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Un Nuevo Concepto en Medicina Perinatal

Neo Red

Early versus later initiation of parenteral nutrition for very preterm infants: a propensity score-matched observational study

- **Objetivo:** evaluar asociación entre momento de inicio de NP y outcomes al alta en prematuros < 31 semanas.

- **Método:** observacional retrospectivo (propensity score-matching), NHS 2008 – 2019, NNRD audit programme.

  - Exclusión: MFC gastrointestinal, MFC con cirugía en periodo neonatal, condiciones letales.

  - NP precoz iniciada primeros 2 días.

- **Outcome:** sobrevida al alta libre de morbilidad neonatal (LOS, BPD, ROP grave, NEC grave, convulsiones o daño cerebral severo).

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Uthaya S, et al. Arch Dis Child Fetal Neonatal Ed 2022;107:F137–F142.

Table 1 Key background characteristics

	Entire cohort		Matched cohort	
	Early PN (n=43 436)	Late PN (n=21 597)	Early PN (n=8147)	Late PN (n=8147)
Infant characteristics at birth				
Gestational age (weeks), mean (SD)	27.7 (2.0)	28.9 (2.0)	28.5 (2.0)	28.5 (2.0)
Birth weight (kg), mean (SD)	1.02 (0.303)	1.22 (0.342)	1.14 (0.322)	1.15 (0.32)
Birth weight z-score, mean (SD)	−0.08 (0.99)	0.16 (0.93)	0.06 (0.96)	0.06 (0.93)
Girls, n (%)	19 880 (46.3)	9385 (44.8)	3633 (45.7)	3633 (45.7)
Maternal factors				
Maternal age, mean (SD)	30.5 (6.3)	30.1 (6.3)	30.3 (6.4)	30.3 (6.3)
Maternal diabetes, n (%)	624 (1.4)	249 (1.2)	108 (1.3)	102 (1.3)
Maternal gestational diabetes, n (%)	1172 (2.7)	678 (3.1)	489 (3.0)	496 (3.0)
Maternal gestational hypertension, n (%)	3167 (7.3)	1759 (8.1)	692 (8.5)	704 (8.6)
Maternal pre-eclampsia, n (%)	1973 (4.5)	529 (2.5)	232 (2.8)	242 (3.0)
Prolonged rupture of membranes, n (%)	4715 (10.9)	2633 (12.2)	957 (11.8)	946 (11.6)
Chorioamnionitis, n (%)	3019 (8.3)	1200 (7.2)	478 (7.3)	472 (7.3)
Complete course of antenatal steroids, n (%)	29 786 (71.9)	13 736 (68.9)	5268 (69.2)	5256 (69.2)
Infant factors after birth				
Apgar score <5 at 5 min, n (%)	5186 (13.5)	1837 (9.6)	813 (11.2)	794 (11.0)
Intubation during resuscitation, n (%)	26 752 (62.0)	9445 (43.7)	4158 (51.4)	4144 (50.9)
Infant factors on first day				
Ventilated on first day, n (%)	33 506 (77.1)	12 728 (58.9)	5460 (67.0)	5463 (67.0)
Surfactant given, n (%)	21 384 (49.2)	8882 (41.1)	3739 (46.0)	3740 (46.0)
Inotropes on first day, n (%)	9544 (22.0)	3352 (15.5)	1512 (19.4)	1495 (18.4)
Treated for infection on first day, n (%)	25 428 (58.5)	12 323 (57.6)	4767 (58.5)	4762 (58.8)
Organisational factors				
Born in level 3 unit (NICU), n (%)	26 790 (61.7)	10 037 (46.5)	4043 (49.7)	4060 (49.9)
Transferred on first day, n (%)	6205 (14.3)	2907 (13.5)	1203 (14.8)	1200 (14.7)

Table 2 Neonatal outcomes

	Entire cohort				Matched cohort					
	Early PN (n=43 436)		Late PN (n=21 597)		Early PN (n=8147)		Late PN (n=8147)			
		Missing data		Missing data		Missing data		Missing data	Treatment effect (95% CI)	P value
Survival to discharge without morbidities (%)	46.7 (0.2)	0	65.0 (0.3)	0	59.5 (0.3)		59.03 (0.36)	0	0.50 (−0.45 to 1.45)	0.29
Secondary outcomes: outcomes during admission										
Survival to discharge	89.8 (0.1)	27 (0.06)	90.7 (0.2)	47 (0.2)	92.1 (0.2)	6 (0.1)	88.89 (0.2)	16 (0.19)	−3.25 (2.68 to 3.82)	<0.001
Brain injury on imaging*	5.4 (0.1)	0	3.4 (0.1)	0	3.8 (0.1)	0	4.03 (0.1)	0	0.23 (0.61 to 0.14)	0.22
BPD†	42.6 (0.3)	4241 (9.76)	23.8 (0.3)	2025 (9.4)	29.9 (0.3)	625 (7.7)	28.7 (0.3)	11.05	1.24 (0.30 to 2.17)	0.01
Late-onset sepsis*	6.6 (0.1)	0	2.7 (0.1)	0	4.1 (0.1)	0	3.2 (0.1)	0	0.84 (0.48 to 1.20)	<0.001
Severe NEC*	5.4 (0.1)	0	3.5 (0.1)	0	4.3 (0.1)	0	4.1 (0.2)	0	0.18 (−0.21 to 0.57)	0.34
Any NEC*	10.9 (0.2)	0	7.0 (0.2)	0	8.7 (0.2)	0	8.2 (0.2)	0	0.47 (−0.07 to 1.01)	0.08
Major surgery*	12.5 (0.2)	0	9.9 (0.2)	0	11.4 (0.2)	0	10.6 (0.2)	0	0.80 (0.20 to 1.40)	0.01
Treatment for ROP*	5.5 (0.1)	0	2.3 (0.1)	0	3.3 (0.1)	0	2.8 (0.1)	0	0.50 (0.17 to 0.84)	<0.001
Maximum ROP*	6.6 (0.1)	0	2.3 (0.1)	0	3.3 (0.1)	0	2.8 (0.1)	0	0.49 (0.16 to 0.83)	0.003
Seizures*	3.5 (0.1)	0	2.9 (0.1)	0	3.0 (0.1)	0	3.2 (0.1)	0	−0.20 (−0.54 to 0.14)	0.24
Growth‡	−1.4 (0)	1089 (2.51)	−1.5 (0.0)	969 (4.5)	−1.5 (0.0)	113 (1.4)	−1.5 (0.0)	114 (1.4)	0.019 (0.035 to 0.003)	0.02
Days from birth to death§	11 (4–29)	0	4 (2–16)	0	10 (3.5–27)	0	4 (2–17)	0	−6 (6 to 6)	<0.001
Secondary outcomes: impairments at 2 years										
Ability to walk* (%)	3.0 (0.1)	0	2.3 (0.1)	0	2.8 (0.1)	0	2.5 (0.1)	0	0.27 (−0.04 to 0.58)	0.08
Vision* (%)	3.7 (0.1)	0	2.4 (0.1)	0	3.0 (0.1)	0	2.7 (0.1)	0	0.30 (−0.02 to 0.62)	0.06
Hearing* (%)	1.4 (0.1)	0	0.9 (0.1)	0	1.2 (0.1)	0	1.1 (0.1)	0	0.13 (−0.08 to 0.34)	0.21

