Best-of des articles de l’année 2022

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PLAN

- Quelle est **la meilleure technique** de **compressions thoraciques** à faire pratiquer par les témoins lors de l'appel en cas d'arrêt cardiaque extra-hospitalier (OHCA) ?
- Intérêt de la mesure semi-quantitative du **score LUS par échographie pulmonaire avant, au cours du transfert et à l'arrivée** chez le nouveau-né avec DR ?
- Intubation du nouveau-né (voie **orale**) : intérêt de **l'oxygénation à haut débit** ?
- **Faut-il médicaliser** le transfert en cas de **suspicion d'inhalation de corps étranger** chez le nourrisson et l'enfant ?
- Intérêt **discriminant** pour le diagnostic du dosage des **lactates en capillaire** en préhospitalier ?
- Bronchiolites **aiguë grave** : **recommandations du GFRUP** (juillet 2002).

OHCA : "Guidage" par téléphone de la CPR des enfants < 2 ans **pour des non-experts** (8/100,000 appels urgents/an)

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ELSEVIER

Comparison of two infant cardiopulmonary resuscitation techniques explained by phone in a non-health professionals' population: Two-thumbs encircling hand technique vs. two-fingers technique, a randomised crossover study in a simulation environment

Check for updates

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OHCA : "Guidage" par téléphone de la CPR des enfants < 2 ans **pour des non-experts** (8/100,000 appels urgents/an)

- The large majority of OHCAs are diagnosed during the call, and **only half** receive proper and early CPR,

  RéAC – Registre électronique des Arrêts Cardiaques [Internet]. [cited 2018 Nov 2]. Available from: http://www.registreac.org/.

- This could multiply the chances of survival **by 2 or 4**,
- But **CPR quality** is frequently **poor**...
- The proportion of the population trained in CPR is **low** (around 20%).

TFT or TTHT ?

Aim of the study : **compare the efficacy** of 2 resuscitation techniques provided on a mannequin:

- the **two-fingers technique** (TFT)
- and the **two-thumbs encircling hand technique** (TTHT),

as explained by a **trained emergency call** responder **over the phone** to a population of **non-health** professionnals.

Randomised crossover study in the **simulation lab** of a University Hospital (CESU 33, CHU de Bordeaux);

35 volunteers were randomised before the sessions, **33** ultimately came to the simulation lab.

OHCA: compressions thoraciques avec 2 pouces ou 2 doigts ?

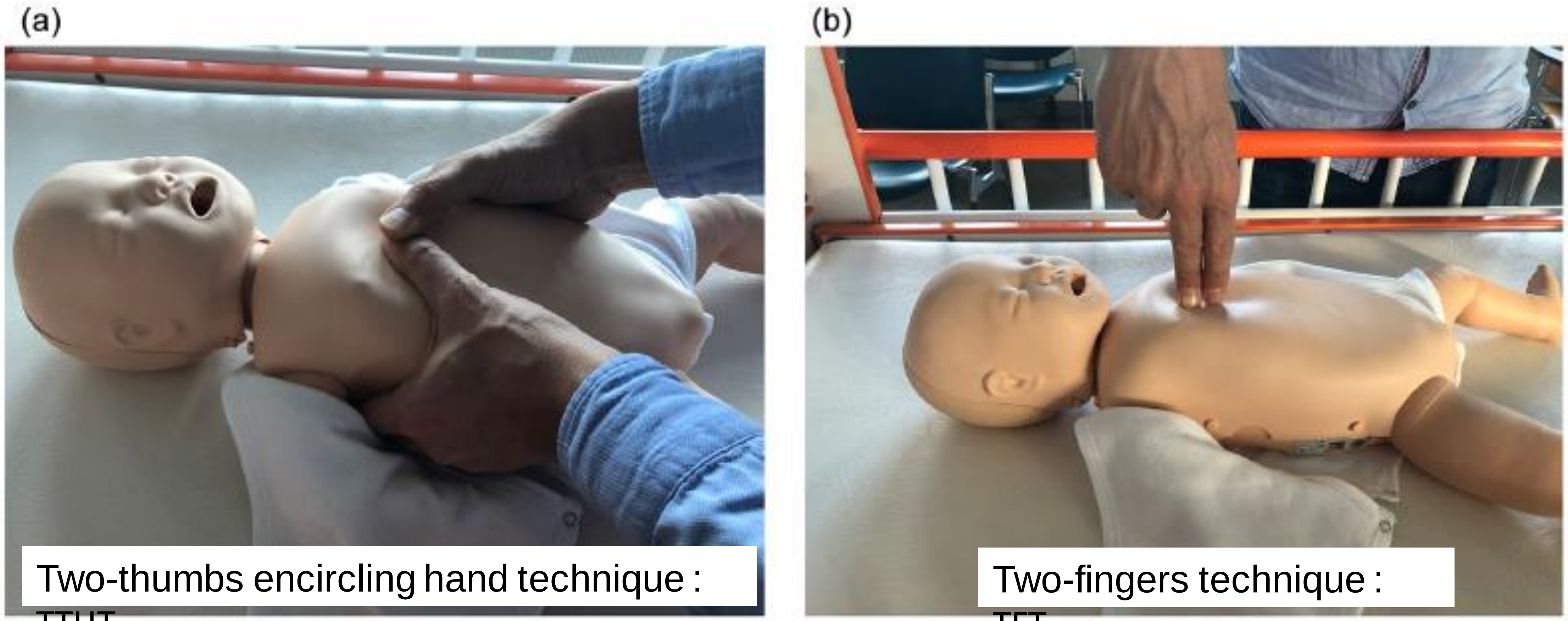

Fig. 1. Cardiopulmonary resuscitation techniques for infants. a) The two-thumbs encircling hands technique (TTHT), and b) the two-fingers technique.

Resusci Baby QCPR and SimPAD plus with Skill reporter (Laerdal) (SPPSR)

OHCA: compressions thoraciques avec 2 pouces ou 2 doigts ?

In 2015, the European Resuscitation Council defined parameters :

- 15:2 compressions/ventilation ratio,
- 100 - 120 compressions per minute to a depth of 4 cm,

followed by full thoracic relaxation between compressions and trying to limit any interruptions of CPR.

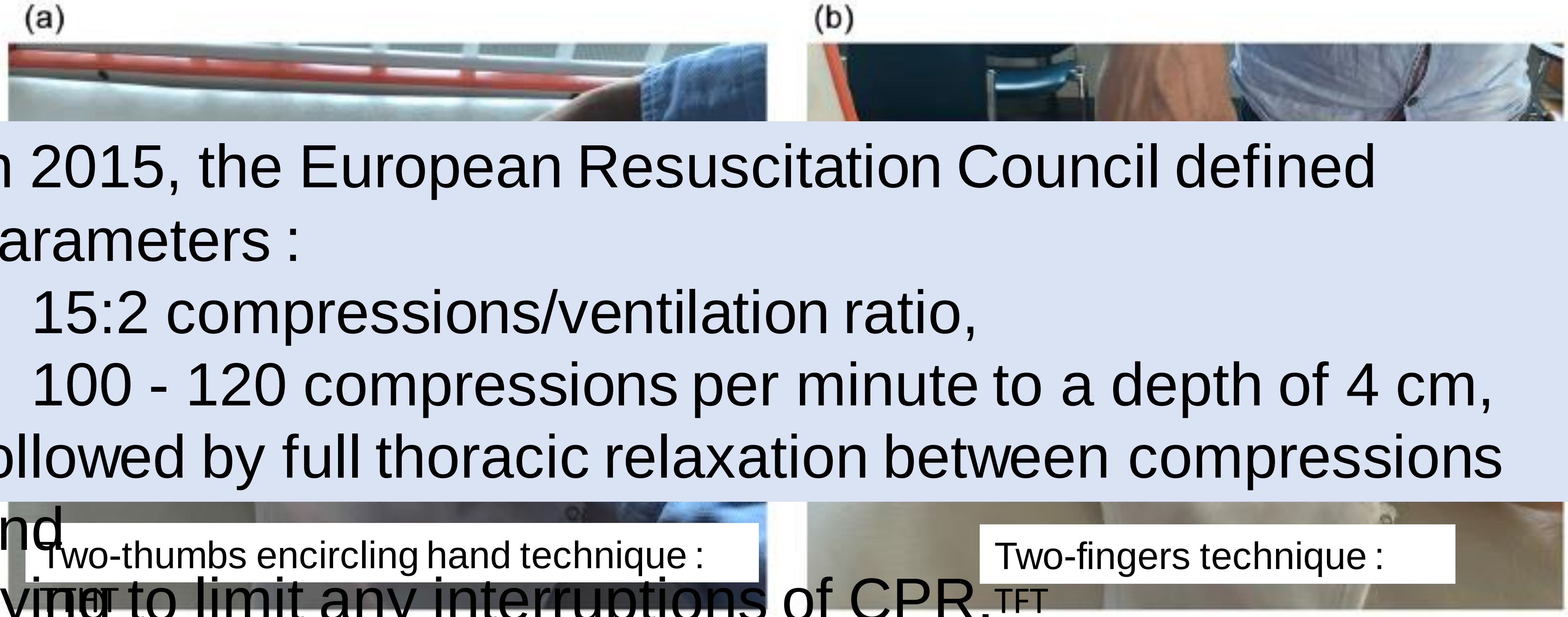

Fig. 1. Cardiopulmonary resuscitation techniques for infants. a) The two-thumbs encircling hands technique (TTHT), and b) the two-fingers technique.

TFT or TTHT ?

The participants (age, 25-75 years; median, 36 years) were assigned (1:1 ratio) to 2 groups:

- group **A** (17): TFT then TTHT
- group **B** (16): TTHT then TFT.

Scenario and techniques were discovered during the evaluation.

Table 1
Volunteer characteristics.

		All $n = 33$	Group A TFT then TTHT		Group B TTHT then TFT	
Sex						
Female N (%)		18 (54.5)	8	(47)	10	(63)
Age	Med [IQR]	36 [33–53]	49	[33–53]	35.5	[33–54]
Height	Med [IQR]	170 [165–176]	171	[164–181]	170	[167–172]
Weight	Med [IQR]	70 [62–86]	75	[64–90]	65	[60–76]
BMI	Med [IQR]	23.7 [21.5–27.8]	24.8	[22.6–28.1]	22.3	[20.7–25.6]
First Aid Training						
	Yes n(%)	9 (27.3)	6	35	3	19

TFT: Two-Fingers Technique
TTHT: Two-Thumbs Encircling Hands Technique
Med: median
IQR: Interquartile Range

Primary outcome : chest compression quality

- **Chest compression quality** measured after 2 min of CPR, assessed using the **QCPR score** automatically computed by the SPPSR for chest compressions. Algorithm constructed by members of the AHA* to assess CPR quality from 0% to 100%.
- A **100% score** was given when CPR **strictly follow** the actual guidelines for resuscitation.
- The **global chest compression score** was a combination of :

  i) depth of compressions, ii) compression frequency,

  iii) compression release, iv) number of compressions per

*American Heart Association

TFT or TTHT ?

We found a **better median QCPR global** score during **TTHT** sessions than during TFT sessions (74 vs. 59, P = 0.046). **Time spent in the proper position** for chest compressions was also better during TTHT (91 vs. 73, P = 0.015).

No differences were found between the 2 session types **for any of the other CPR parameters** measured by the SPPSR,
such as : chest compression rate, rate of correct chest compressions, chest compression depth, length of no flow, and time to first chest compression.

	All		TFT		TTHT		P
QCPR Global score (%)	71	[32–90]	59	[22–85]	74	[55–90]	0.046
Compression score (%)	73	[32–90]	65	[22–86]	74	[55–90]	0.058
Chest compressions per min	108	[99–119]	108	[101–119]	108	[98–116]	NS
Rate of correct chest compression (%)	51	[25–74]	51	[25–73]	51	[25–74]	NS
Number of chest compressions	208	[187–230]	208	[194–231]	204	[186–228]	NS
Mean depth of chest compression (mm)	43	[40–43]	42	[41–43]	43	[40–43]	NS
Rate of correct chest compression depth (%)	100	[98–100]	100	[98–100]	100	[99–100]	NS
Chest compression release (%)	73	[30–98]	83	[58–99]	42	[12–95]	0.002
No flow (s)	1	[0–1]	1	[0–1]	0	[0–1]	NS
Correct position for chest compression (%)	100	[86–100]	98	[38–100]	100	[99–100]	0.015
Time to first chest compression (s)	36	[35–40]	37	[35–40]	36	[35–40]	NS

Linear mixed models, computed for the complementary analysis, showed that the TTHT method performed was the only variable associated with a better QCPR global score (model 1: β = 14.3; 95% CI, 2.4–26.2; model 2: β = 14.5; 95% CI, 2.5–26.6).

TFT or TTHT ?

