Junio 2021

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Un Nuevo Concepto en Medicina Perinatal

Neo Red

Outcomes of a uniformly active approach to infants born at 22–24 weeks of gestation

- **Objetivo:** mostrar sobrevida y outcomes de prematuros extremos 22+0 a 24+6 semanas en centro con manejo activo uniforme.
- **Método:** retrospectivo, 1 centro (Uppsala UCH, Suecia), 2006-2015. Evaluación de morbilidades (ROP, NEC, DAP, HIV, LPV, DBP) y Neurodesarrollo a los 2.5 años (PC, visual, auditiva).
- **Manejo activo:** todos los ≥ 22 + 0.
  - Antenatal: derivación a las 22s, tocolisis, corticoides, consejería.
  - ATI: neonatólogo senior, intubación y surfactante, traslado a UCI.

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Söderström F. Arch Dis Child Fetal Neonatal Ed. 2021 Jul;106(4):413-417.

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Table 2 Neonatal and maternal characteristics of full cohort by gestational week

Neonatal characteristics	**22–24 (n=222)**	**22 (n=44)**	**23 (n=87)**	**24 (n=91)**
Birth weight	597 (111)	492* (62)	577 (83)	666 (106)
Male	117 (53)	23 (52)	45 (52)	49 (54)
Outborn	32 (14)	3 (7)	13 (15)	16 (18)
Maternal characteristics	**22–24 (n=193)**	**22 (n=37)**	**23 (n=77)**	**24 (n=79)**
Multiple gestation	32 (17)	8 (22)	9 (12)	15 (19)
Caesarean section	70 (36)	0 (0)	22 (29)	48 (61)
Antenatal steroids	184 (95)	37 (100)	73 (95)	74 (94)
Complete course	122 (63)	20 (54)	51 (66)	51 (65)
Tocolysis	142 (74)	35 (95)	56 (73)	51 (65)
Preeclampsia	14 (7)	1 (3)	4 (5)	9 (11)

Data presented as mean (SD) or n (%).
*Birthweight not recorded, n=1.

