Extubations non programmées
(Unplanned extubations)

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Unplanned Extubations in the Adult Intensive Care Unit

11 réanimations 426 patients, 2 mois, 3312 jours de ventilation

57 extubations non programmées (dont 2 accidentelles)

46 (10,8%) uniques

1,59 pour 100 jours de ventilation mécanique

26 (46%) coopérants, 35 (61%) agités et 7 (12%) sédatés

33 (58%) attachés

Association des Réanimateurs du Centre Ouest

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Boulain T et al. Am J Respir Crit Care Med 1998;57:1131–1137

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57 extubations non programmées (dont 2 accidentelles)

46 (10,8%) uniques

réintubations : 28/46 *vs.* 28/284 $p<0,0001$

pas de différence sur la mortalité, la survenue d'une pneumonie nosocomiale

ACOR
Association des Réanimateurs du Centre Ouest

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Facteur de risque à l'admission :

insuffisance respiratoire chronique : OR 2,1 [1,5-3]

UNPLANNED EXTUBATION OCCURRENCE ACCORDING TO DAY-TO-DAY EXPOSURE TO RISK FACTORS

Risk Factor	Non-UEX Intubation (*d*)	UEX Intubation (*d*)	Crude Odds Ratio*† (95% CI)	Adjusted Odds Ratio$_{MH}$* (95% CI)
Lack of strong tube fixation				
Yes	501	27	4.9 (2.6–9.2)	3.45 (2.3–5.2)
No	2,765	19		
Orotracheal intubation				
Yes	816	25	3.6 (2.06–6.4)	3.7 (2.7–5)
No	2,497	21		
Lack of intravenous sedation				
Yes	2,282	41	3.5 (1.4–8.9)	5.9 (3.5–9.9)
No	984	5		

Boulain T et al. Am J Respir Crit Care Med 1998;57:1131–1137

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The Drive to Survive*

Unplanned Extubation in the ICU

Variables	UE	Control Subjects	p Value
ICU LOS	5.9 (3.1–12.4)	3.1 (1.5–7.1)	< 0.001†
Hospital LOS	17 (9–30)	10 (5–18)	< 0.001†
Days of MV	5 (2–9)	2 (2–7)	< 0.001†
ICU mortality	8.0	25.0	< 0.001‡
Hospital mortality	20.0	35.0	0.011‡

44 réintubations

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Krinsley JS et al. Chest 2005;128:560–566

The Drive to Survive*

Unplanned Extubation in the ICU

Variables	UE R +	UE R −	p Value
Day of UE	3 (1–6)	2 (1–5)	0.200§
ICU LOS†	11.6 (6.4–21.1)	3.9 (1.6–6.7)	< 0.001§
Hospital LOS‡	30 (16–50)	14 (8–21)	< 0.001§
Days of MV‡	9 (6–20)	2 (1–5)	< 0.001§
ICU mortality	18.2%	0.0%	0.003
Hospital mortality	36.4%	7.1%	< 0.001§
Infections acquired in ICU, No.			
Patients with infection	13	0	< 0.001‖
Ventilator-associated pneumonia	7	0	
Central line infection	1	0	
Urinary tract infection	5	0	
Methicillin-resistant *Staphylococcus aureus*	1	0	
Clostridium difficile infection	3	0	
Vancomycin-resistant enterococcus infection	2	0	

44 réintubations

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The Drive to Survive*

Unplanned Extubation in the ICU

Variables	UE	Control Subjects	p Value†
Laboratory	11,159 (5,982–19,490)	5,952 (3,472–12,231)	< 0.001
Imaging	7,980 (3,828–11,939)	3,973 (1,248–8,559)	< 0.001
Pharmacy	4,842 (2,075–9,821)	2,219 (727–5,720)	< 0.001

Variables	UE R +	UE R −	p Value†
Laboratory	18,501 (12,953–26,704)	7,106 (4,215–11,535)	< 0.001
Imaging	11,694 (8,911–18,036)	4,691 (2,416–7,821)	< 0.001
Pharmacy	9,821 (4,409–19,853)	3,401 (991–5,406)	< 0.001