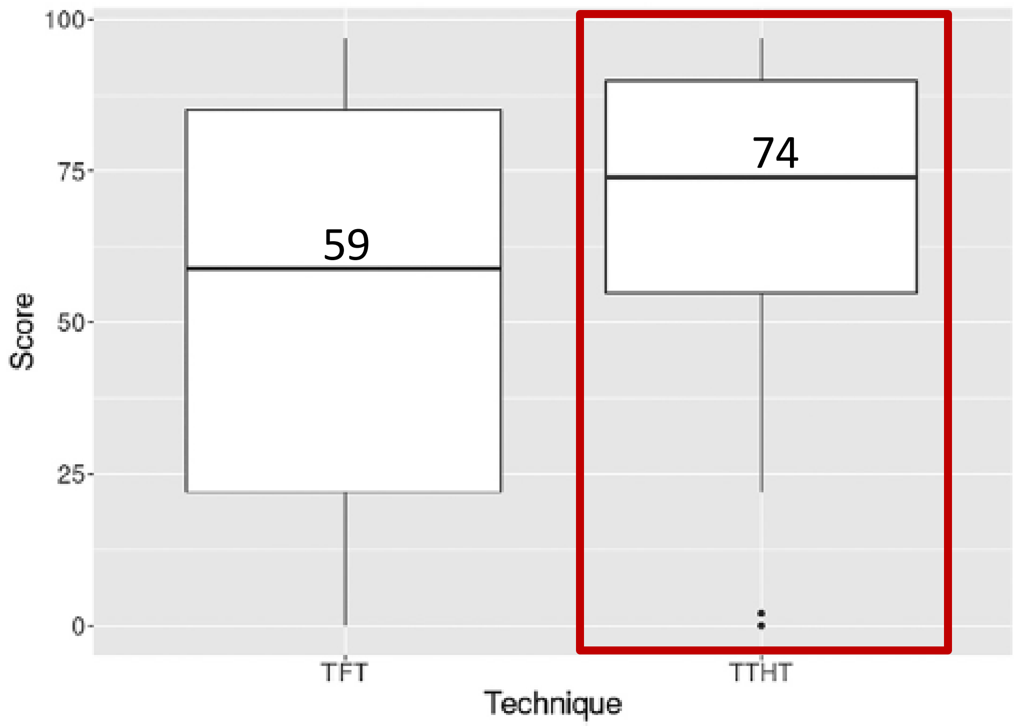

Fig. 2. Boxplot comparing the effects of the two-thumbs encircling hand technique (TTHT) and the two-fingers technique (TFT) on the QCPR global score.

We found a **better median QCPR global** score during T
sessions than during TFT sessions (74 vs. 59, P = 0.046

TFT or TTHT ?

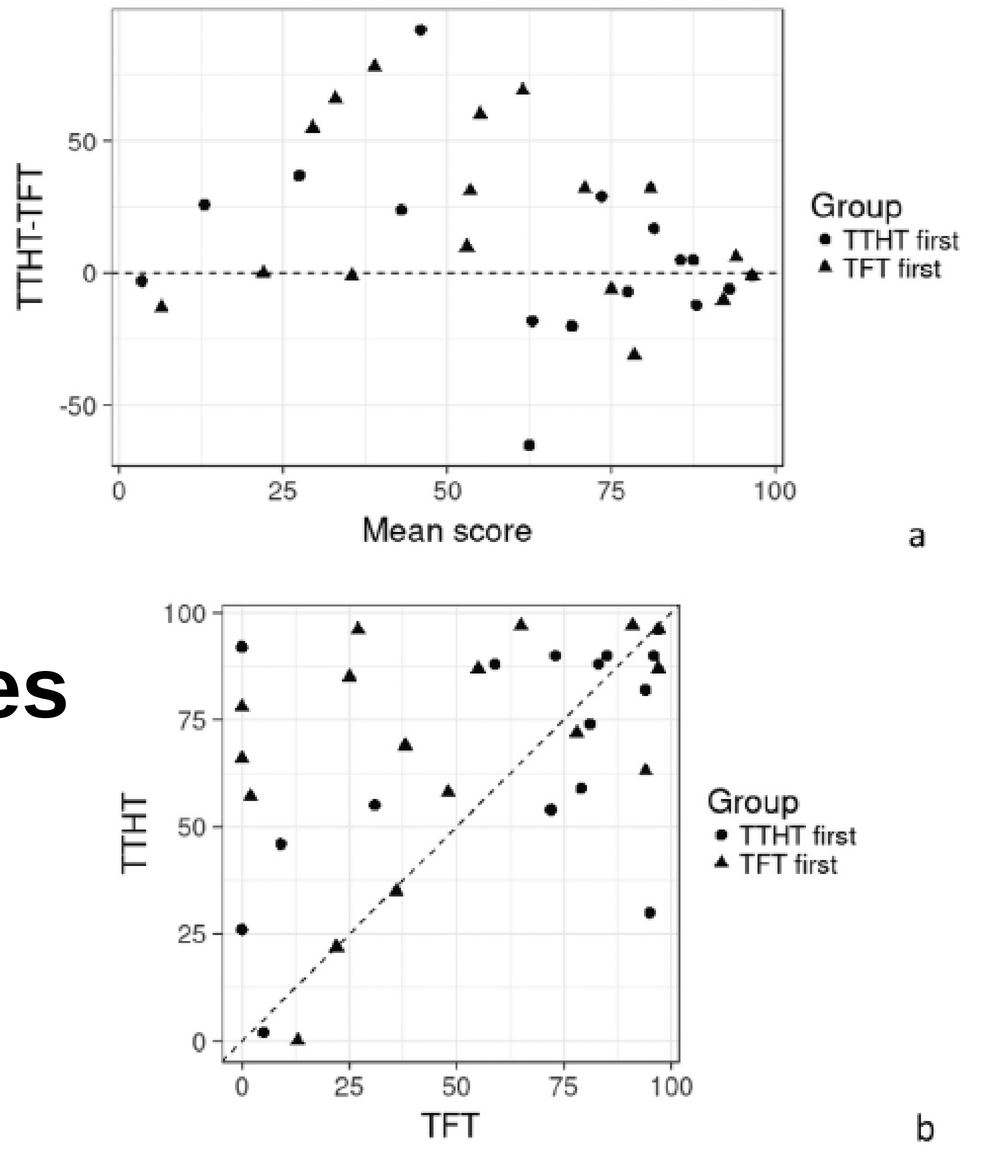

Fig. 3. Bland–Altman plot (a) and scatter plot (b) computed to compare the effects of TTHT and TFT on the QCPR global score.

Fig. 3 presents the **global QCPR scores** for all participants by group.

TTHT was **more efficient** than TFT for almost all of the bystanders.

TFT or TTHT ?

É. Tellier, M. Lacaze, J. Naud et al.

Table 3
Multivariate analysis performed with a linear mixed model to assess the effect of CPR technique on QCPR global score.

	β	95% CI
Model 1: age, sex, body mass index, previous training, order		
TTHT vs. TFT	14.3	[2.4–26.2]
Model 2: age, sex, body mass index, previous training		
TTHT vs. TFT	14.5	[2.5–26.6]

Linear mixed models showed that the **TTHT method** was the **only variable associated with a better QCPR global score** :

- model 1: β = 14.3; 95% confidence interval (CI), 2.4–26.2;

TFT or TTHT ?

- **One of** the **main limitations** of the study was the **absence of insufflation**
  before starting CPR as recommended by the ERC,

  Maconochie IK, et al. European resuscitation council guidelines for resuscitation 2015: section 6. Paediatric life support Resuscitation. 2015 Oct;95:223–48

- In fact, **one of the leading causes** of infant CA is **hypoxemia,**
- For that concern, **the international guidelines** advocate beginning with insufflations.

  Topjian Alexis A, et al. Part 4: Pediatric Basic and Advanced Life Support: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2020 Oct 20;142(16_suppl_2):S469–523.

- However, **bystander witnesses are occasionally embarrassed by insufflations**,
  and the ERC also considered it **better to perform <u>only</u> chest**

TFT or TTHT ?

Conclusion:

Our study showed **the superiority of TTHT** for infant CPR performed by non-health professionals when an emergency call responder advised them over the phone.

It seemed to be **the best technique** for a **solo rescuer** regardless of previous training

PLAN

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DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

European Journal of Pediatrics
https://doi.org/10.1007/s00431-022-04488-7

ORIGINAL ARTICLE

Check for updates

Semi-quantitative lung ultrasound score during ground transportation of outborn neonates with respiratory failure

Vincent Ollier[1] · Barbara Loi[1] · Clemence Rivaud[1] · Feriel Fortas[1] · Valerie Ruetsch[1] · Nadya Yousef[1] · Gilles Jourdain[1] · Daniele De Luca[1,2]

Received: 10 February 2022 / Revised: 30 March 2022 / Accepted: 25 April 2022

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

- **Semi-quantitative lung ultrasound score** (LUS) is correlated with oxygenation impairment and endogenous surfactant activity, and became the **more accurate tool** to **guide** surfactant replacement and **optimize** its timeliness.

- Brat R, Yousef N, Klifa R et al (2015) Lung ultrasonography score to evaluate oxygenation and surfactant need in neonates treated with continuous positive airway pressure. JAMA Pediatr 169:e151797

- Autilio C, Echaide M, Benachi A et al (2017) A noninvasive surfactant adsorption test predicting the need for surfactant therapy in preterm infants treated with continuous positive airway pressure. J Pediatr 182:66-73.e1

- De Luca D, Autilio C, Pezza L et al (2021) Personalised medicine for the management of RDS in preterm neonates. Neonatology 118:127–138. https://doi.org/10.1159/000513783

- **Only one study** focused on lung ultrasound **during neonatal transportation** and reported its general feasibility; but did not investigate the use of LUS.

Jagła M, Grudzień A, Starzec K et al (2019) Lung ultrasound in the diagnosis of neonatal respiratory failure prior to patient transport. J Clin Ultrasound 47:518–525

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

Table 1 Basic population details. Data are expressed as mean (standard deviation), median [25th–75th percentile], or number (%). TRIPS-II score is a dimensionless variable. *Surfactant has always been administered in the NICU after the arrival at the "hub" hospital. Abbreviations: *SGA*, small for gestational age; *TRIPS-II*, transport risk index of physiologic stability-II score (calculated by the transportation team when the patient was evaluated at the "spoke" hospital immediately before transfer)

Neonates	76
Gestational age (weeks)	35.8 (4.2)
Birth weight (g)	2652 (980)
Postnatal age at retrieval (h)	3 [1.5–4.9]
Male sex	42 (55.3%)
SGA	1 (1.3%)
Cesarean section	35 (46.1%)
5′Apgar score	9 [7.7–8.7]
TRIPS-II score	4 [4.9–9.4]
Surfactant replacement*	22 (28.9%)
Duration of transfer (h)	1.4 (0.5)

76 neonates were consecutively transferred and fulfilled the eligibility criteria during the study period: all were enrolled;

Their basic characteristics are shown in Table 1

Median **duration of transportation**: 79 (68–102) min.
Neonates suffered from respiratory failure due to :

- TTN (*n* = 43 (56.6%)),
- RDS (*n* = 25 (32.9%)),
- MAS (*n* = 5 (6.6%)),
- Pneumothorax (*n* = 3 (3.9%))

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

- **Use of semi-quantitative lung ultrasound score** could **:**

- facilitate **patient stabilization**
- allow **safer** transportation,

by identifying the **more severe** cases and **titrating** respiratory support or **indicating** early surfactant replacement

- **Effect** of transportation on **LUS evolution**,
- **Conformity of interpretation** of LUS during neonatal transfer,
- **Relationships** between LUS, oxygenation, and clinical severity are **unknown**.

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

Study design

- Single-center, blinded, observational, cross-sectional study, conducted from January to August 2020;
- **Inclusion criteria :**

(1) appearance of respiratory distress signs within 24 h from birth, irrespective of gestational age;

(2) need of nasal CPAP or invasive mechanical ventilation

- **Exclusion criteria :**

(1) major congenital malformations;

(2) chromosomal abnormalities or genetic anomalies.

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

- **Patients' data** routinely monitored during transportation :
- **Basic clinical data and vital parameters**
- **Transcutaneous partial oxygen pressure** (PtcO2) was routinely measured using devices (TCM4®, Radiometer, Bronshoj, Denmark)
- **Oxygenation** estimated using a **modified oxygenation index (OI)** calculated (i.e., OI = inspired oxygen fraction × mean airway pressure × 100/PtcO2), **PtcO2/FiO2 ratio**, and **alveolar-arterial (A-a) gradient**,

- **Clinical severity** : **Transport Risk Index of Physiologic Stability-II (TRIPS-II)**
- **Definite diagnosis** was established **by NICU physicians** (unaware of the ultrasound findings obtained during transportation) by integrating anamnestic, laboratory, and clinical data with the ultrasound findings obtained in the NICU as per our routine practice.

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

- **Lung ultrasound data** were collected by an attending neonatologist leading the mobile NICU team :

- at the “spoke” hospital prior to the ride : pre-transfer (T1),
- in the mobile unit : transfer (T2),
- at the end of transportation upon arrival in the NICU at the “hub” hospital : post-transfer (T3).

- **CPAP** provided with a **variable flow system** using nasal masks (Fabian®, Vyaire, Mettawa-IL, USA) at **5-6 cmH2O** not changed during the transfer.
- **Invasive ventilation** provided in assisted/control or in high-frequency oscillatory modes and titrated, depending on the clinical severity according to our clinical protocols for transportation.

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

- **TTN** and **RDS** were diagnosed according to international consensus criteria,

  De Luca D, van Kaam AH, Tingay DG et al (2017) The Montreux definition of neonatal ARDS: biological and clinical background behind the description of a new entity. Lancet Respir Med 5:657–66

- **MAS** was diagnosed as neonatal acute respiratory distress syndrome fulfilling the Montreux definition, appearing **early** from birth and with the **presence of meconium-stained amniotic fluid and/or airway secretions,**
- During transportation, **surfactant (poractant-alpha, 200 mg/kg)** was administered following criteria described in **European guidelines** and always **after** lung ultrasound.