Sobrevida y Neurodesarrollo

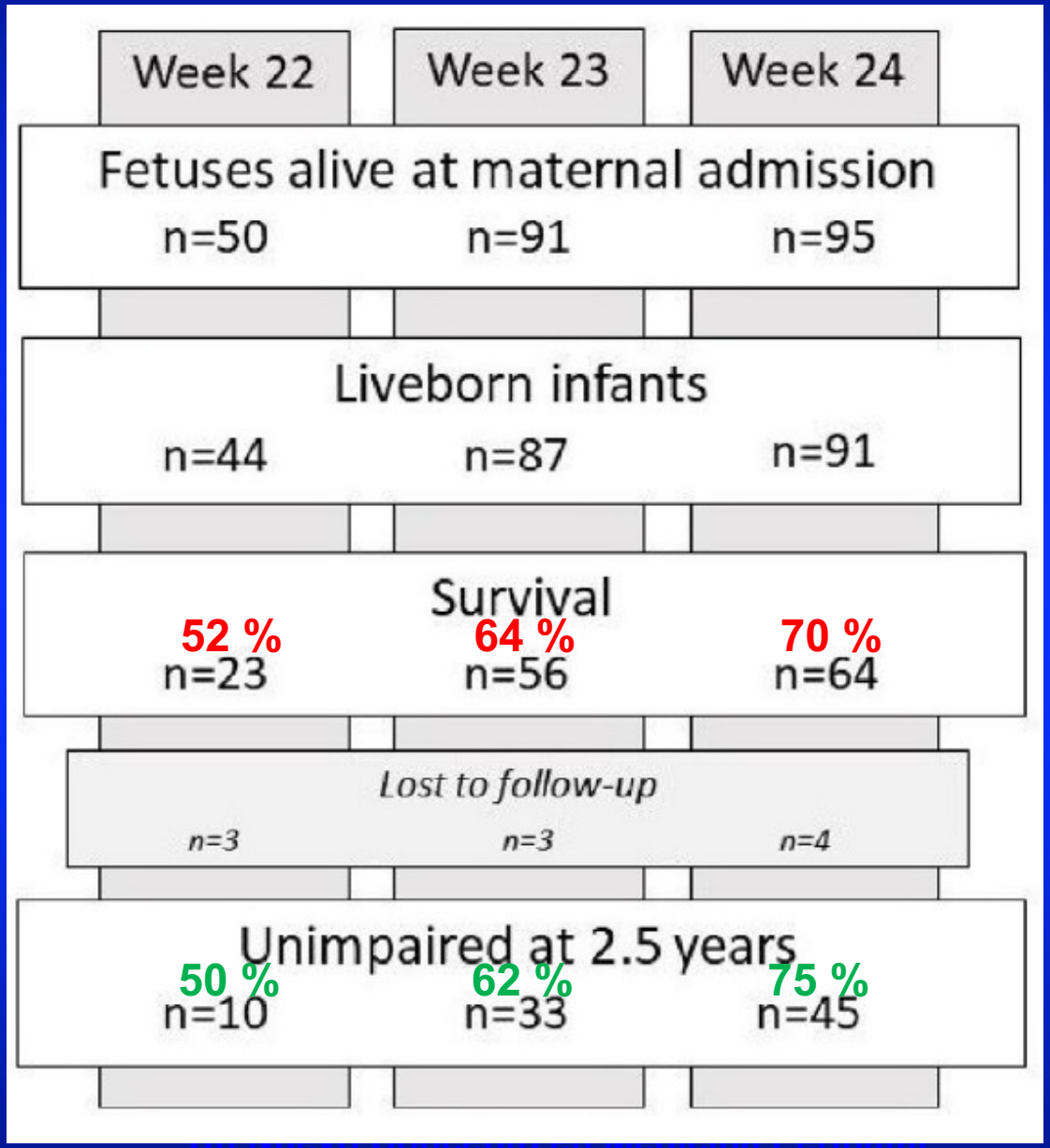

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Table 3 Hospital outcomes in survivors by gestational week

Gestational age, weeks	22–24 (n=143)	22 (n=23)	23 (n=56)	24 (n=64)
ROP treatment	35 (25)	10 (45)*	17 (30)	8 (13)†
NEC surgery	15 (11)	2 (9)	5 (9)*	8 (13)**
PDA surgery	51 (36)	11 (48)	21 (38)*	19 (31)††
IVH III-IV	9 (6)	2 (9)	3 (5)	4 (6)
PVL	14 (10)	5 (22)	5 (9)	4 (7)†
Severe BPD	65 (49)	17 (77)*	23 (43)††	25 (43)‡‡
Length of stay, days	125 (110–150)	144 (131–208)††	131 (111–151)††	118 (104–32)§§
Mechanical ventilation, days	45 (27–57)	53 (49–72)*	45 (28–58)**	34 (15–53)¶¶

Mortalidad

- 14 mortinatos.
- Sin diferencias inborn vs outborn.
- Mediana edad de muerte: 11 días.
- Causas: NEC (23%), DBP (15%), HIV (14%), sepsis (14%).

- Seguimiento hasta lo 5.5 años (pediatra, fisiatra, psicólogo).
  - Bayley (sólo 35%) o Evaluación clínica detallada multidisciplinaria.
  - Parálisis cerebral según GMFCS.

- Post ROP tratada seguimiento hasta edad escolar.
  - Discapacidad visual: errores refracción no corregibles, agudeza visual < 0.3 o ceguera.

- Discapacidad auditiva moderada si hipoacusia requiere audífonos, severa si es sordera o requiere implante coclear.

Table 1 Definitions of developmental delay

Mild impairment	► Walks but may have difficulties running, poor balance ► Impaired fine motor skills such as difficulties using a spoon or drawing ► Limited abilities to interact socially with peers or lack of interest ► Communicates verbally but may have limited vocabulary or difficulties putting two-word sentences together ► Needs more support compared with peers in activities of daily living due to either cognitive or motor impairment, but not unable to participate ► Existing but limited non-verbal communication such as eye contact, facial expression, body language ► Able to attend daycare but may require extra support
Moderate to severe impairment	► Limited or total lack of social interaction including non-verbal communication ► General lack of interest in environment ► Significant difficulties or passivity regarding playing with toys or interacting with peers due to either cognitive or motor impairment ► Limited or total lack of verbal communication ► Walks with difficulty, moving by crawling or completely non-ambulant ► Autism diagnosis ► Needs special assistance in daycare or unable to attend ► Requires special assistance in home-environment

Speech or language difficulties due to structural abnormalities or hearing impairment are not classified as developmental delay. Motor impairment due to cerebral palsy is categorised separately.