44 réintubations

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Krinsley JS et al. Chest 2005;128:560–566

Risk factors and outcomes after unplanned extubations on the ICU: a case-control study

30 mois, 17398 jours de ventilation mécanique

0,4/100 jours de ventilation mécanique

Variables	UE Cases (*n* = 74)	Controls (*n* = 296)	*P* value
Mean age, yr (± SD)	60.6 (± 14)	61.2 (± 16)	0.22
Males, *n* (%)	57 (77%)	188 (64%)	0.03
APACHE II score (± SD)	16.4 (± 8)	18.5 (± 8)	0.36
Type of admittance[b], *n* (%)			
Medical	34 (46%)	135 (46%)	0.82
Planned surgery	30 (43%)	128 (43%)	0.79
Urgent surgery	10 (14%)	33 (11%)	0.65
Cardiovascular	39 (53%)	124 (42%)	0.85
Diagnostic category, *n* (%)			
Respiratory	17 (23%)	74 (25%)	0.33
Sepsis	2 (3%)	12 (4%)	0.41
Neurological	9 (12%)	39 (13%)	0.41
Gastrointestinal	5 (7%)	33 (11%)	0.15
Vascular	1 (1%)	6 (2%)	0.45
Metabolism	1 (1%)	1 (0.3%)	0.56
Hematological	-	3 (1%)	0.99
Renal	-	3 (1%)	0.99

de Groot RI et al. Crit Care 2011;15:R19

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30 mois, 17398 jours de ventilation mécanique

	Univariate analysis		Multivariable analysis	
Variables	**OR (95% CI)**	***P* value**	**OR (95% CI)**	***P* value**
Sex[b]	1.9 (1.07-3.48)	0.03	1.8 (0.84-3.89)	0.13
Age (yr)	0.9 (0.98-1.01)	0.76	1.0 (0.97-1.03)	0.98
BMI (kg/m^2)	1.1 (1.00-1.10)	0.04	1.0 (0.97-1.11)	0.26
Subunit ICU[c]		0.02		
ICU subunit A	1.2 (0.62-2.41)	0.60	1.0 (0.38-2.42)	0.94
ICU subunit B	2.2 (1.23-4.02)	0.01	2.6 (1.06-6.53)	0.04
Length of stay at time of UE (days)[d]	0.9 (0.97-1.00)	0.07	1.0 (0.93-0.99)	0.01
Sodium (mmol/L) at time of UE	1.0 (1.00-1.09)	0.05	1.0 (0.97-1.11)	0.26
Ramsay Sedation Scale score at time of UE		<0.01		<0.01
1 Anxious/agitated	41.4 (4.84-354.05)	<0.01	30.6 (3.18-294.20)	<0.01
2 Awake/cooperative	15.2 (1.96-117.89)	<0.01	25.5 (2.99-216.96)	<0.01
3 Responds to commands only	6.4 (0.77-53.29)	0.09	7.0 (0.78-63.01)	0.08
4 Brisk response to loud noise	3.0 (0.29-31.01)	0.34	1.4 (0.12-15.97)	0.79
5 Sluggish response to loud noise	2.8 (0.29-26.59)	0.37	1.8 (0.17-18.42)	0.62
6 No response (reference)	1.0 (reference)	-	1.0 (reference)	-
Clonidine use at time of UE	2.3 (0.97-5.33)	0.06	2.3 (0.67-7.56)	0.19
Haloperidol use at time of UE	2.1 (1.24-3.51)	0.01	1.6 (0.66-3.72)	0.31
Methadone use at time of UE	2.0 (1.07-3.65)	0.03	0.9 (0.39-2.46)	0.97
Midazolam use at time of UE	1.4 (0.83-2.31)	0.21	2.3 (1.01-5.18)	0.05
Other benzodiazepine use at time of UE (diazepam, lorazepam, oxazepam, temazepam)	1.5 (0.85-2.55)	0.16	1.1 (0.48-2.69)	0.77

de Groot RI et al. Crit Care 2011;15:R19

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Risk factors and outcomes after unplanned extubations on the ICU: a case-control study