  Sweet DG, et al (2019) European consensus guidelines on the management of respiratory distress syndrome – 2019 update. Neonatology 115:432–450

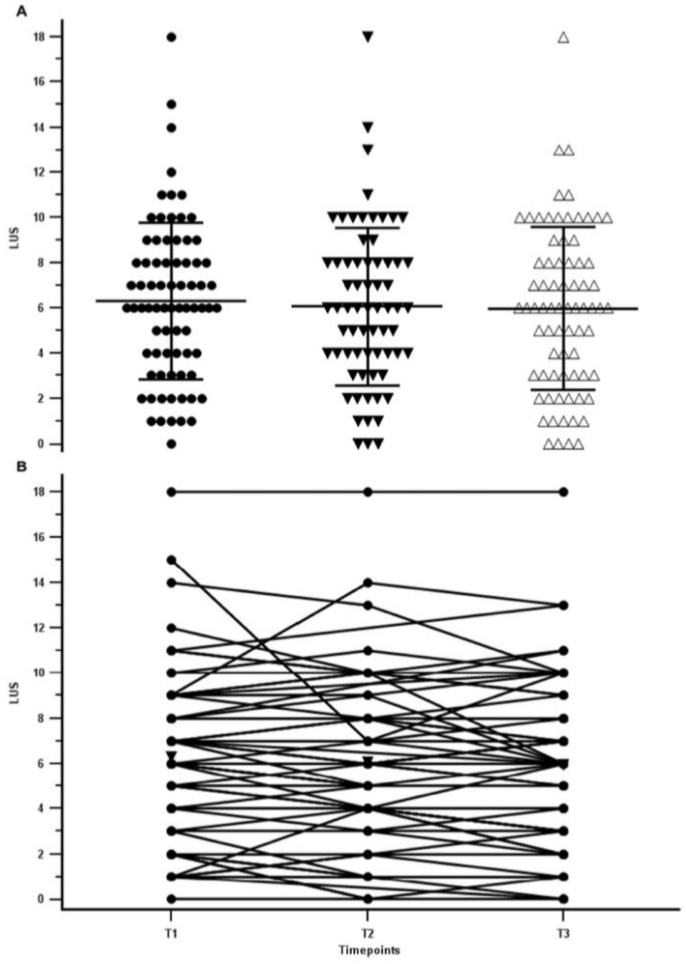
DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

- No technical problem observed : **all neonates** remained **perfectly stable** while performing lung ultrasound during transportation.
- Ultrasound exam lasted on average **2.9 (1.4) minutes**
- Duration was **significantly but slightly different** between time points (T1: 3.1 (1.7), T2: 2.7 (1.2), T3: 2.5 (1); $p < 0.001$).
- There was a **significant agreement** between the **first** respiratory diagnosis given **during transportation** and **the final one at the NICU** discharge ($\kappa = 0.84$ (95%CI: 0.68–1); $p < 0.0001$).

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

European Journal of Pediatrics

Fig. 1 LUS variation during neonatal transfer. Panels **A** and **B** represent the whole data with summary measures and the individual case variation, respectively. Horizontal lines and T-bars in panel **A** represent means and standard deviations, respectively. Connecting lines in panel **B** indicate the individual case variation. Timepoints are indicated as follows: T1: before transportation (i.e., in the "spoke" hospital), T2: during transportation, T3: after transportation (i.e., at the arrival to the NICU in "hub" hospital). LUS has been calculated by one operator (the attending neonatologist leading the transportation team) for T1 and T2 and by another (the attending or fellow neonatologist in the "hub" NICU). The two operators were blinded to each other's results. LUS is a dimensionless variable. Abbreviations: LUS, lung ultrasound score; NICU, neonatal intensive care unit



<u>LUS between the different time points</u>:

LUS did not significantly change overtime (overall $p = 0.479$) :
- T1: 6.3 (3.5),
- T2: 6.1 (3.5),
- T3: 5.8 (3.4);

The individual case variation is almost always zero,

This is confirmed after adjustment for gestational age, postnatal age, or the duration of transport ($p = 0.951$, $p = 0.424$, and 0.266, respectively).

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

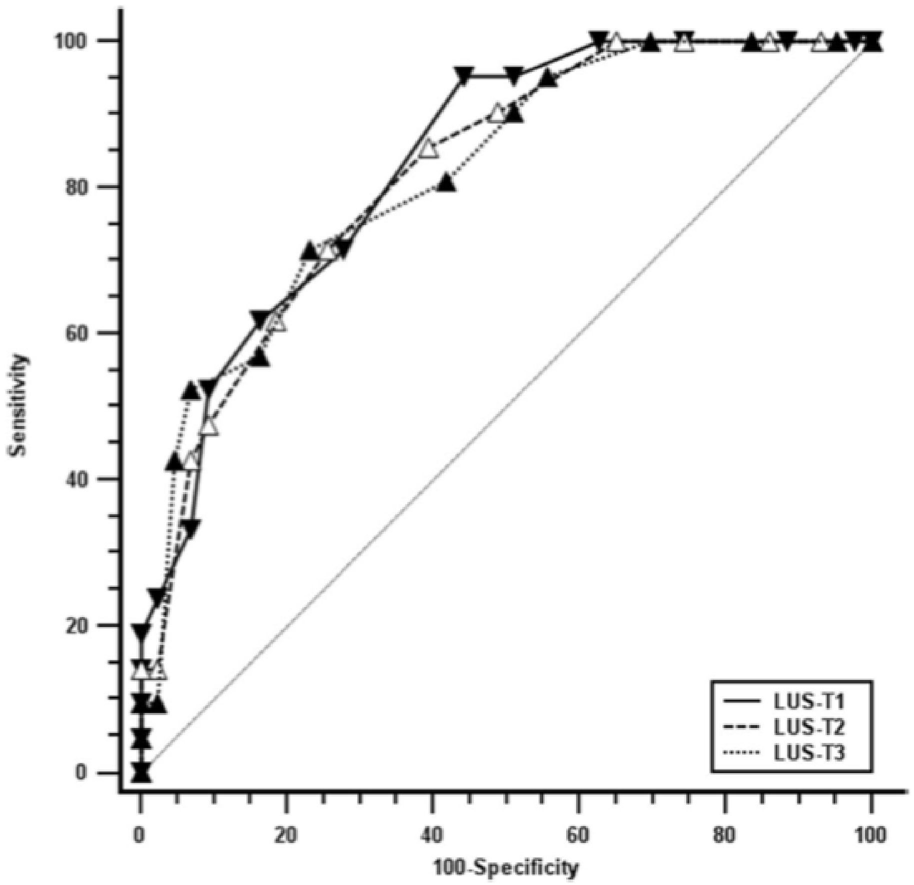


Fig. 2 Receiver operator characteristics analysis of LUS calculated during neonatal transfer to predict surfactant need. Timepoints are indicated as follows: T1 (full curve): before transportation (i.e., in the "spoke" hospital), T2 (bold hatched curve): during transportation, T3 (light hatched curve): after transportation (i.e., at the arrival to the NICU in "hub" hospital). Area under the curves is not significantly different overtime (T1 vs T2: $p=0.486$; T1 vs T3: $p=0.577$; T2 vs T3: $p=0.945$). Diagonal line represents an area under the curve of 0.5. Abbreviations: LUS, lung ultrasound score

Figure 2 shows **ROC analysis** results:
LUS calculated during or at the end of transportation reliably predicted surfactant need :
- AUC at T1: 0.833 (95%CI: 0.72–0.92);
- AUC at T2: 0.82 (95%CI: 0.70–0.91);
- AUC at T3: 0.82 (95%CI: 0.70–0.90);

p always < 0.0001)
and there was no difference in AUC overtime.

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

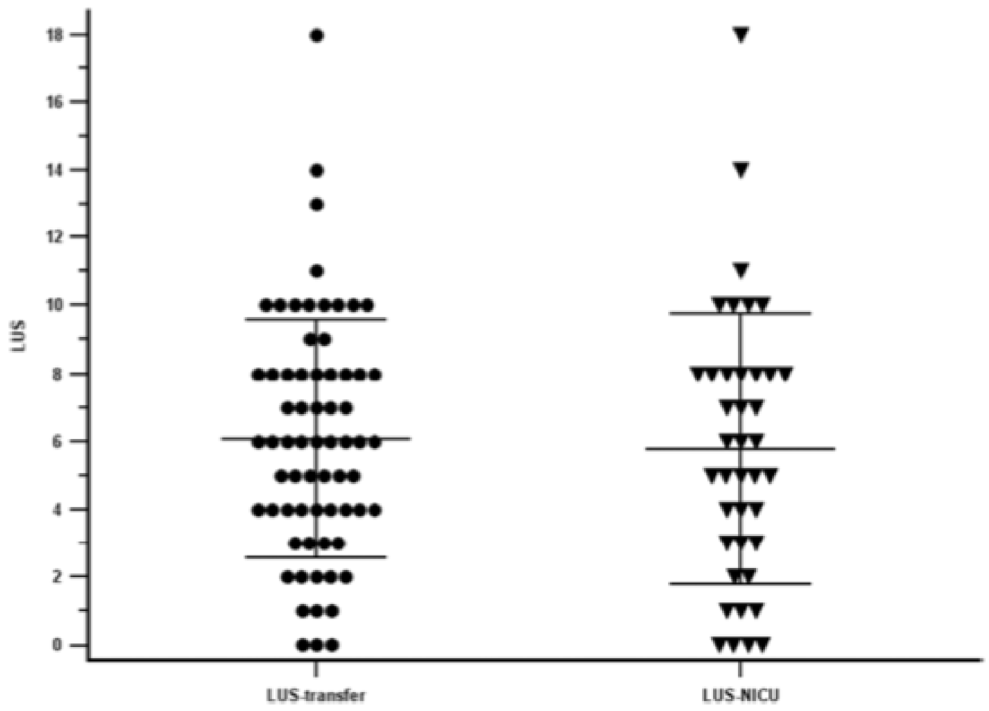


Fig. 3 LUS calculated during patient transfer (dots) and upon arrival in the NICU at the tertiary referral center (triangles). Horizontal bars represent mean and standard deviation. The two LUS have been calculated by different operators blinded to each other's results (see text for more details). LUS is a dimensionless variable. Abbreviations: LUS, lung ultrasound score; NICU, neonatal intensive care unit

Figure 3: **very high agreement** between LUS calculated during transportation and that calculated in the NICU (ICC = 0.912 (95%CI: 0.83–0.95); $p < 0.001$;
LUS calculated during transportation (6.1 (3.5)) and upon NICU admission (5.8 (2.6)) are **globally similar** (p = 0.635).

This was confirmed performing a subgroup analysis per type of respiratory disorder (online supplement).

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

There is a **significant positive correlation** between them ($r = 0.905$, $p < 0.001$; standardized $B = 0.788$ (95%CI: 0.62–0.97), $p < 0.001$) and Bland–Altman analysis shows that the disagreement between the two LUS is often **small** and always **constant** over different LUS values.

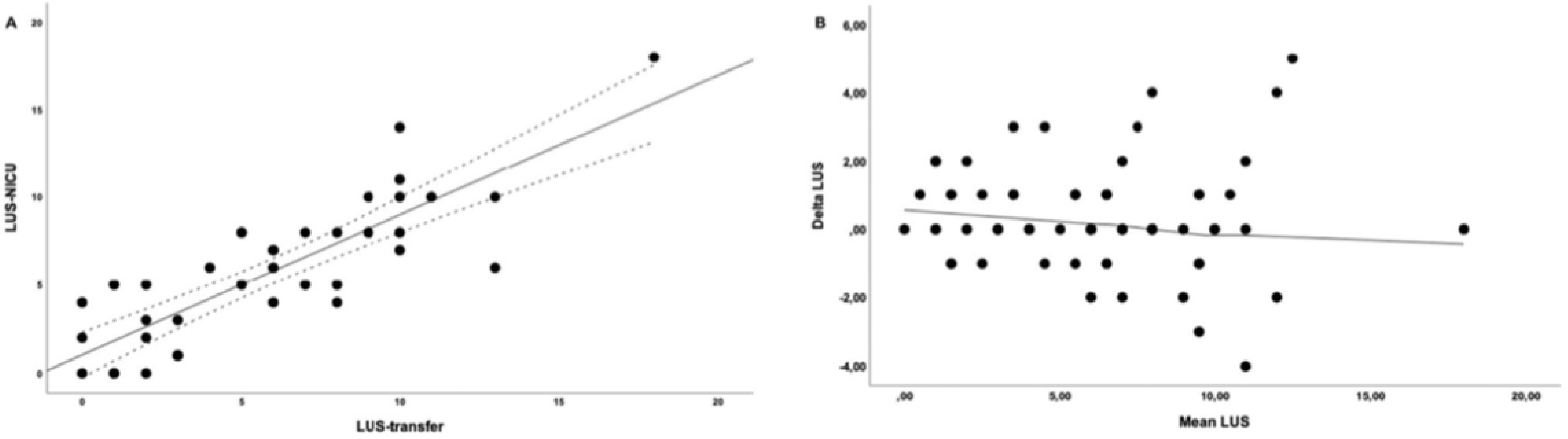


Fig. 4 Relationship between LUS calculated during transportation and upon NICU admission in the tertiary referral center. Panels **A** and **B** show the correlation and the Bland–Altman graph, respectively. In panel **A**, black and dotted lines represent correlation lines and 95% confidence interval, respectively. In panel **B**, the *Y* and *X* axes represent the difference (delta) between LUS at T1 and T3 and their mean, respectively; the line represents the best fitting data curve plotted with local regression (smoother) method. The two LUS have been calculated by different operators blinded to each other's results (see text for more details). LUS is a dimensionless variable. Abbreviations: LUS, lung ultrasound score; NICU, neonatal intensive care unit

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

LUS during transportation was also **significantly correlated** with :

- OI (r = 0.321, p = 0.026; standardized B = 0.397 (95%CI: 0.03–0.76), p = 0.048),
- PtcO2/FiO2 ratio (r = – 0.465, p < 0.001; standardized B = – 0.39 (95%CI: – 22 to – 6), p < 0.001),
- A-a gradient (r = 0.632, p < 0.001; standardized B=0.6 (95%CI: 9–20), p<0.001),
- TRIPS-II score (r = 0.302, p = 0.008; standardized B = 0.568 (95%CI: 0.04–1.1), p = 0.037).