Table 4 Neurodevelopmental outcome at 2.5 years corrected age by gestational week

Gestational age, weeks	22–24 (n=133)	22 (n=20)	23 (n=53)	24 (n=60)
Cerebral palsy	10 (8)	1 (5)	2 (4)	7 (12)
Mild	5 (4)	1 (5)	2 (4)	2 (3)
Moderate-severe	5 (4)	0 (0)	0 (0)	5 (8)
Visual impairment	11 (8)	3 (15)	8 (15)	0 (0)
Mild	5 (4)	1 (5)	4 (8)	0 (0)
Moderate-severe	6 (4)	2 (10)	4 (8)	0 (0)
Hearing impairment	2 (2)	1 (5)	0 (0)	1 (2)
Mild	1 (1)	0 (0)	0 (0)	1 (2)
Moderate	1 (1)	1 (5)	0 (0)	0 (0)
Developmental delay	36 (27)	10 (50)	16 (30)	10 (17)
Mild	21 (16)	4 (20)§	11 (21)¶	6 (10)§
Moderate-severe	15 (11)	6 (30)¶	5 (9)**	4 (7)§
Unimpaired	88 (66)	10 (50)§	33 (62)††	45 (75)‡‡

Conclusiones

- Manejo activo uniforme a todos los prematuros de 22-24 semanas resultaría en sobrevida > 50%.
- Mayoría de los que sobreviven no tendrían alteraciones del neurodesarrollo a los 2.5 años.
- Estos resultados reflejarían los outcomes sin la injerencia de la selección perinatal de pacientes.
- Escepticismo hacia el manejo activo provoca profecía autocumplida de malos resultados a estas EG.
- Exposición frecuente en manejo de pacientes graves.

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Bronchopulmonary dysplasia and postnatal growth following extremely preterm birth

- **Objetivo:** mostrar incidencia actual de DBP, comparar cambios en peso y circunferencia craneana entre los con DBP y sin DBP.

- **Método:** retrospectivo, todas las unidades de UK 2014 – 2018, National Neonatal Research Database, Imperial College London.

  – Prematuros < 28s.

  – Diferencia en Z-Peso y Z-Circunferencia craneana al nacimiento y a las 36s EGC.

  – Definición DBP: paciente con cualquier tipo apoyo respiratorio a las 36s.

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Dassios T. Arch Dis Child Fetal Neonatal Ed. 2021 Jul;106(4):386-391.

Neo Red

Table 1 Characteristics of the included infants (N=11 806) and completeness of data

	Median (IQR) or n (%)	Range	Available data, n (%)
Maternal age (years)	31 (26–35)	13–62	11 707 (99)
Antenatal corticosteroids	10 409 (88.2)	N/A	11 670 (99)
Tertiary neonatal unit at birth	8275 (70.1)	N/A	11 803 (100)
Gestational age (weeks)	26.0 (24.9–27.1)	22.0–27.86	11 806 (100)
Apgar score at 5 min	8 (6–9)	0–10	11 462 (97)
Male sex	6371 (54.0)	N/A	11 805 (100)
Surfactant administration	10 558 (89.7)	N/A	11 722 (99)
Duration of invasive ventilation (days)	10 (3–26)	0–281	11 766 (100)
Duration of parenteral nutrition (days)	15 (9–25)	0–269	11 781 (100)
BPD at 36 weeks postmenstrual age	6264 (57.5)	N/A	10 898 (92)
Death before 36 weeks postmenstrual age	2235 (18.9)	N/A	Recorded only if positive
Postnatal corticosteroids	2350 (19.9)	N/A	Recorded only if positive
Operated for necrotising enterocolitis	674 (5.7)	N/A	Recorded only if positive
Surgical ligation of patent ductus arteriosus	464 (3.9)	N/A	Recorded only if positive
Intraventricular haemorrhage grade 3–4	1864 (25.9)	N/A	7198 (61)
Periventricular leucomalacia	445 (7.4)	N/A	5980 (53)
Treated for retinopathy of prematurity	1368 (11.7)	N/A	11 682 (99)
Breast feeding at discharge	4258 (44.8)	N/A	9494 (80)
Death before discharge from neonatal care	2391 (20.3)	N/A	11 806 (100)
Discharged on home oxygen	3477 (29.4)	N/A	10 618 (90)
Postmenstrual age at discharge (weeks)*	39.5 (37.6–42.1)	33.7–77.6	9408 (98)

