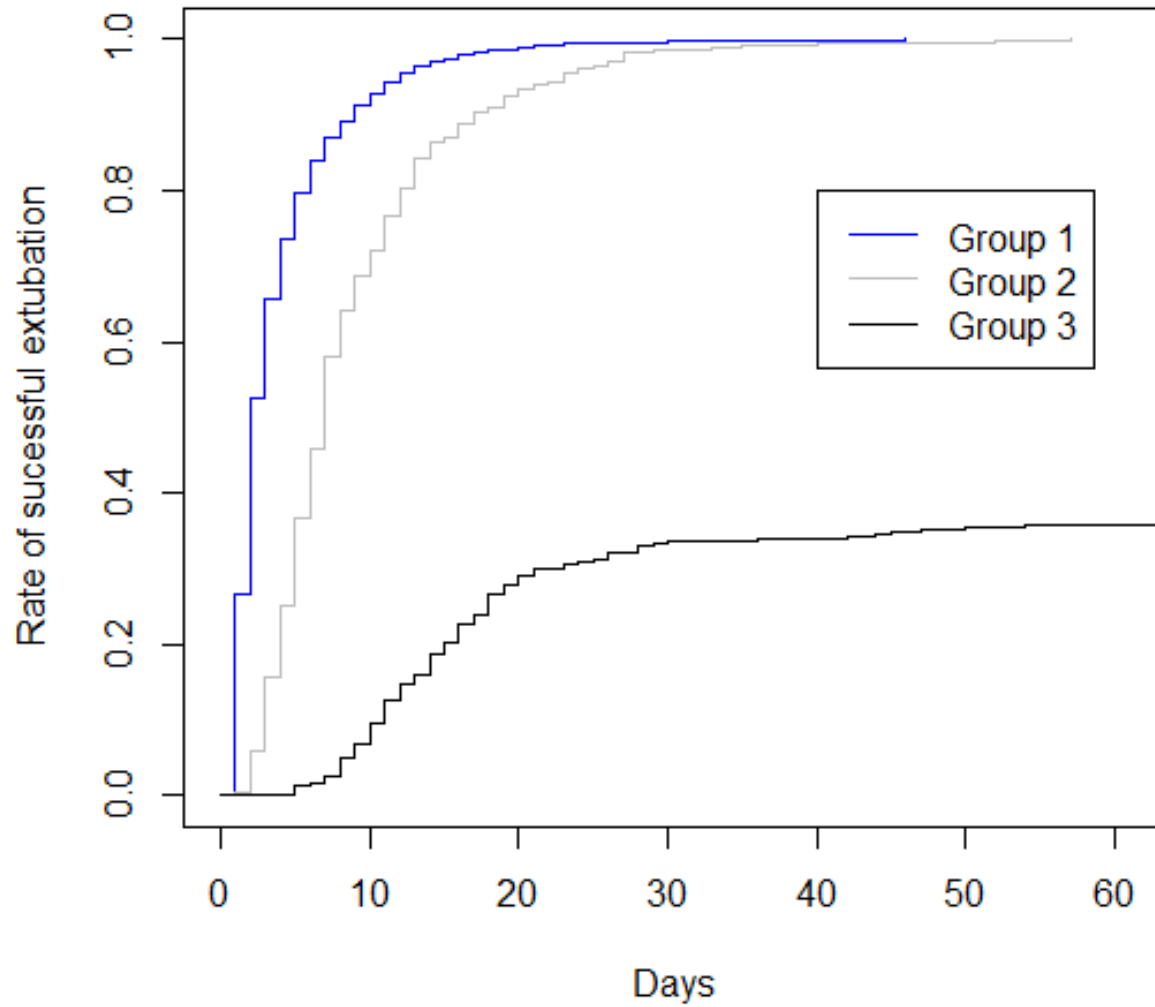


New Weaning Classification

Patients weaning



Kaplan- Meier curves of weaning success



Characteristics and ICU outcome according to the WIND weaning group

	No weaning process N=704	Simple weaning N=1255	Difficult weaning N=325	Prolonged weaning N=343	p
SAPS II Mean±SD	66±23	44±17	49±17	56±18	<0.001
Surgical admission, n (%)	123 (17.5)	412 (32.8)	60 (18.5)	54 (15.8)	<0.001
ICU LOS (d) Median (25 th -75 th)	3 [2;8]	5 [3;8]	10 [7;18]	20 [9;37]	<0.001
ICU deaths, n (%)	560 (79.7%)	4 (0.3%)	1 (0.3%)	179 (52.2%)	<0.001

Characteristics of weaning process according to the WIND weaning group

	Simple weaning N=1255	Difficult weaning N=325	Prolonged weaning N=343	p
Type of SBT: T-tube/ZEEP/Other %	44.5/51.7/4	55.5/43.2/1	50.5 /45.2/4	<0.001 (each)
Delay from inclusion to 1 st weaning attempt, d median (25 th -75 th)	2 [1;5]	5 [3;9]	6 [3;9]	<0.001
Delay from inclusion to 1 st successful extubation, d median (25 th -75 th)	2 [1;5]	7 [4;11]	14 [10;19]	<0.001
Patients with reintubation for weaning failure, n (%)	0	29 (8.9)	97 (28.4)	<0.001
Patients receiving post extubation NIV, n (%)	164 (13)	54 (16.6)	58 (17)	<0.001

CONCLUSION

- The previous classification did not permit to classify almost 50% of the cohort. This modified weaning classification allows describing and classifying real weaning practices.
- Among MV patients starting weaning, 65% of them fall in the simple weaning category
- This modified weaning definition strongly discriminates 3 groups with different weaning process and prognosis
- The other 35 % have either difficult (48%) or prolonged weaning (52%). Two thirds of patients entering the “prolonged” category will never be weaned.

- Amiens (respiratory ICU) : Dr C Andrejak
- Amiens (chirurgical ICU) : Dr E Zogheib
- Angers : Dr L Piquilloud
- Barcelone : Dr F Roche Campo
- Caen : Dr N Terzi
- Créteil : Dr F Schortgen
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- Dijon : Dr A Pavon
- Dreux : Dr P Dubosq
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- La Chaux de Fonds : Dr H Zender
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- Lille : Dr E Parmentier
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- Melun : Dr S Jochmans
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- Nancy : Dr M Conrad
- Nantes : Dr M Jonas
- Nice : Dr J Dellamonica
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