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

Limitations

- Studied population is **relatively small**, but largest study on this matter so far;
- **Further studies are needed :**

  - to generalize these data to infants with less common causes of respiratory failure

  - to consider possible confounders that might have gone unnoticed;
- **Appropriate training should be provided before** applying these results to teams with less ultrasound proficiency (neonatal lung ultra-sound training is short and easy as demonstrated even in developing countries).

DR du nouveau-né : **LUS score** par échographie embarquée au cours du transport

Conclusion:

- The calculation of semi-quantitative LUS during transportation of outborn neonates with respiratory failure **is suitable** and **not influenced by the transportation** itself.
- LUS calculated during the transfer has **a high agreement with that calculated in the NICU setting**
- LUS correlates with **patients' oxygenation** and **severity** of respiratory failure.
- LUS can be used to evaluate **lung aeration** and contribute to **patient monitoring and stabilization.**

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Intubation **orale** : intérêt de **l'oxygénation à haut débit** ?

Hodgson KA et al. Nasal high-flow therapy during neonatal endotracheal intubation. N Engl J Med 2022; 386: 1627-1637

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Nasal High-Flow Therapy during Neonatal Endotracheal Intubation

Kate A. Hodgson, M.B., B.S., Louise S. Owen, M.D.,
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Intubation **orale** : intérêt de **l’oxygénation à haut débit** ?

Hodgson KA et al. Nasal high-flow therapy during neonatal endotracheal intubation. N Engl J Med 2022; 386: 1627-1637

- Neonatal endotracheal intubation often involves **more than one attempt, and oxygen desaturation** is common.
- It is unclear **whether nasal high-flow therapy**, which extends the time to desaturation during elective intubation in children and adults receiving general anesthesia, **can improve** the likelihood of successful neonatal intubation on the first attempt.

Intubation **orale** : intérêt de **l'oxygénation à haut débit** ?

Hodgson KA et al. Nasal high-flow therapy during neonatal endotracheal intubation. N Engl J Med 2022; 386: 1627-1637

- Randomized, controlled trial to compare **nasal high-flow therapy** with **standard care** (no nasal high-flow therapy or supplemental oxygen) in neonates undergoing **oral** endotracheal intubation at 2 Australian tertiary neonatal intensive care units.

- **Randomization** of intubations to the high-flow group or the standard-care group was **stratified according to**: trial center, use of premedication for intubation (yes or no), postmenstrual age of the infant (≤28 or >28 weeks), experience level of the operator according to the number of previous intubations performed .

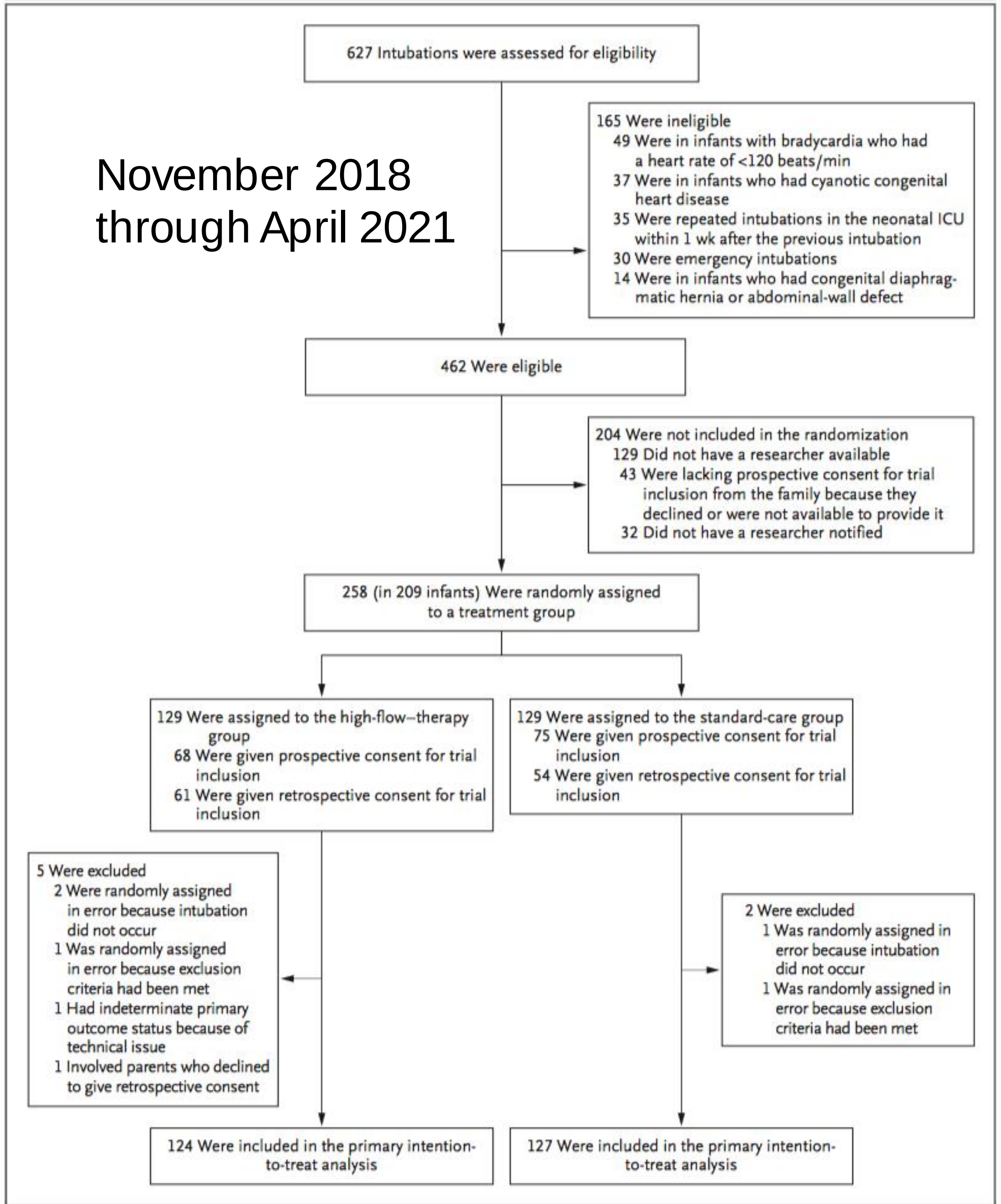

Figure 1. Screening, Randomization, and Analysis.
Intubations were randomly assigned to the high-flow group, in which nasal high-flow therapy was used, or the standard-care group, in which the intubation was performed according to standard clinical practice. ICU denotes intensive care unit.

Intubation **orale** : intérêt de **l'oxygénation à haut débit** ?

Primary intention-to-treat analysis included outcomes of **251 intubations in 202 infants**

- 124 intubations were assigned to the high-flow group,

- 127 to the **standard-care group**.

Table 1. Demographic and Clinical Characteristics of the Infants Undergoing Endotracheal Intubation.*

Characteristic	High-Flow Group (N=124)	Standard-Care Group (N=127)
Median gestational age (IQR) — wk	27.0 (25.0–31.0)	27.0 (25.1–28.9)
Median birth weight (IQR) — g	893 (684–1492)	841 (670–1162)
Delivery by cesarean section — no. (%)	96 (77.4)	96 (75.6)
Multiple birth — no. (%)	41 (33.1)	30 (23.6)
Male sex — no. (%)	71 (57.3)	70 (55.1)
Median Apgar score at 5 min (IQR)	8 (6–9)	7.5 (6–9)
Median age at intubation (IQR) — hr	7.0 (0.0–86.0)	13.0 (0.0–292.0)
Median postmenstrual age at intubation (IQR) — wk	27.9 (26.3–33.4)	27.9 (26.3–31.0)
Median weight at intubation (IQR) — g	976 (712–1835)	907 (713–1320)
Location of intubation — no. (%)		
Delivery room	31 (25.0)	34 (26.8)
Neonatal intensive care unit	93 (75.0)	93 (73.2)
Respiratory support before procedure — no. (%)		
Nasal high-flow therapy	2 (1.6)	5 (3.9)
Continuous positive airway pressure	113 (91.1)	113 (89.0)
Intermittent positive-pressure ventilation	4 (3.2)	6 (4.7)
Low-flow oxygen	1 (0.8)	1 (0.8)
None	4 (3.2)	2 (1.6)
Fraction of inspired oxygen before randomization	0.62±0.28	0.62±0.29
Peripheral oxygen saturation immediately before procedure — %	92.6±12.7	92.3±11.9
Primary indication for intubation — no. (%)		
Hypoxia	73 (58.9)	74 (58.3)
Hypercarbia	3 (2.4)	4 (3.1)
Apnea	26 (21.0)	25 (19.7)
Resuscitation	3 (2.4)	7 (5.5)
Other	19 (15.3)	17 (13.4)
Operator experience level — no. (%)		
Inexperienced: <20 previous intubations	61 (49.2)	51 (40.2)
Experienced: ≥20 previous intubations	63 (50.8)	76 (59.8)

* Plus–minus values are means ±SD. Intubations were randomly assigned to the high-flow group, in which nasal high-flow therapy was used, or the standard-care group, in which the intubation was performed according to standard clinical practice. An infant could undergo more than one intubation during the trial period and be counted more than once in the total number of intubations. IQR denotes interquartile range.

RESULTS

The infants had a **median :**

- **postmenstrual age of 27.9 weeks**
- **weight of 920 g**

at the time of intubation.

(More often in NICU thna in delivery room).

RESULTS (2)

Table 2. Primary Outcome and Subgroup Analyses.

Outcome	High-Flow Group (N=124)	Standard-Care Group (N=127)	Adjusted Risk Difference (95% CI)*
Primary outcome and component analyses			
Primary outcome: successful intubation on first attempt without physiological instability — no. (%)	62 (50.0)	40 (31.5)	17.6 (6.0 to 29.2)†
Successful intubation on first attempt — no. (%)‡	85 (68.5)	69 (54.3)	15.8 (4.3 to 27.3)†
No physiological instability — no. (%)‡	79 (63.7)	64 (50.4)	13.4 (1.3 to 25.5)§
No desaturation¶	89 (71.8)	77 (60.6)	13.1 (4.1 to 22.1)§
No bradycardia‖	113 (91.1)	111 (87.4)	2.4 (−2.1 to 6.9)§
Primary outcome according to prespecified subgroup analyses			
Postmenstrual age — no./total no. (%)			
≤28 wk	34/64 (53.1)	23/66 (34.8)	16.8 (0.3 to 33.2)
>28 wk	28/60 (46.7)	17/61 (27.9)	20.3 (5.8 to 35.7)
Premedication use — no./total no. (%)			
Yes	50/92 (54.3)	30/93 (32.3)	20.1 (7.1 to 34.2)
No	12/32 (37.5)	10/34 (29.4)	13.5 (−7.2 to 34.1)
Operator experience level — no./total no. (%)			
Inexperienced: <20 previous intubations	30/61 (49.2)	8/51 (15.7)	33.3 (18.3 to 48.2)
Experienced: ≥20 previous intubations	32/63 (50.8)	32/76 (42.1)	7.5 (−9.4 to 24.3)

Desaturation occurred during 34% of the intubations.

A **successful** intubation on the **first attempt** <u>without</u> physiological instability achieved:

- in 62/124 intubations (**50.0%**) in the **high-flow** group,
- and in 40/127 intubations (**31.5%**) in the **standard-care group.**

(adjusted risk difference, 17.6 percentage points; 95% confidence interval [CI], 6.0 to 29.2), for a number needed to treat of 6 (95% CI, 4 to 17) for 1 infant to benefit.