30 mois, 17398 jours de ventilation mécanique

0,4/100 jours de ventilation mécanique

Outcome	Patients (n = 74)	Controls (n = 296)	Mean difference (95% CI)	P value
Mean ICU-LOS at index time[b], days	10	14	4 (0.68-8.34)	0.021
Mean ICU-LOS after UE, days	14	16	2 (3.20-7.36)	0.436
Mean length of total intubation time, days	23	29	6 (6.44-13.75)	0.074
Mean LOS ICU, days	24	30	6 (1.15-13.78)	0.097
Mean LOS hospital, days	43	48	5 (6.19-14.97)	0.413
ICU mortality, n (%)	13 (18)	80 (27)	-	0.096
Hospital mortality, n (%)	14 (19)	95 (32)	-	0.028

Outcome cases	UE with reintubation (n = 35)	UE without reintubation (n = 39)	Mean difference (95% CI)	P value
Mean LOS ICU, index time[b] (days)	13	7	6 (12.29-0.23)	0.059
Mean LOS ICU, after UE (days)	26	3	23 (31.68-15.27)	<0.001
Mean length of total intubation (days)	38	9	29 (40.73-18.70)	<0.001
Mean LOS ICU (days)	40	10	30 (41.43-18.18)	<0.001
Mean LOS hospital (days)	61	28	33 (51.86-15.14)	<0.001
Mortality ICU, n (%)	13 (37)	0 (0)	-	<0.001
Mortality hospital, n (%)	13 (37)	1 (3)	-	<0.001

de Groot RI et al. Crit Care 2011;15:R19

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Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomised controlled trial

	Intervention group (n=167)	Control group (n=168)	p value
Ventilator-free days*			
Mean	14·7 (0·9)	11·6 (0·9)	0·02
Median	20·0 (0 to 26·0)	8·1 (0 to 24·3)	
Time to discharge (days)			
From intensive care	9·1 (5·1 to 17·8)	12·9 (6·0 to 24·2)	0·01
From hospital	14·9 (8·9 to 26·8)	19·2 (10·3 to NA)†	0·04
28-day mortality	47 (28%)	58 (35%)	0·21
1-year mortality	74 (44%)	97 (58%)	0·01
Duration of brain dysfunction (days)			
Coma	2 (0 to 4)	3 (1 to 7)	0·002
Delirium	2 (0 to 5)	2 (0 to 6)	0·50
RASS at first successful SBT	−1 (−3 to 0)	−2·5 (−4 to 0)	0·0001
Complications			
Any self-extubation	16 (10%)	6 (4%)	0·03
Self-extubation requiring reintubation‡	5 (3%)	3 (2%)	0·47
Reintubation‡	23 (14%)	21 (13%)	0·73
Tracheostomy	21 (13%)	34 (20%)	0·06

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Girard TD et al. Lancet 2008;371:126–134

Conclusion

Événement fréquent :

- 1-16%
- 0,5 à 2 événements pour 100 jours de ventilation

Associé à une morbidité lourde

- 40-60% de réintubation précoce
- prolongation de la durée de ventilation
- prolongation de la durée d'hospitalisation
- mortalité en réanimation et hospitalière majorée

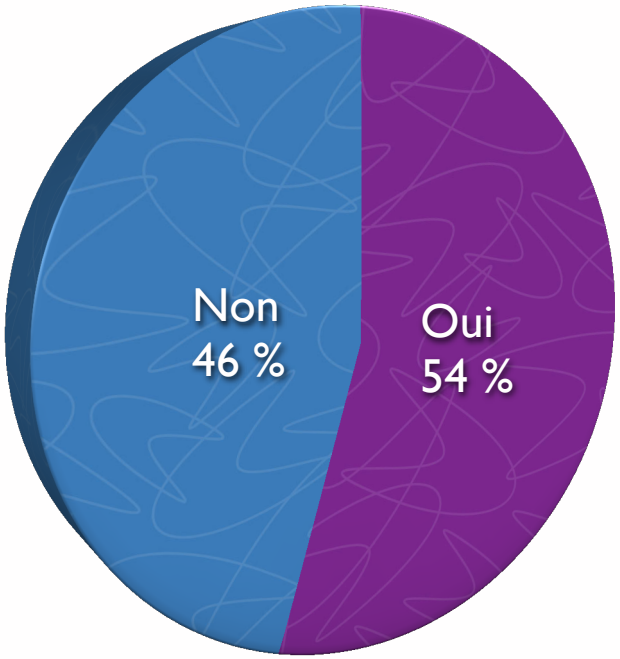
Favorisé :