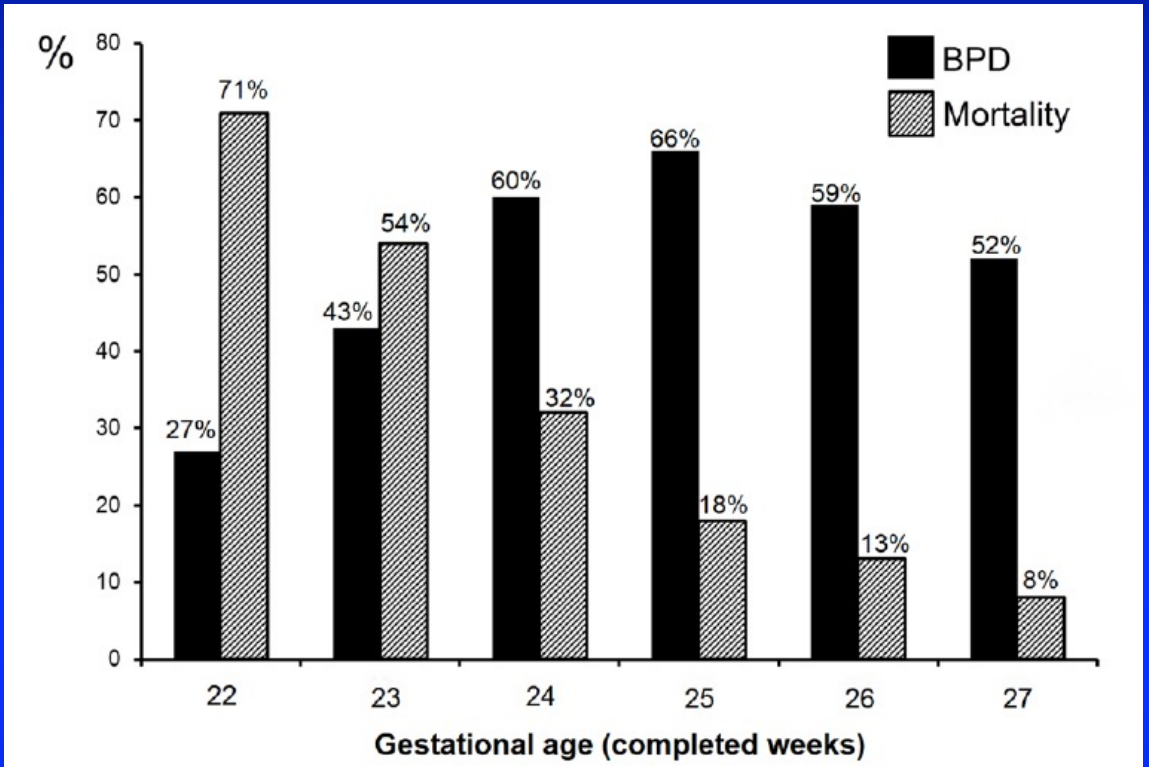

Figure 1 Incidence of bronchopulmonary dysplasia (BPD) and mortality before discharge from neonatal care by completed weeks of gestational age.

Table 2 ΔWz and ΔHz from birth to discharge by week of completed gestation (n=9398)

	ΔWz	ΔHz
Available data, n (%)	9383 (100)	1921 (20)
All infants 23–27 weeks	–1.10 (–1.78 to –0.47)	–0.46 (–1.73 to 0.50)
23 weeks (n=506/58 for ΔWz/ΔHz)	–1.30 (–2.17 to –0.56)	–0.49 (–1.64 to 0.88)
24 weeks (n=1331/193 for ΔWz/ΔHz)	–1.09 (–1.91 to –0.34)	–1.04 (–2.44 to 0.24)
25 weeks (n=1868/336 for ΔWz/ΔHz)	–1.15 (–1.89 to –0.48)	–0.93 (–2.43 to 0.20)
26 weeks (n=2424/494 for ΔWz/ΔHz)	–1.07 (–1.71 to –0.45)	–0.47 (–1.80 to 0.47)
27 weeks (n=3254/840 for ΔWz/ΔHz)	–1.09 (–1.67 to –0.52)	–0.26 (–1.27 to 0.63)