RESULTS (3)

Table 3. Secondary Outcomes and Adverse Events.*

Outcome	High-Flow Group (N=124)	Standard-Care Group (N=127)	Difference (95% CI)
Peripheral oxygen saturation†			
Intubations assessed — no.	120	126	
Median value of outcome (IQR) — %	94 (83–98)	89 (79–95)	5.0 (1.1 to 8.9)
Heart rate†			
Intubations assessed — no.	120	126	
Mean value of outcome — beats/min	166±22	161±24	5.4 (−0.5 to 11.2)
Duration of peripheral oxygen saturation of >97%†‡			
Intubations assessed — no.	119	122	
Median value of outcome (IQR) — sec	2.0 (0.0–20.0)	0 (0.0–16.0)	2.0 (−2.1 to 6.1)
Number of intubation attempts per procedure			
Intubations assessed — no.	124	127	
Median value of outcome (IQR) — no.	1.0 (1.0 to 2.0)	1.0 (1.0 to 2.0)	0.0 (−0.2 to 0.2)
Duration of first intubation attempt§			
Intubations assessed — no.	124	127	
Median value of outcome (IQR) — sec	50.5 (33.5–69.0)	46.0 (33.0–66.0)	5.0 (−4.5 to 14.5)
Total duration of all intubation attempts¶			
Intubations assessed — no.	123	127	
Median value of outcome (IQR) — sec	58.0 (36.0–95.0)	68.0 (35.0–125.0)	−10.0 (−27.2 to 7.2)
Esophageal intubation — no. (%)	18 (14.5)	20 (15.7)	−1.2 (−10.1 to 7.6)‖
Time to apply nasal prongs			
Intubations assessed — no.	123	NA	
Mean value of outcome — sec	9.9±5.2	NA	
Intubations in which desaturation occurred — no. (%)**	35 (28.2)	50 (39.4)	
Time to desaturation†			
Intubations assessed — no.	34	50	
Mean value of outcome — sec	44.3±19.5	35.5±19.5	8.8 (0.2 to 17.4)
Duration of desaturation†			
Intubations assessed — no.	34	47	
Mean value of outcome — sec	65.0±35.1	63.6±38.9	1.5 (−15.3 to 18.2)
Intubations in which bradycardia occurred — no. (%)	11 (8.9)	16 (12.6)	
Time to bradycardia†			
Intubations assessed — no.	11	15**	
Mean value of outcome — sec	39.4±22.9	39.9±19.9	−0.5 (−17.9 to 16.9)
Duration of bradycardia — sec†			
Intubations assessed — no.	11	15**	
Mean value of outcome — sec	26.6±20.7	31.3±23.3	−4.6 (−22.9 to 13.6)
Serious adverse events — no. of events (%)			
CPR or epinephrine administration within 1 hr after intubation attempt	0	2 (1.6)	

Table 3. (Continued.)

Outcome	High-Flow Group (N=124)	Standard-Care Group (N=127)	Difference (95% CI)
Pneumothorax diagnosed within 72 hours after randomization			
Any case	2 (1.6)	6 (4.7)	
Cases involving drainage with needle thoracocentesis or intercostal catheter	2 (1.6)	5 (3.9)	
Death within 72 hr after randomization	1 (0.8)	3 (2.4)	

- Consistent with the findings in previous studies, the **median duration** of the **first** intubation **attempt** was **more than 45 seconds** in **both treatment groups**, which is **<u>longer</u> than the 30-second time limit recommended in guidelines** (Wozniak M, et al. The 30-second rule: the effects of prolonged intubation attempts on oxygen saturation and heart rate in preterm in- fants in the delivery room. Minerva Pedi- atr 2018;70:127-32.)
- **Inexperienced clinicians** are **less** likely to perform neonatal intubation successfully on the first attempt, and their attempts **take longer**.

Intubation **orale** : intérêt de **l'oxygénation à haut débit** ?

Hodgson KA et al. Nasal high-flow therapy during neonatal endotracheal intubation. N Engl J Med 2022; 386: 1627-1637

- **CONCLUSIONS**

Among infants undergoing endotracheal intubation at 2 Australian tertiary neonatal intensive care units, **nasal high-flow therapy during the procedure improved the likelihood** of successful intubation on the **first attempt** without physiological instability in the infant.

The results of **subgroup analyses** according to the experience level of the operator suggested **a greater benefit** of **high-flow therapy** in intubations **performed by inexperienced operators.**

PLAN

- Quelle est **la meilleure technique** de **compressions thoraciques** à faire pratiquer par les témoins lors de l'appel en cas d'arrêt cardiaque extra-hospitalier (OHCA) ?
- Intérêt de la mesure semi-quantitative du **score LUS par échographie pulmonaire avant, au cours du transfert et à l'arrivée** chez le nouveau-né avec DR ?
- Intubation du nouveau-né (voie **orale**) : intérêt de **l'oxygénation à haut débit** ?
- **Faut-il médicaliser** le transfert en cas de **suspicion d'inhalation de corps étranger** chez le nourrisson et l'enfant ?
- Intérêt **discriminant** pour le diagnostic du dosage des **lactates en capillaire** en préhospitalier ?
- Bronchiolites **aiguë grave** : **recommandations du GFRUP** (juillet 2002).

Médicaliser le transfert en cas de suspicion d’inhalation de corps étranger ?

JID: ARCPED [m5G;August 30, 2022;5:06]

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Research paper

Evaluation of the relevance of interhospital transfer medicalization in the suspicion of foreign body aspiration in children

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Médicaliser le transfert en cas de suspicion d’inhalation de corps étranger ?

Table 1
Demographics and origin of patients.

	Total effective N=174	Proportion
Gender		
Female	101	58%
Male	73	42%
Mode of transport		
EMS transport team	64	37%
EMS paramedics	17	10%
Ambulance	24	14%
Family	39	22%
Unknown	30	17%
Mode of consultation		
Inter-hospital transfer	96	55%
Spontaneous presentation	66	38%
Unknown	12	7%

EMS: emergency medical service.

Retrospective, single-center study Timone Children’s Hospital,
From January 1, 2016, to December 31, 2017

Relevance of medical transport for children suspected of **foreign body aspiration** (FBA)

Total of 178 children, 174 incuded

96 children were transferred from another hospital to the pediatric ear−nose−throat (ENT) reference center in Marseille,
63 were **asymptomatic.**

Anziani-Vente A, Moreddu E and Tsapis M. Evaluation of the relevance of interhospital transfer medicalization in the suspicion of foreign body aspiration in children, Archives de pediatrie (2022),

Médicaliser le transfert en cas de suspicion d'inhalation de corps étranger ?

A. Anziani-Vente, E. Moreddu and M. Tsapis

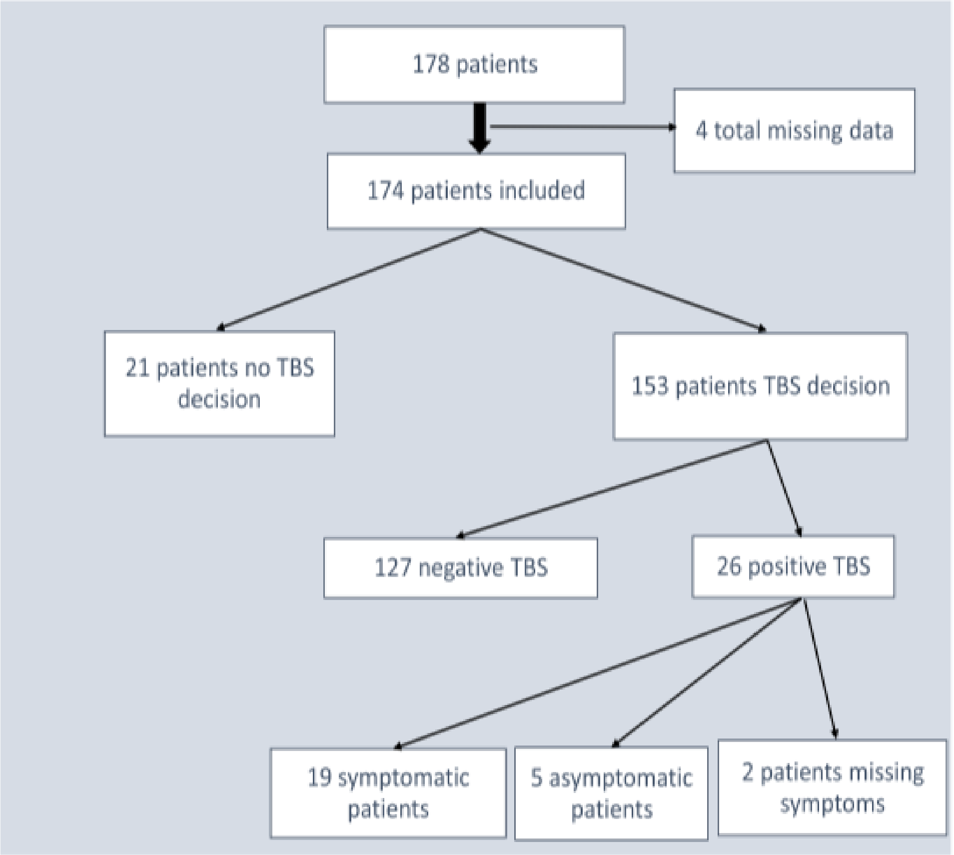

Fig. 1. General flow chart of the study cohort. TBS: tracheobronchoscopy.

Table 2
Clinical features.

		Total effective N = 174	Proportion
Witnessed FB being put in the mouth		87	60%
Nature of suspected FB			
	Organic	73	42%
	Inorganic	63	36%
	Unknown	38	22%
Witnessed aspiration event			
	Cough	125	72%
	Choking	69	40%
	Cyanosis	50	29%
Symptoms			
	Cough	27	17%
	Dysphonia	1	0.60%
	Hypersialorrhea	8	5%
	Vomiting	1	0.60%
	Chest pain	3	2%
	Dyspnea	16	10%
Physical signs			
	Tachypnea	11	7%
	Chest retraction	10	6%
	Cyanosis	1	0.60%
Chest sounds			
	Normal	133	76.5%
	Unilateral reduced air entry	16	9.2%
	Wheezing/crackles	11	6.3%
	Unknown	14	8%
Chest X-ray			
	Normal	138	80%
	Foreign body	4	2%
	Collapse	2	1%
	Trapping	13	7%
	Opacity	5	3%
	Unknown	12	7

FB: foreign body.

Médicaliser le transfert en cas de suspicion d'inhalation de corps étranger ?

A. Anziani-Vente, E. Moreddu and M. Tsapis

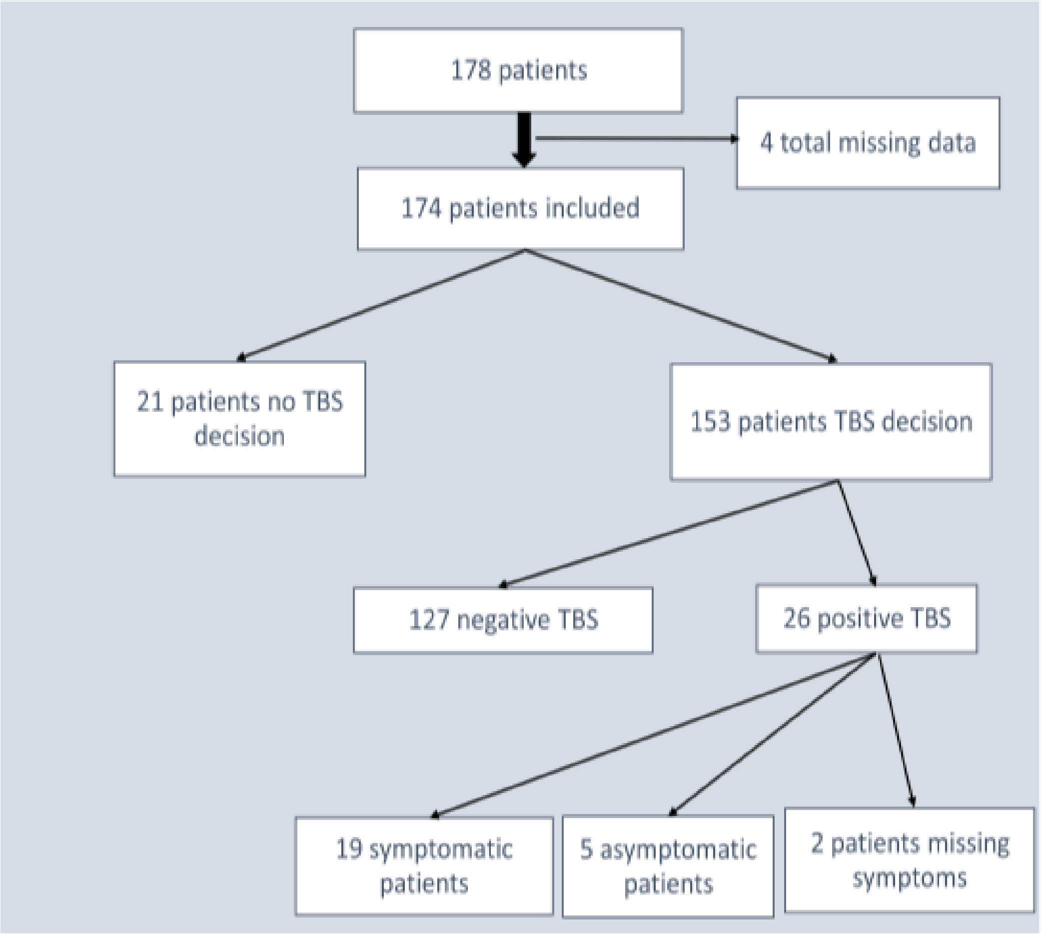

Fig. 1. General flow chart of the study cohort. TBS: tracheobronchoscopy.

Médicaliser le transfert en cas de suspicion d’inhalation de corps étranger ?