- méthode de fixation
- voie d'intubation (orale *vs* nasale)
- niveau de sédation

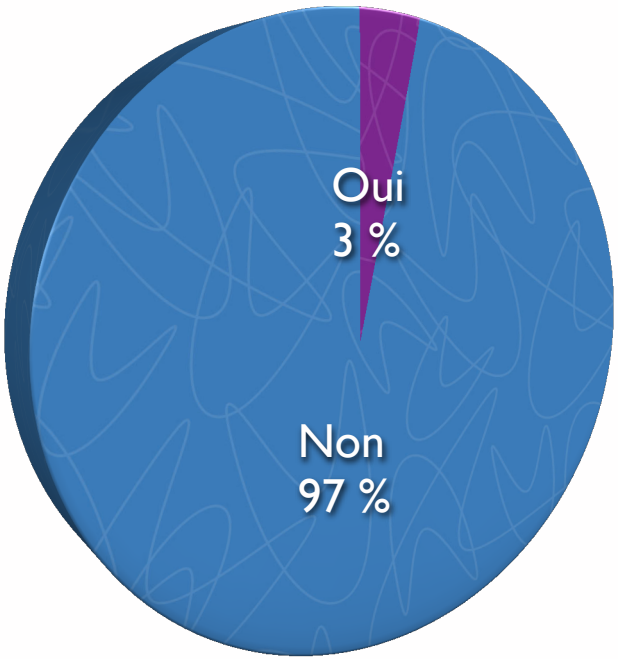
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Questionnaire ARCO - 30 réponses

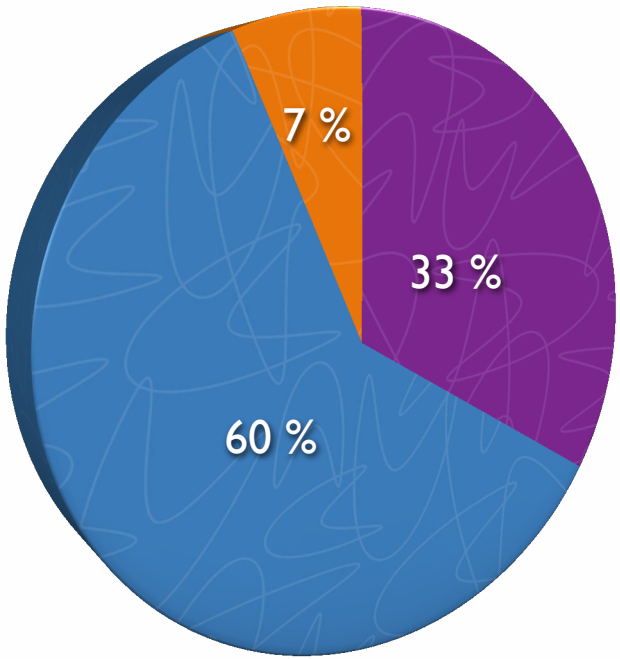
Avez vous un protocole ?



Extubations à heure fixe ?