Table 3 ΔWz, ΔHz and characteristics of infants with BPD and no BPD

	BPD (n=6105)	No BPD (n=2389)	P value
Parameters at birth			
Maternal age	31 (26–35)	31 (27–35)	<0.001
Antenatal steroids	5477 (89.7)	2170 (90.8)	0.15
Tertiary neonatal unit at birth	4451 (72.9)	1571 (65.8)	<0.001
Gestational age (weeks)	26.0 (24.9–27.0)	26.9 (26.0–27.4)	<0.001
Birthweight z-score	−0.44 (−0.95 to 0.01)	−0.23 (−0.68 to 0.19)	<0.001
Apgar at 5 min	8 (6–9)	8 (7–9)	<0.001
Male sex	3390 (55.5)	1140 (47.7)	<0.001
Surfactant administration	5610 (91.9)	2026 (84.8)	<0.001
Parameters during neonatal stay			
Duration of ventilation (days)	18 (7–35)	4 (2–10)	<0.001
Postnatal corticosteroids	1726 (28.3)	145 (6.1)	<0.001
Operated for necrotising enterocolitis	387 (6.3)	87 (3.6)	<0.001
Surgical ligation of patent ductus	402 (6.6)	17 (0.7)	<0.001
Treatment for retinopathy of prematurity	1147 (18.8)	136 (5.7)	<0.001
Intraventricular haemorrhage grade 3–4	855 (14.0)	229 (9.6)	<0.001
Periventricular leucomalacia	281 (4.6)	80 (3.3)	0.004
Breast feeding at discharge	2444 (40.0)	1309 (54.8)	<0.001
Parenteral nutrition (days)	18 (12–30)	13 (10–21)	<0.001
Postmenstrual age at discharge	40.8 (39.0–43.4)	37.8 (36.8–39.2)	<0.001
Discharged home from tertiary unit	2468 (40.4)	916 (38.3)	0.08
Changes in z-scores			
ΔWz birth to 36 PMA	−0.69 (−1.28 to −0.14)	−0.89 (−1.40 to −0.33)	<0.001
ΔWz birth to discharge	−1.03 (−1.74 to −0.34)	−1.34 (−1.96 to −0.75)	<0.001
ΔHz birth to discharge	−0.33 (−1.69 to 0.71)	−0.61 (−1.85 to 0.35)	0.001