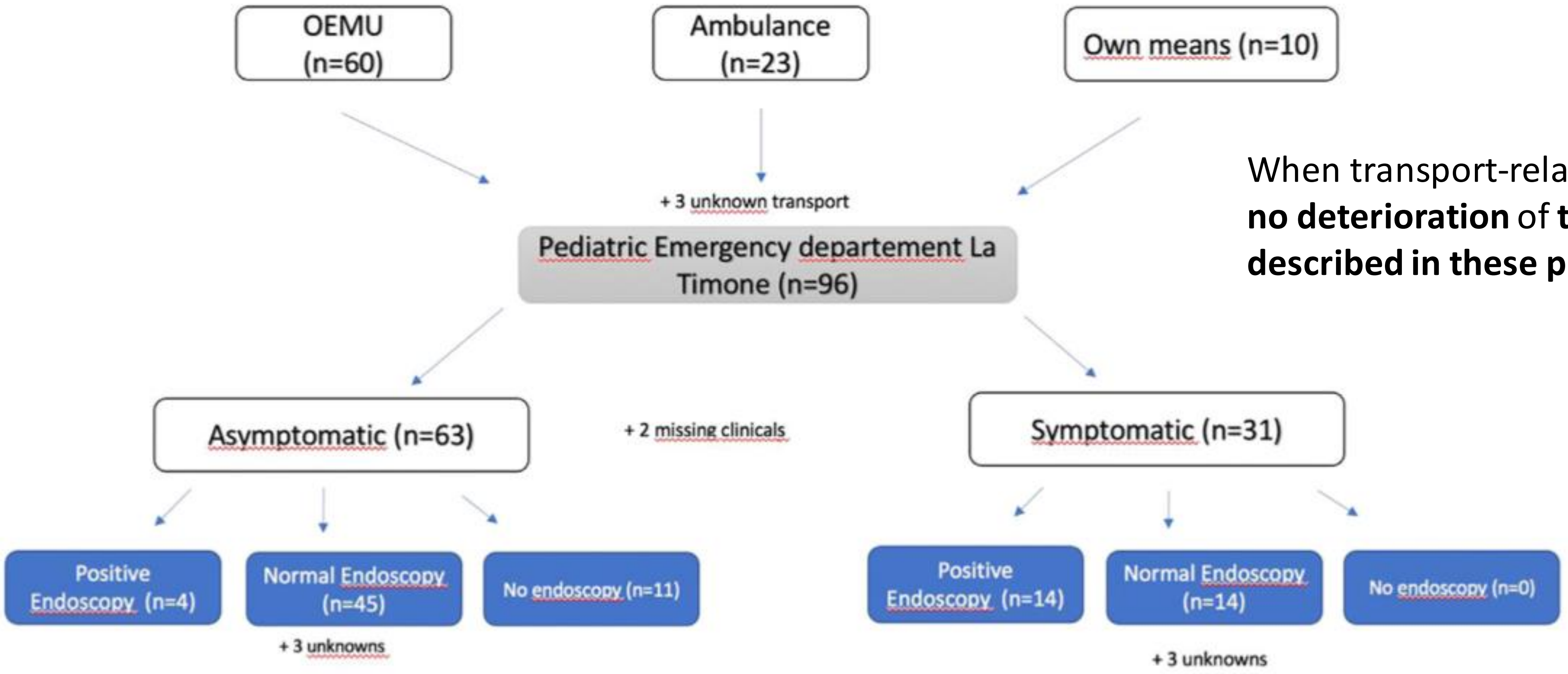

Fig. 2. Flow chart of interhospital transfers. OEMU: emergency medical services.

When transport-related data were available, **no deterioration** of **the clinical condition was described in these patients during transport.**

Médicaliser le transfert en cas de suspicion d'inhalation de corps étranger ?

Table 3
Tracheobronchoscopy results.

	Total effective N = 174	Proportion (%)
Tracheobronchoscopy		
Yes	153	88
No	21	12
Results		
Normal	122	80
FB in the right mainstem bronchus	14	9
FB in the left mainstem bronchus	8	5
FB in another location	4	2.6
Unknown	5	3.4

Table 4
General comparison of tracheobronchoscopy (TBS) results in symptomatic and asymptomatic children.

		Symptomatic	Asymptomatic
Results	Negative TBS result	52.5% Effective: 21	94.7% Effective: 90
	Positive TBS result	47.50% Effective: 19	5.30% Effective: 5

Table 5
Association between clinical, radiological signsj and foreign body presence.

Variable\Test	Mann Whitney
Dyspnea	< 0,.0001
Cough	< 0,.0001
Dysphonia	07.686
Hypersialorrhea	0,.839
Vomiting	0₇;686
Chest pain	0,.012
Polypnea	< 0,.0001
Saturation	0,.027
Chest retraction	< 0,.0001
Cyanosis	07.686
Auscultation	< 0,.0001
Chest Xx-ray	< 0,.0001

Médicaliser le transfert en cas de suspicion d’inhalation de corps étranger ?

Conclusion:

In our retrospective study of the medical care for suspected FBA in children in the West PACA region, **less than 10%** of children who were **asymptomatic** but **suspected** of having FBA presented with a foreign body on endoscopy, which questions **the relevance of physician presence** during transport of these patients.

PLAN

- Quelle est **la meilleure technique** de **compressions thoraciques** à faire pratiquer par les témoins lors de l'appel en cas d'arrêt cardiaque extra-hospitalier (OHCA) ?
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Lactates dosés en capillaire en préhospitalier

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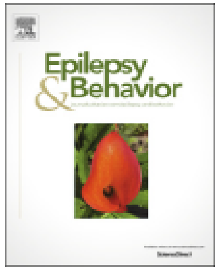

Prehospital capillary lactate in children differentiates epileptic seizure from febrile seizure, syncope, and psychogenic nonepileptic seizure

2022

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Available online 17 January 2022

Lactates dosés en capillaire en préhospitalier (2)

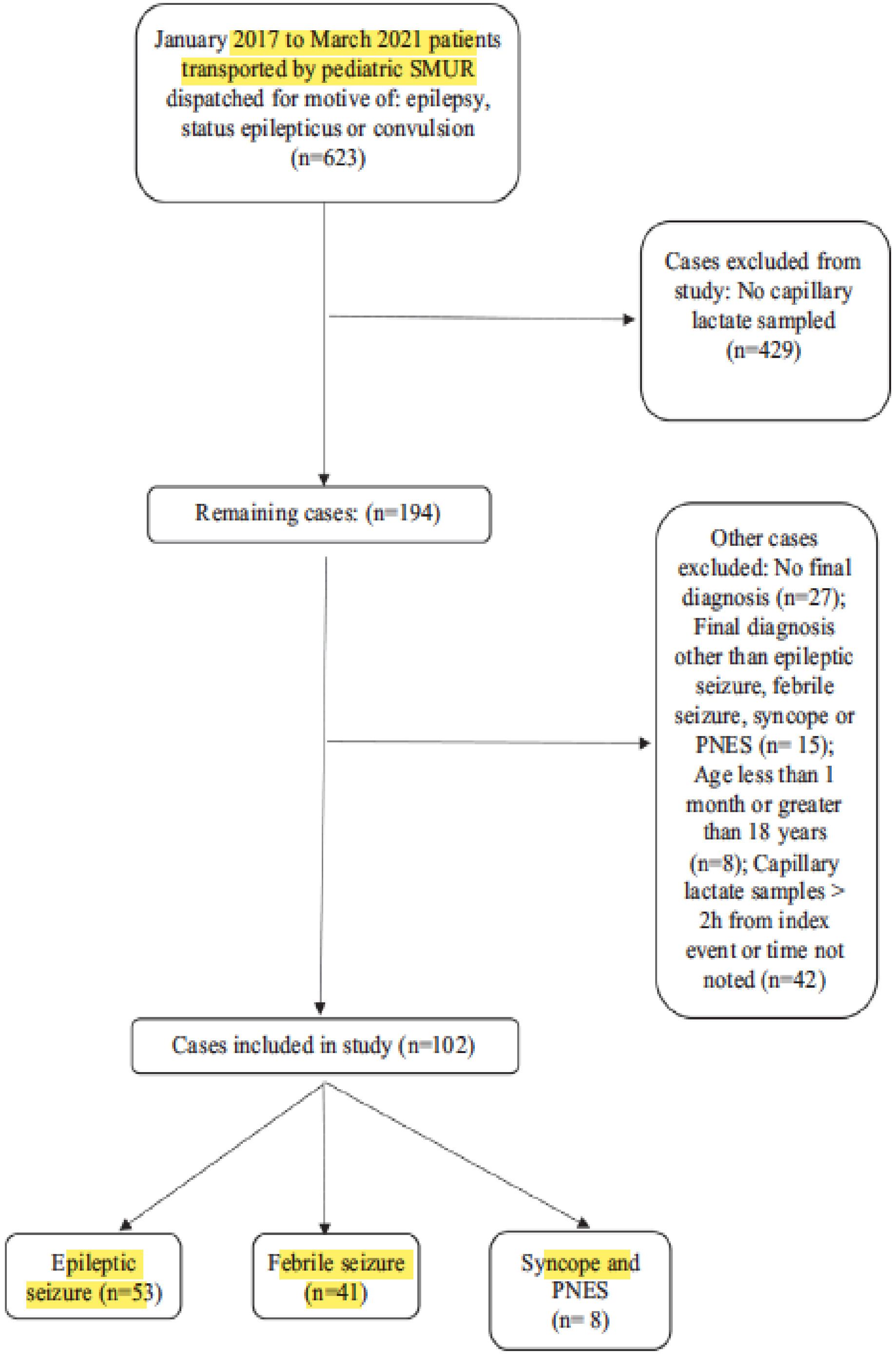
The aim of the study was to **examine prehospital capillary lactate** in children as a **diagnostic biomarke**r to differentiate **epileptic seizures** from febrile seizures, syncope, and psychogenic nonepileptic seizures (PNES).

- **Primary objective** was to study the association between the value of capillary lactate measured by a mobile pediatric intensive care unit (MPICU) after a paroxysmal event **to differentiate** epileptic seizure from febrile seizure and nonepileptic events.
- **Secondary objective** was to **assess the other factors** associated with prehospital capillary lactate concentrations

All patients **aged 1 month and <18 years** transported by the MPICU of Robert-Debré University Hospital (Paris, France) for the initial purpose of epilepsy, convulsion, status epilepticus and who had capillary lactate concentrations measured <2 h from the initial event were recruited.

Methods : Capillary lactate concentrations taken in a **pediatric prehospital setting** within 2 h of the paroxysmal event were compared retrospectively between patients with epileptic seizure, febrile seizure, syncope, and PNES, based on the final diagnosis from the hospitalization report

Lactates dosés en capillaire en préhospitalier FLOW-CHART



Lactates dosés en capillaire en préhospitalier (3)

Results: 102 patients were included,

53 (52%) with epileptic seizures, 41 (40%) with febrile seizures, 8 (8%) with syncope or PNES.

- Capillary lactate in patients with a **final diagnosis** of epileptic seizure was **significantly increased** in comparison to the concentrations in patients with febrile seizure ($p < 0.0007$) and in comparison to the concentrations in patients with syncope or PNES ($p < 0.0204$).
- The **area under the ROC - curve** was 0.71 (95% CI 0.61–0.80).
- For a cutoff concentration of prehospital capillary lactate **>3.9 mmol/l** (Youden index), the **sensitivity** was 49% and the **specificity** 92%.

Lactates dosés en capillaire en préhospitalier (4)

Results: 102 patients were included,
53 (52%) with epileptic seizures,
41 (40%) with febrile seizures,
8 (8%) with syncope or PNES.

- Capillary lactate in patients with a **final diagnosis** of **epileptic seizure** was **significantly increased**
- in comparison to the concentrations in patients with **febrile** seizure ($p < 0.0007$)
- and in comparison to the concentrations in patients with syncope or PNES ($p < 0.0204$).

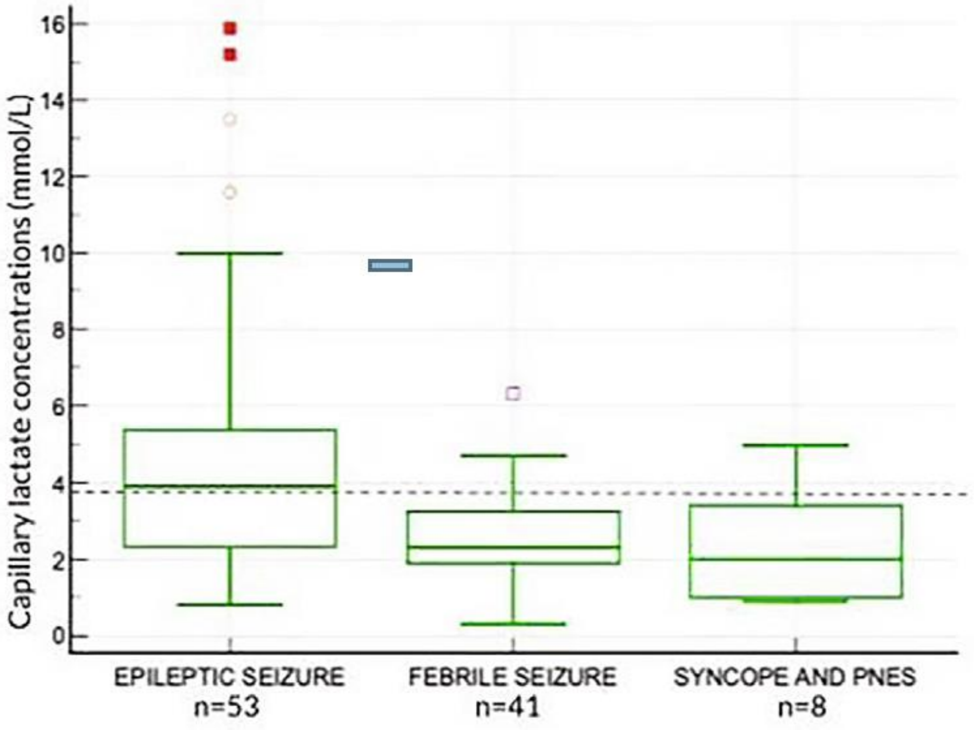


Fig. 2. Distribution of capillary lactate concentrations in the patient groups. Dotted line indicates 3.9 mmol/L capillary lactate concentration.

Lactates dosés en capillaire en préhospitalier (5)

Conclusion:

- Prehospital capillary lactate concentrations are a **useful tool** for **differentiating the nature of a paroxysmal event** in children.
- Prehospital **capillary lactate concentrations > 3.9 mmol/L** seemed to be a **fair biomarker** for **epileptic seizure** with an AUC of 0.71 in the ROC analysis.