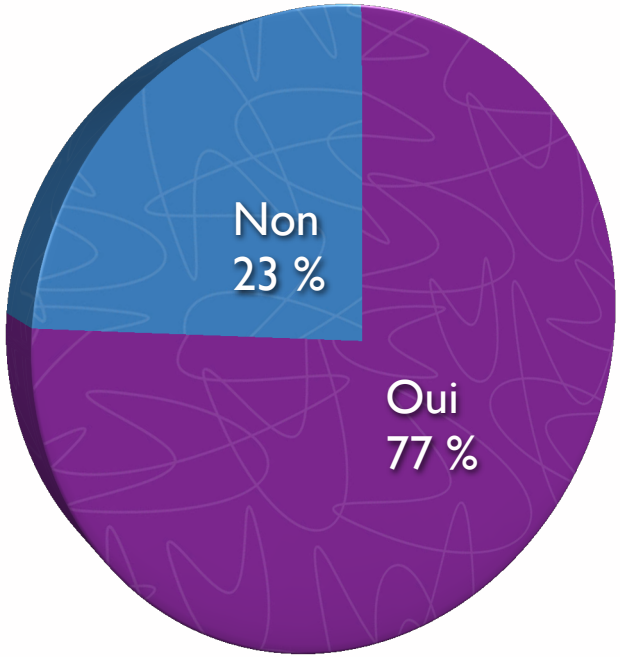
Contentions ?



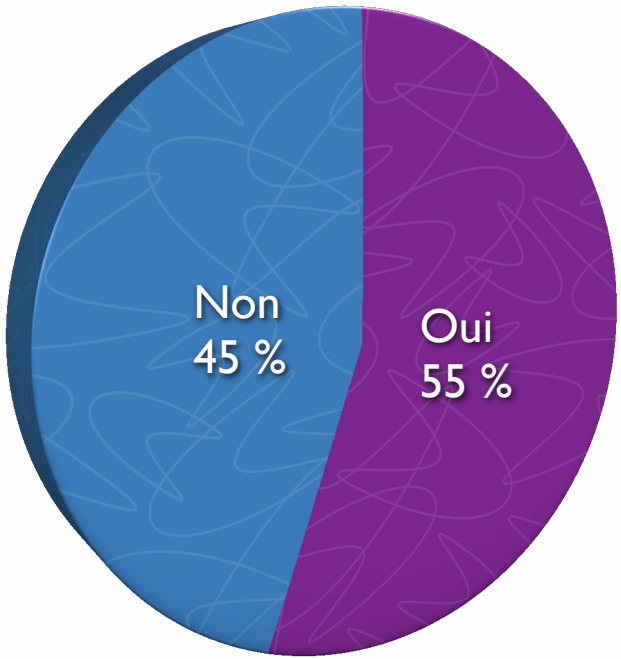
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Présence d'un kiné ?



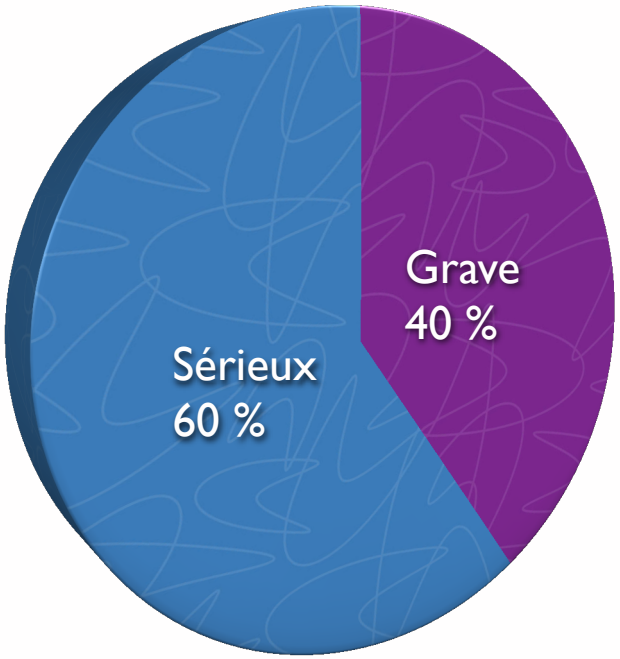
Corticothérapie ?