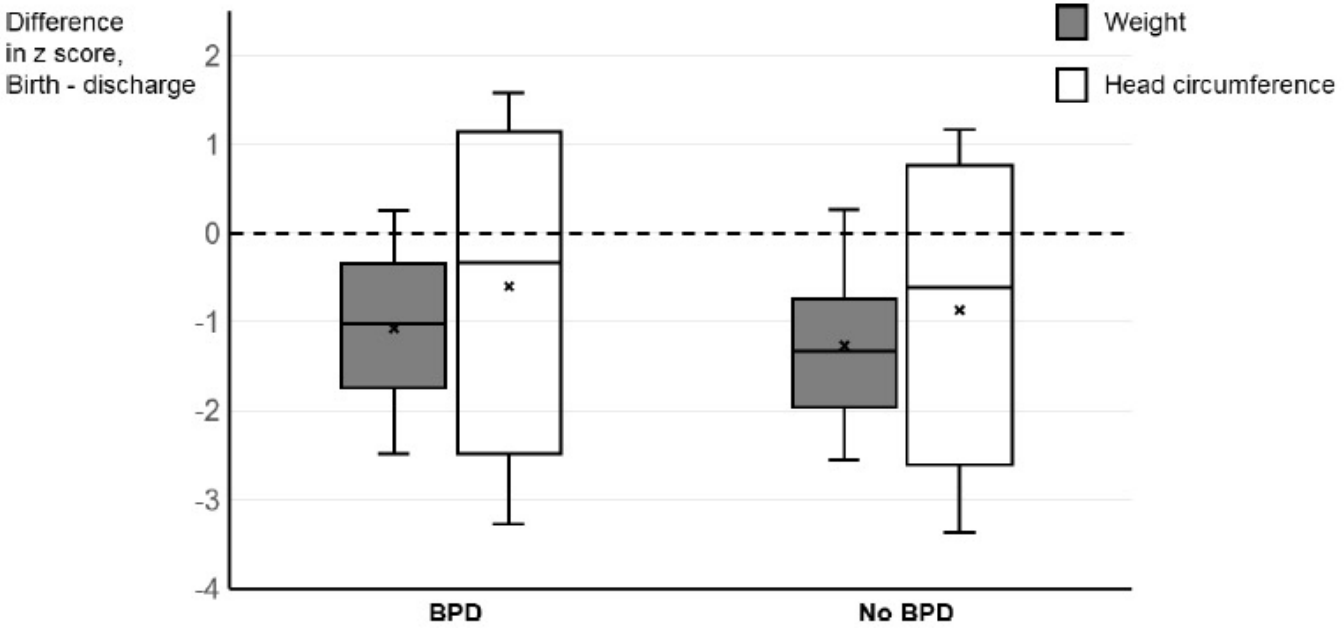

Figure 2 Difference in weight and head circumference z-scores in infants diagnosed with BPD compared with infants without BPD. The horizontal lines in the box and whisper plots represent the 10th, 25th, 50th, 75th and 90th centile. The dashed line represents zero. BPD, bronchopulmonary dysplasia.

Conclusiones

- Disminución global en Z-score de peso y CC entre nacimiento y alta en esta cohorte de < 28s.

- Menor descenso del Z-score en pacientes con diagnóstico de DBP.

- Mejor crecimiento en pacientes con DBP:

  – mayor estadía hospitalaria

  – implementación de nutrición parenteral agresiva y estrategias enterales dirigidas a prematuros con riesgo de DBP (Framework for Practice on neonatal PN by the British Association of Perinatal Medicine - 2011)

  – menor proporción de lactancia materna en RN con DBP

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Reviewing recordings of neonatal resuscitation with parents