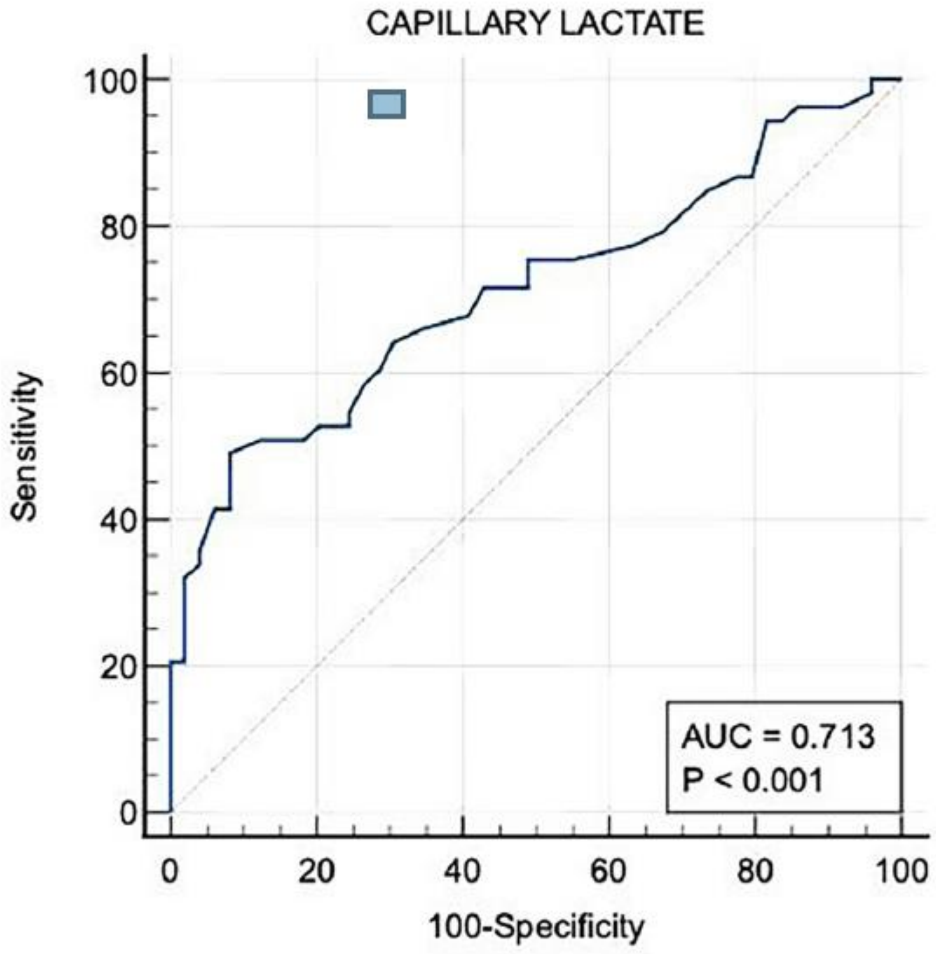


Fig. 3. ROC curve analysis of capillary lactate as a diagnostic marker for epileptic seizure.

PLAN

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Bronchiolite

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Premier champ : Critères d'admission en soins critiques
R1.1 Quels sont les critères d'admission en soins critiques

R1.1.1 Les experts suggèrent de considérer **les facteurs de gravité** suivants pour décider d'une **hospitalisation en soins critiques** :

- Présence d'apnées
- Hypoxémie avec SpO2 < 92% sous oxygénothérapie standard
- Augmentation importante du travail respiratoire clinique ou épuisement respiratoire
- Acidose hypercapnique avec pCO2 veineuse > 60 mmHg et/ou pH < 7.30
- Altération de la vigilance et/ou hypotonie

Pour les patients déjà hospitalisés, l'évaluation dynamique de ces paramètres est importante à prendre en compte.

AVIS D'EXPERT, ACCORD FORT

Quatrième champ : support ventilatoire

R4.6 Quel type de ventilation doit être privilégié pour le transport des patients ?

R4.6 - Il faut probablement utiliser un support ventilatoire **non-invasif** : pression positive continue (CPAP) ou haut débit nasal lors du transport des patients.

En cas d'utilisation du haut débit nasal, un système de **chauffage & humidification** doit être associé.

Les experts **ne recommandent pas** d'intubation systématique pour le transport.

GRADE 2+, ACCORD FORT

Suivi à long terme des nouveau-nés transférés

Follow up at 3 years old of 2780 children

European Journal of Pediatrics
https://doi.org/10.1007/s00431-022-04450-7

ORIGINAL ARTICLE

Check for updates

Long-term outcomes of children with neonatal transfer: the Japan Environment and Children's Study

Katsuya Hirata[1] · Kimiko Ueda[2] · Kazuko Wada[1] · Satoyo Ikehara[3] · Kanami Tanigawa[3] · Tadashi Kimura[4] · Keiichi Ozono[5] · Hiroyasu Iso[3] · the Japan Environment and Children's Study Group

Received: 21 October 2021 / Revised: 9 March 2022 / Accepted: 16 March 2022

Suivi à long terme des nouveau-nés transférés (2)

Table 1 Socioeconomic background characteristics in the full, term, and preterm cohorts with or without neonatal transfer

	Full cohort (all GAs)		Term cohort (GA ≥ 37 weeks)		Preterm cohort (GA < 37 weeks)	
	With neonatal transfer ($n = 2780$)	Without neonatal transfer ($n = 62{,}930$)	With neonatal transfer ($n = 1799$)	Without neonatal transfer ($n = 61{,}259$)	With neonatal transfer ($n = 981$)	Without neonatal transfer ($n = 1671$)
Maternal age*	32.2 (5.3)	31.4 (4.9)	32.1 (5.4)	31.4 (4.9)	32.4 (5.1)	31.8 (5.1)
Marital status: married						
Yes	2587 (93.1)	58,028 (92.2)	1679 (93.3)	56,494 (92.2)	908 (92.6)	1534 (91.8)
No	99 (3.6)	2595 (4.1)	55 (3.1)	2525 (4.1)	44 (4.5)	70 (4.2)
Missing data	94 (3.4)	2307 (3.7)	65 (3.6)	2240 (3.7)	29 (3.0)	67 (4.0)
Mother's educational background						
Non-tertiary education	915 (32.9)	21,350 (33.9)	569 (31.6)	20,748 (33.9)	346 (35.3)	602 (36.0)
Tertiary education	1805 (64.9)	41,022 (65.2)	1216 (67.6)	39,975 (65.3)	589 (60.0)	1047 (62.7)
Missing data	60 (2.2)	558 (0.9)	14 (0.8)	536 (0.9)	46 (4.7)	22 (1.3)
Mother's working status						
Working	1690 (60.8)	39,318 (62.5)	1094 (60.8)	38,268 (62.5)	596 (60.8)	1050 (62.8)
Student	13 (0.5)	344 (0.5)	9 (0.5)	336 (0.5)	4 (0.4)	8 (0.5)
Not working	929 (33.4)	19,542 (31.1)	600 (33.4)	19,047 (31.1)	329 (33.5)	495 (29.6)
Missing data	148 (5.3)	3726 (5.9)	96 (5.3)	3608 (5.9)	52 (5.3)	118 (7.1)
Household income						
< 4 million Japanese yen	965 (34.7)	22,957 (36.5)	601 (33.4)	22,313 (36.4)	364 (37.1)	644 (38.5)
≥ 4 and < 8 million Japanese yen	1282 (46.1)	29,167 (46.3)	870 (48.4)	28,428 (46.4)	412 (42.0)	739 (44.2)
≥ 8 million Japanese yen	298 (10.7)	6450 (10.2)	201 (11.2)	6296 (10.3)	97 (9.9)	154 (9.2)
Missing data	235 (8.5)	4356 (6.9)	127 (7.1)	4222 (6.9)	108 (11.0)	134 (8.0)
Mother's drinking during pregnancy						
Yes	62 (2.2)	1688 (2.7)	42 (2.3)	1651 (2.7)	20 (2.0)	37 (2.2)
No	2649 (95.3)	60,571 (96.3)	1736 (96.5)	58,960 (96.2)	913 (93.1)	1611 (96.4)
Missing data	69 (2.5)	671 (1.1)	21 (1.2)	648 (1.1)	48 (4.9)	23 (1.4)
Mother's smoking during pregnancy						
Yes	109 (3.9)	2831 (4.5)	73 (4.1)	2759 (4.5)	36 (3.7)	72 (4.3)
No	2595 (93.3)	58,232 (92.5)	1675 (93.1)	56,688 (92.5)	920 (93.8)	1544 (92.4)
Missing data	76 (2.7)	1867 (3.0)	51 (2.8)	1812 (3.0)	25 (2.5)	55 (3.3)

Data are expressed as mean (SD) or number (%)

GA gestational age

JAPAN - 2022

Socioeconomic background characteristics with or without neonatal transfer are shown in Table 1

Suivi à long terme des nouveau-nés transférés (2)

Table 2 Perinatal characteristics of mothers and children in the full, term, and preterm cohorts with or without neonatal transfer

	Full cohort (all GAs)		Term cohort (GA ≥ 37 weeks)		Preterm cohort (GA < 37 weeks)	
	With neonatal transfer ($n=2780$)	Without neonatal transfer ($n=62{,}930$)	With neonatal transfer ($n=1799$)	Without neonatal transfer ($n=61{,}259$)	With neonatal transfer ($n=981$)	Without neonatal transfer ($n=1671$)
Mothers						
Primigravida						
Yes	1076 (38.7)	19,844 (31.5)	755 (42.0)	19,334 (31.6)	321 (32.7)	510 (30.5)
No	1665 (59.9)	42,407 (67.4)	1018 (56.6)	41,266 (67.4)	647 (66.0)	1141 (68.3)
Missing data	39 (1.4)	679 (1.1)	26 (1.4)	659 (1.1)	13 (1.3)	20 (1.2)
Fertility treatment						
Yes	240 (8.6)	5704 (9.1)	144 (8.0)	5563 (9.1)	96 (9.8)	141 (8.4)
No	2439 (87.7)	54,889 (87.2)	1588 (88.3)	53,426 (87.2)	851 (86.7)	1463 (87.6)
Missing data	101 (3.6)	2337 (3.7)	67 (3.7)	2270 (3.7)	34 (3.5)	67 (4.0)
Cesarean delivery						
Yes	1131 (40.7)	10,641 (16.9)	578 (32.1)	10,109 (16.5)	553 (56.4)	532 (31.8)
No	1646 (59.2)	52,183 (82.9)	1219 (67.8)	51,047 (83.3)	427 (43.5)	1136 (68.0)
Missing data	3 (0.1)	106 (0.2)	2 (0.1)	103 (0.2)	1 (0.1)	3 (0.2)
Epidural analgesia during labor						
Yes	55 (2)	1427 (2.3)	40 (2.2)	1395 (2.3)	15 (1.5)	32 (1.9)
No	2633 (94.7)	60,610 (96.3)	1719 (95.6)	59,012 (96.3)	914 (93.2)	1598 (95.6)
Missing data	92 (3.3)	893 (1.4)	40 (2.2)	852 (1.4)	52 (5.3)	41 (2.5)
Pregnancy-associated complications*						
Hypertensive disorder of pregnancy	295 (10.6)	1870 (3.0)	125 (6.9)	1693 (2.8)	170 (17.3)	177 (10.6)
Gestational diabetes mellitus	190 (6.8)	1481 (2.4)	148 (8.2)	1426 (2.3)	42 (4.3)	55 (3.3)
Placenta previa	89 (3.2)	289 (0.5)	29 (1.6)	242 (0.4)	60 (6.1)	47 (2.8)
Premature rupture of the membranes	474 (17.1)	4873 (7.7)	186 (10.3)	4494 (7.3)	288 (29.4)	379 (22.7)
Intrauterine infection	57 (2.1)	276 (0.4)	28 (1.6)	258 (0.4)	29 (3.0)	18 (1.1)
Intrauterine growth restriction	215 (7.7)	926 (1.5)	119 (6.6)	872 (1.4)	96 (9.8)	54 (3.2)
Non-reassuring fetal status	181 (6.5)	1349 (2.1)	107(5.9)	1291 (2.1)	74 (7.5)	58 (3.5)
Children						
Gestational age, weeks*	37.3 (3.2)	39.4 (1.2)	39.2 (1.3)	39.5 (1.1)	33.9 (2.8)	36.0 (1.2)
Term birth (≥ 37 weeks)	1798 (64.7)	61,247 (97.3)	1798 (100)	61,247 (100)	-	-
Late preterm birth (34, 35, 36 weeks)	624 (22.4)	1598 (2.5)	-	-	624 (63.6)	1598 (95.6)
Moderate preterm birth (32, 33 weeks)	171 (6.2)	38 (0)	-	-	171 (17.4)	38 (2.3)
Very preterm birth (< 32 weeks)	186 (6.7)	35 (0)	-	-	186 (19.0)	35 (2.1)
Birthweight, g*	2615 (679)	3052 (370)	2944 (487)	3068 (359)	2012 (558)	2503 (381)
Low birthweight (< 2500 g)	1146 (41.2)	3634 (5.8)	354 (19.7)	2852 (4.7)	792 (80.7)	782 (46.8)
Not low birthweight (≥ 2500 g)	1634 (58.8)	59,296 (94.2)	1445 (80.3)	58,407 (95.3)	189 (19.3)	889 (53.2)
Male sex*	1522 (54.7)	31,912 (50.7)	950 (52.8)	30,950 (50.5)	572 (58.3)	709 (57.6)
Apgar score, 5-min (< 7)						
Yes	132 (4.7)	141 (0.2)	62 (3.4)	123 (0.2)	70 (7.1)	18 (1.1)
No	2601 (93.6)	60,259 (96.2)	1704 (94.7)	58,952 (96.2)	897 (91.4)	1577 (94.4)
Missing data	47 (1.7)	2260 (3.6)	33 (1.8)	2184 (3.6)	14 (1.4)	76 (4.5)