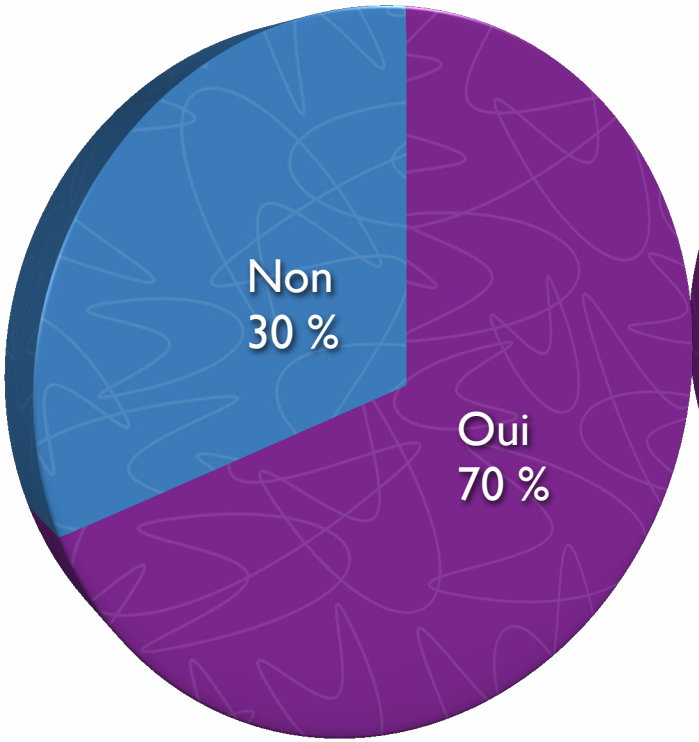
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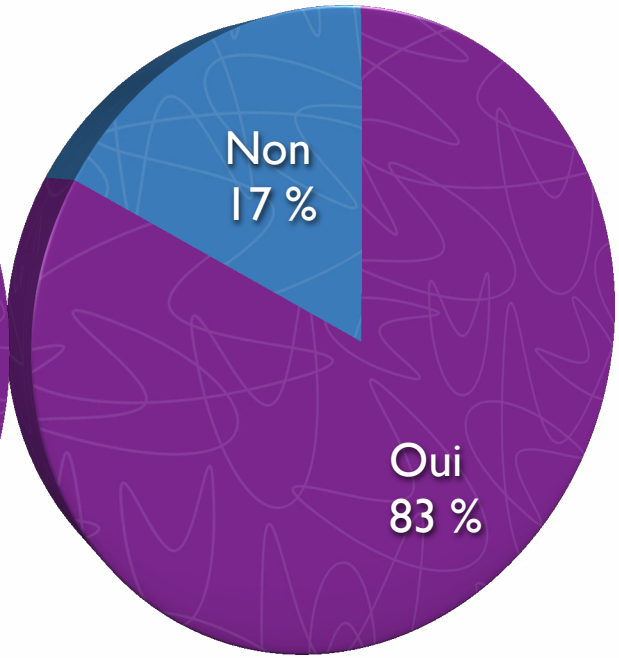
Une ENP est ?



Marqueur de la qualité des soins ?



Évènement culpabilisant ?