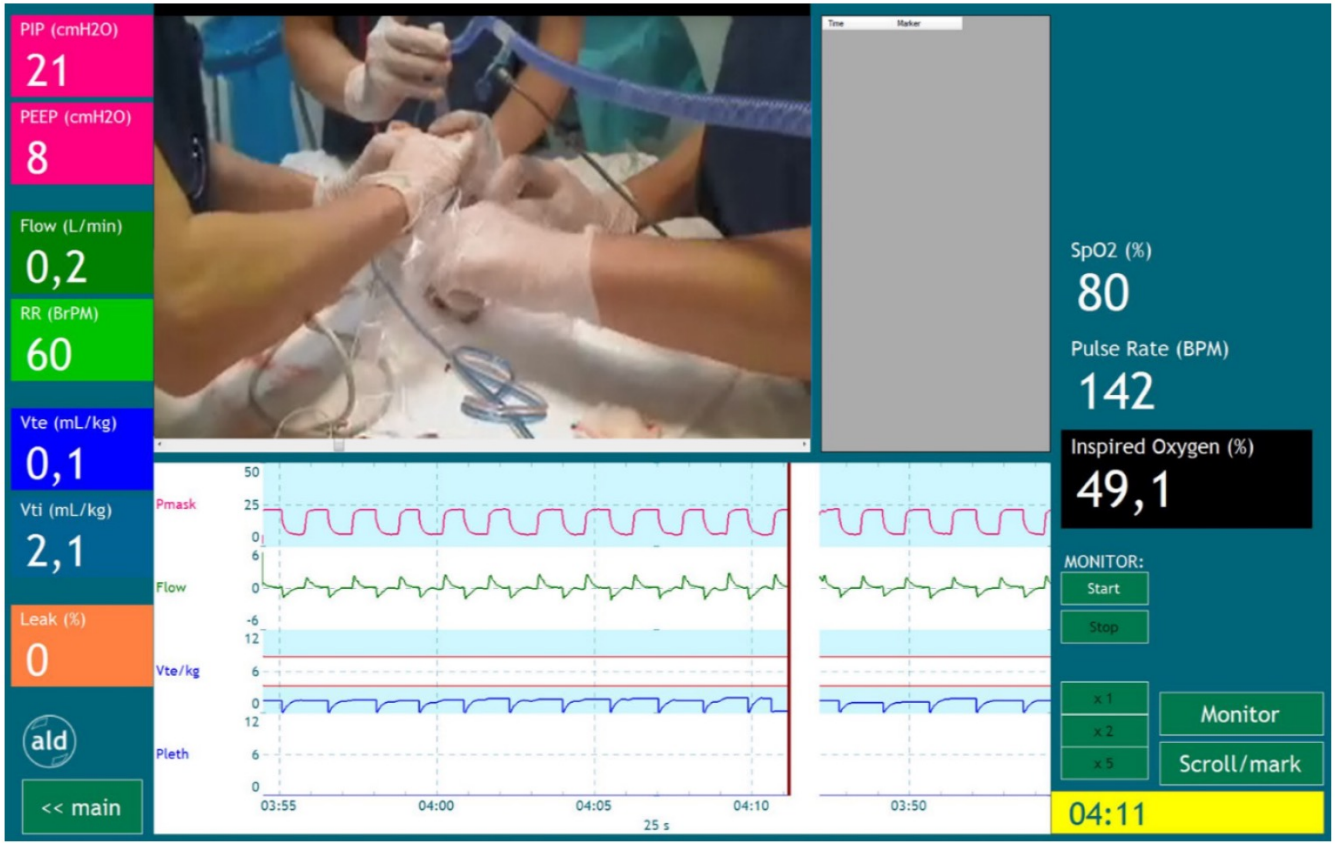

Figure 1 Recording video and vital parameters of neonatal resuscitation at the Leiden University Medical Center. PIP, peak inspiratory pressure; PEEP, positive end-expiratory pressure; RR, respiratory rate; Vte, exhaled tidal volume; Vti, inhaled tidal volume.

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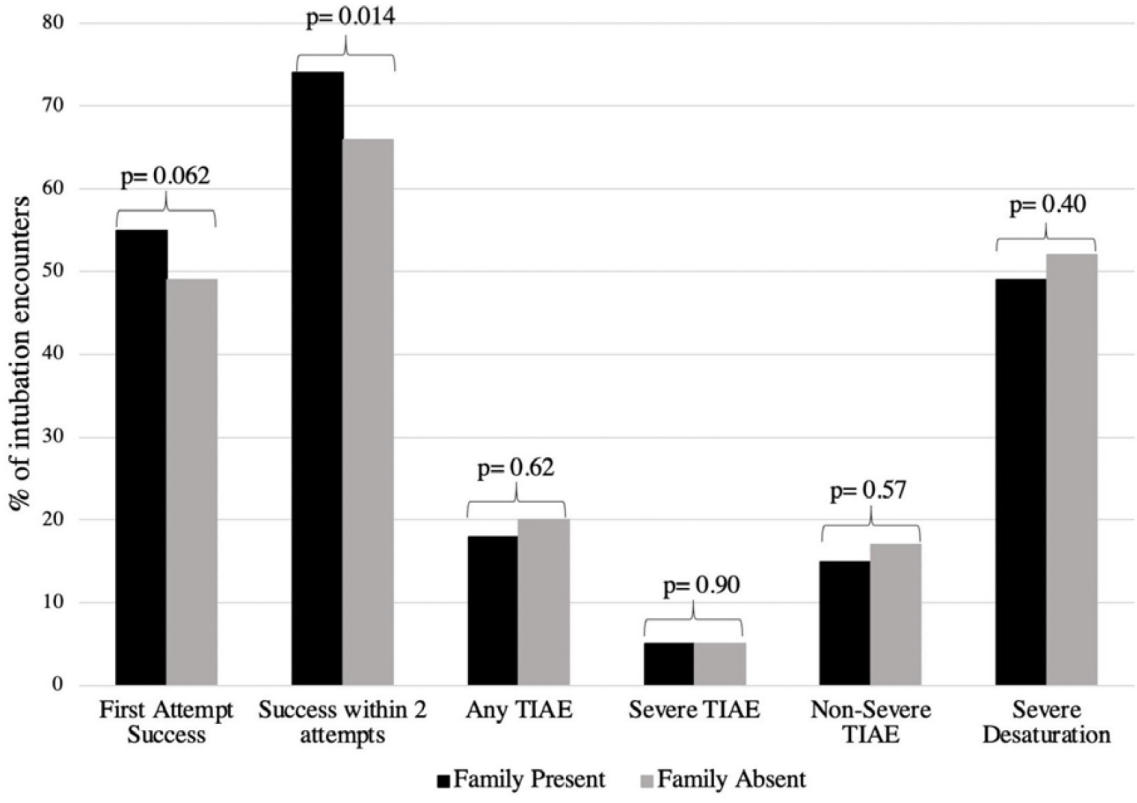
den Boer MC, et al. Arch Dis Child Fetal Neonatal Ed 2021;106:F346–F351.