Perinatal characteristics with and without neonatal transfer are shown in Table **2**

Suivi à long terme des nouveau-nés transférés (2)

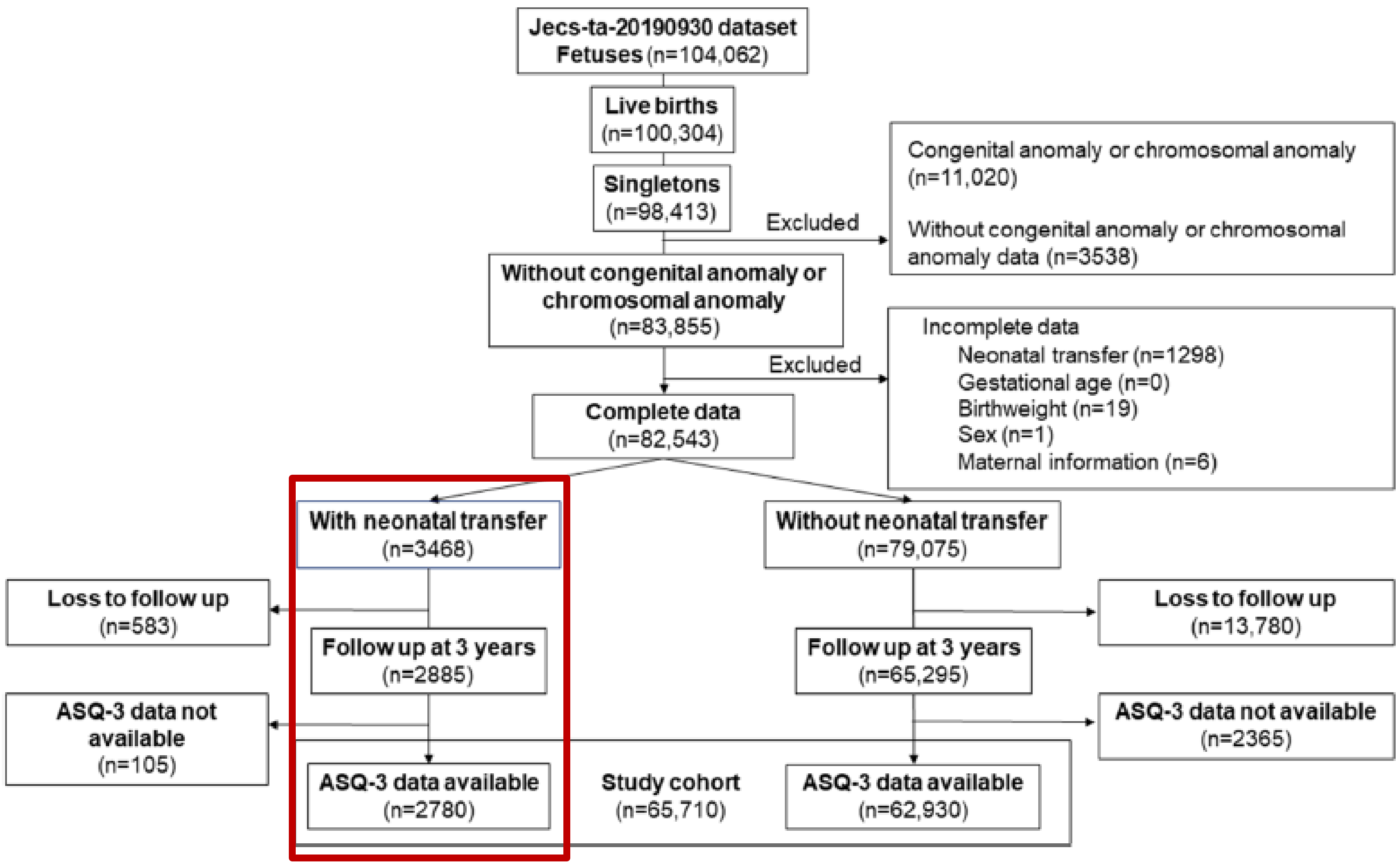

Fig. 1 Flow diagram of patients' enrollment in this study. ASQ-3, Ages and Stages Questionnaire, third edition

Suivi à long terme des nouveau-nés transférés (2)

ASQ-3 (3 years od) : Full cohort , term cohort and preterm cohort

Table 3 Incidence of scores below the cut-off value of the ASQ-3 at 3 years old in the full, term, and preterm cohorts with or without neonatal transfer with adjustment for perinatal confounders

	Full cohort (all GAs)				Term cohort (GA ≥ 37 weeks)				Preterm cohort (GA < 37 weeks)			
	With neonatal transfer	Without neonatal transfer	OR (95% CI)	*p* value	With neonatal transfer	Without neonatal transfer	OR (95% CI)	*p* value	With neonatal transfer	Without neonatal transfer	OR (95% CI)	*p* value
Communication (< 29.95)	179/2770 (6.5)	2201/62,719 (3.5)	1.42 (1.19–1.70)	< 0.001	89/1796 (5.0)	2125/61,054 (3.5)	1.30 (1.04–1.63)	0.02	90/974 (9.2)	76/1665 (4.6)	1.50 (1.03–2.20)	0.04
Gross motor (< 39.26)	210/2778 (7.6)	2531/62,797 (4.0)	1.26 (1.07–1.49)	< 0.001	107/1799 (5.9)	2425/61,129 (4.0)	1.30 (1.06–1.60)	0.01	103/979 (10.5)	106/1668 (6.4)	1.04 (0.74–1.48)	0.81
Fine motor (< 27.91)	312/2765 (11.3)	4449/62,566 (7.1)	1.19 (1.03–1.36)	0.01	156/1791 (8.7)	4269/60,908 (7.0)	1.10 (0.93–1.31)	0.28	156/974 (16.0)	180/1658 (10.9)	1.11 (0.84–1.46)	0.48
Problem solving (< 30.03)	298/2748 (10.8)	4259/62,222 (6.8)	1.29 (1.12–1.48)	< 0.001	149/1779 (8.4)	4118/60,566 (6.8)	1.14 (0.96–1.36)	0.13	149/969 (15.4)	141/1656 (8.5)	1.40 (1.04–1.87)	0.02
Personal-social (< 29.89)	171/2773 (6.2)	1821/62,664 (2.9)	1.52 (1.26–1.83)	< 0.001	84/1795 (4.7)	1760/60,998 (2.9)	1.39 (1.10–1.75)	0.006	87/978 (8.9)	61/1666 (3.7)	1.75 (1.17–2.62)	0.006

Data are expressed as number (%) or OR (95% CI)

Adjustment for mothers: age, marital status, primigravida, fertility treatment, cesarean delivery, epidural analgesia during labor, hypertensive disorder of pregnancy, gestational diabetes mellitus, placenta previa, premature rupture of the membranes, intrauterine infection, intrauterine growth restriction, non-reassuring fetal status, alcohol drinking during pregnancy, smoking during pregnancy, educational status, work status, and household income

Adjustment for children: gestational age, birthweight, sex, and asphyxia at birth

Suivi à long terme des nouveau-nés transférés (2)

ASQ-3 (3 years old): in the cohort with prolonged hospital stay at birth ≥ 7 days

Table 4 Incidence of scores below the cut-off value of the ASQ-3 at 3 years old in the cohort with prolonged hospital stay at birth (≥7 days) with or without neonatal transfer with adjustment for perinatal confounders

	With neonatal transfer (*n* = 1905)	Without neonatal transfer (*n* = 19,430)	Crude OR (95% CI)	*p* value	Adjusted OR (95% CI)	*p* value
Communication (<29.95)	121/1898 (6.4)	724/19,372 (3.7)	1.75 (1.44–2.14)	<0.001	1.28 (1.02–1.61)	0.03
Gross motor (<39.26)	154/1904 (8.1)	900/19,398 (4.6)	1.81 (1.51–2.16)	<0.001	1.34 (1.09–1.63)	0.005
Fine motor (<27.91)	228/1895 (12.0)	1555/19,313 (8.1)	1.56 (1.35–1.81)	<0.001	1.19 (1.01–1.41)	0.04
Problem solving (<30.03)	211/1882 (11.2)	1411/19,199 (7.3)	1.59 (1.34–1.86)	<0.001	1.24 (1.04–1.47)	0.02
Personal-social (<29.89)	123/1900 (6.5)	654/19,357 (3.4)	1.98 (1.62–2.41)	<0.001	1.58 (1.26–1.98)	<0.001

Data are expressed as number (%) or OR (95% CI)

Adjustment for children: gestational age, birthweight, sex

In conclusion, our findings reveal evidence that neonatal transfer is associated with an increased risk of neurodevelopmental impairment: scores are below the cut-off value of all 5 domains in the ASQ-3 at 3 years

Suivi à long terme des nouveau-nés transférés (2)

ASQ-3 (3 years old): in the cohort with asphyxia at birth (Apgar score < 7)

Table 5 Incidence of scores below the cut-off value of the ASQ-3 at 3 years old in the cohort with asphyxia at birth (5-min Apgar score<7) with or without neonatal transfer with adjustment for perinatal confounders

	With neonatal transfer (n=132)	Without neonatal transfer (n=141)	Crude OR (95% CI)	p value	Adjusted OR (95% CI)	p value
Communication (<29.95)	17/132 (12.9)	3/140 (2.1)	6.75 (1.93–23.6)	0.003	5.98 (1.62–22.1)	0.007
Gross motor (<39.26)	16/132 (12.1)	7/140 (5.0)	2.62 (1.04–6.59)	0.04	1.17 (0.40–3.45)	0.77
Fine motor (<27.91)	20/132 (15.2)	16/139 (11.5)	1.37 (0.68–2.78)	0.38	1.13 (0.52–2.47)	0.76
Problem solving (<30.03)	24/131 (18.3)	5/137 (3.6)	5.92 (2.19–16.0)	0.0005	5.54 (1.95–15.7)	0.001
Personal-social (<29.89)	15/132 (11.4)	3/140 (2.1)	5.85 (1.65–20.7)	0.006	4.59 (1.22–17.3)	0.02

Data are expressed as number (%) or OR (95% CI)

Adjustment for children: gestational age, birthweight, sex

ASQ-3 Ages and Stages Questionnaire, third edition, *OR* odds ratio, *CI* confidence interval

Adjustment for children: gestational age, birthweight, sex

Suivi à long terme des nouveau-nés transférés (2)

Limitations of the study :

1) **No detailed data** on neonatal transfer : birth and transferred hospital volume, age at neonatal transfer, distance between centers, details on the resuscitation at birth, and during neonatal transfer data.

- **duration** of neonatal transfer
- **time from birth** to neonatal transfer

may affect the short-term outcome;

2) Healthcare providers **might not have documented** **all** of the complications;

3) Use of ASQ-3 as a screening tool for developmental delay in children;

4) **No analyze** of the clinical severity using Transport Risk Index of Physiologic Stability (TRIPS) **scores** because of insufficient data.

Suivi à long terme des nouveau-nés transférés (2)

Long-term outcomes of children with neonatal transfer: the Japan Environment and Children's Study.

Katsuya Hirata, Kimiko Ueda, Kazuko Wada, Satoyo Ikehara, Kanami Tanigawa, Tadashi Kimura, Keiichi Ozono,
Hiroyasu Iso the Japan Environment and Children's Study Group (JESC) **European Journal of Pediatrics https://doi.org/10.1007/s00431-022-04450-7**
Accepted: 16 March 2022

Conclusion:

Our findings provide novel evidence that neonatal transfer is associated with **an increased risk of neurodevelopmental impairment** as shown by scores below the cut-off value of all 5 domains in the **ASQ-3** at **3 years of age.**

Hanovre, Germany - 2022

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RESEARCH REPORT

Pediatric Anesthesia WILEY

Incidence and characteristics of errors detected by a short team briefing in pediatric anesthesia

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Hanovre Germany 2022

pedSOAP-M

When: Before anesthesia induction
Who: Anesthetist and nurse anesthetist
Goal: Safety-Check and fallback plans

Hannover Medical School
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Germany

Suction	•Suction unit working? •Suction catheter in right size connected?
Oxygen	•Anesthesia workstation (AWS) is turned on? •QUICKcheck of the AWS? •Position of APL valve? •Self-deflating ventilation bag as backup? •Is there enough oxygen available for transports?
Airway	•Size of ETT or LMA? •Is there an ETT or LMA of smaller size available? •Possibility of a difficult airway? •Where is the next difficult-airway trolley? •Communicate plan A and plan B in the team
Pharmaceuticals	•Does everybody know the correct weight of the patient? •Joint calculation of the doses for induction, relaxant, analgesia and emergency medications in mg and mL •Check of weight and dose calculation in the perfusor syringe pumps
Monitoring	•Has the necessary monitoring been established? •Is there a specific need for extended monitoring, e.g. NIRS or transcutaneous CO2?

FIGURE 1 The briefing tool pedSOAP-M (adapted from Cote et al[2]).

LECTURES PROPOSEES - 2022