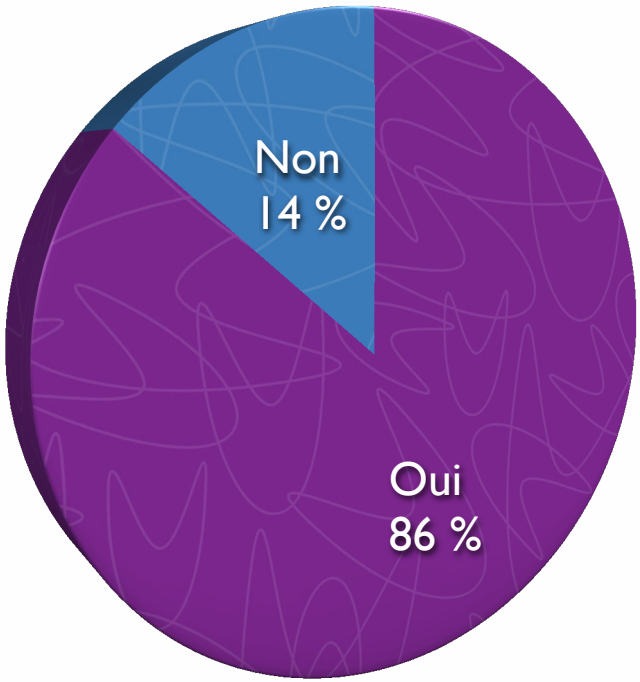


Grave
Sérieux
Anodin

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Questionnaire ARCO - 30 réponses

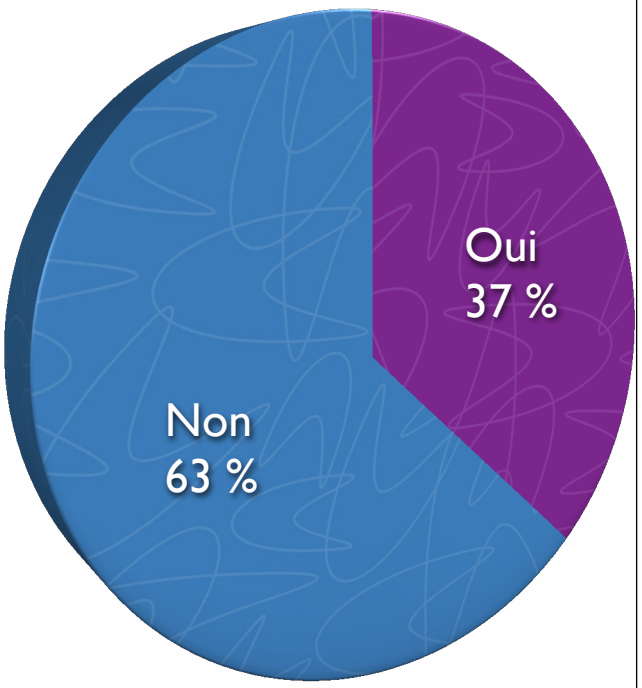
Mesures pour limiter les ENP ?



Majoration des sédations/ contentions : 60%

Extuber à toute heure : 40%

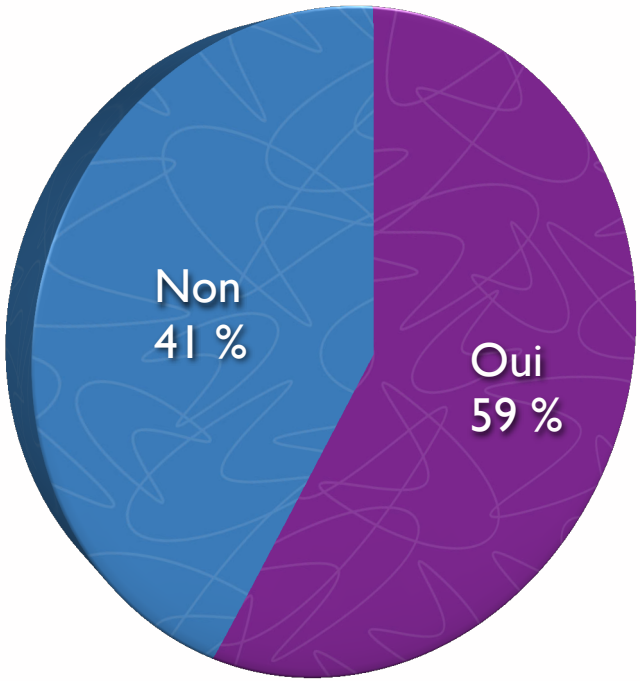
Procédures existantes ?



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Recensement ?



De 20 à 40% de réintubation

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Commentaires libres :

- L'ENP est le corollaire de l'évolution de la gestion des sédations
  - Faire évoluer le type de fixation en fonction du niveau de sédation ?
- Envisager de nouvelles actions correctrices auprès des médecins (ne pas retarder les extubations possibles) et non sur les paramédicaux

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