Figure 1 Hermann Hospital opening day, 1949, Houston, Texas, USA (photographer Victor M Helm; courtesy of the McGovern historical Centre, Texas Medical Centre Library, IC 104 Texas Medical Centre Photograph Collection, IC104-P891-001).

Associations between family presence and neonatal intubation outcomes: a report from the National Emergency Airway Registry for Neonates: NEAR4NEOS



TIAEs: Adverse TI associated events
Non-severe TIAEs: esophageal intubation with immediate recognition, dysrhythmia, epistaxis, lip trauma, agitation, mainste intubation, emesis with no aspiration, hypertension
Severe TIAEs: esophageal intubation with delayed recognition, direct airway injury, pneumothorax, gum or dental trauma, emesis with aspiration, hypotension, laryngospasm, malignant hyperthermia, cardiac compressions, or cardiac arrest
Severe desaturation: ≥ 20% drop in oxygen saturation during intubation attempt

Figure 3 Univariate analysis of family presence during neonatal intubation with tracheal intubation outcomes.

Brei BK, et al. Arch Dis Child Fetal Neonatal 2021;106:F39-F397.

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Discharge planning considerations for the neonatal intensive care unit

Table 1 Examples of discharge planning tools and their use/indication

Tool	Use/indication
Discharge guidelines or checklists[5 12]	Help standardise discharge planning. Ensure all necessary steps in the discharge planning are completed.
Transfer brochures[5]	Raise familiar awareness of available community resources.
Family educational aids[3 5]	Supplement and reinforce bedside teaching.
Discharge questionnaire to assess readiness for discharge[3 4 12 13]	Assess a family's readiness for hospital discharge including: ▶ Home and home environment. ▶ Food and supplies. ▶ Infant and family transportation needs. ▶ Families' physical and mental ability to provide the necessary care for the infant at home.
Discharge summary[3 5 12]	Is a communication tool that provides information to: ▶ The family. ▶ Community/medical home providers. ▶ Specialty medical providers. Provides a summary of the hospital course including: ▶ Pertinent maternal and birth history. ▶ The infant's discharge diagnoses, medications, follow-up appointment schedule needed and any ongoing medical needs. ▶ Any pending test results. ▶ Any medical and/or social issues that require follow-up.

Smith VC. Arch Dis Child Fetal Neonatal Ed 2021;106:F442–F445.

Original research

OPEN ACCESS

Hypotension in Preterm Infants (HIP) randomised trial

Eugene M Dempsey ,[1] Keith J Barrington,[2] Neil Marlow ,[3] Colm Patrick Finbarr O'Donnell ,[4] Jan Miletin ,[5] Gunnar Naulaers,[6] Po-Yin Cheung ,[7] John David Corcoran ,[8] Afif Faisal EL-Khuffash ,[8] Geraldine B Boylan,[1] Vicki Livingstone,[1] Gerard Pons,[9] Jozef Macko,[10] David Van Laere,[11] Hana Wiedermannova,[12] Zbyněk Straňák ,[13] On behalf of the HIP consortium

Original research

Physiological responses to facemask application in newborns immediately after birth

Vincent D Gaertner ,[1] Christoph Martin Rüegger ,[1] Eoin O'Currain,[2] C Omar Farouk Kamlin,[3,4,5] Stuart B Hooper,[6] Peter G Davis ,[3,4,5] Laila Springer[7]

Review

Management of systemic hypotension in term infants with persistent pulmonary hypertension of the newborn: an illustrated review

Heather M Siefkes, Satyan Lakshminrusimha