Data are percentages (SE), unless indicated otherwise.
Missing data presented as n (%).
Growth is change in weight z-score between birth and discharge.
*Missing value is regarded as outcome not present.
†If infant died before 36 weeks, BPD status was treated as 'unknown'; if infant was discharged before 36 weeks, BPD status was treated as negative.
‡Mean (SE).
§Median (IQR).
BPD, bronchopulmonary dysplasia; NEC, necrotising enterocolitis; PN, parenteral nutrition; ROP, retinopathy of prematurity.

Conclusiones

- Menor mortalidad en grupo que recibe NP precoz (sesgo sobrevida).
- Mayor morbilidad en sobrevivientes que recibieron NP precoz.
  - Acorde a evidencia en adultos, niños (PEPaNIC trial), RNT.
  - ¿Efecto adverso de aminoácidos?
- Morbilidades asociadas con alteraciones al neurodesarrollo en el largo plazo.

Outcomes in relation to early parenteral nutrition use in preterm neonates born between 30 and 33 weeks' gestation: a propensity score-matched observational study

- **Objetivo:** evaluar diferencias en sobrevida y outcomes neonatales relevantes en prematuros de 30+0 a 32+6 semanas, según si recibieron o no NP la primera semana de vida.

- **Método:** cohorte retrospectivo, propensity score-matching, NHS-NNRD 2012 - 2017.

  - Exclusión: MFC gastrointestinal, MFC con cirugía en periodo neonatal, condiciones letales.

- **Outcome:** sobrevida al alta. Secundarios: crecimiento y componentes del neonatal core outcomes.

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Webbe JWH, et al. Arch Dis Child Fetal Neonatal Ed 2022;107:F131–F136.

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Table 1 Key background characteristics of neonates

	Entire cohort		Matched cohort	
	No PN group (N=19 080)	PN group (N=16 282)	No PN group (N=8146)	PN group (N=8146)
Gestational age (weeks), mean (SD)	31.5 (0.7)	30.9 (0.8)	31.2 (0.8)	31.2 (0.8)
Birth weight (kg), mean (SD)	1.74 (0.28)	1.47 (0.32)	1.67 (0.28)	1.59 (0.29)
Birth weight Z-score, mean (SD)	0.12 (0.95)	−0.16 (1.0)	0.01 (0.91)	−0.05 (0.88)
Proportion small for gestational age, n (%)	834 (4.4)	3773 (23.2)	710 (8.7)	715 (8.8)
Female, n (%)	8787 (46.1)	7424 (45.6)	3664 (45.0)	3733 (45.8)
Maternal factors				
Maternal age, mean (SD)	30.5 (6.3)	30.7 (6.3)	30.8 (6.3)	30.8 (6.2)
Maternal complications of pregnancy*, n (%)	14 025 (73.5)	12 234 (75.1)	6055 (74.3)	6177 (75.8)
Complete course of antenatal steroids, n (%)	3312 (18.2)	2515 (16.1)	1328 (17.0)	1324 (17.0)
Infant factors after birth				
Apgar score at 5 min, median (IQR)	9 (8–10)	9 (8–9)	9 (8–10)	9 (8–10)
Intubation during resuscitation, n (%)	1730 (9.1)	3275 (20.1)	1175 (14.4)	1180 (14.5)
Infant factors on first day				
Admission temperature, mean (SD)	36.7 (0.6)	36.7 (0.6)	36.8 (0.6)	36.8 (0.6)
Admission heart rate, mean (SD)	156 (18.0)	157 (18.2)	157 (18.0)	157 (18.1)
Admission oxygen saturation, mean (SD)	93.4 (7.8)	93.6 (7.6)	93.3 (7.8)	93.3 (7.8)
Ventilated on first day, n (%)	2833 (14.9)	5364 (33.1)	1932 (23.8)	1979 (24.4)
Inotropes on first day, n (%)	186 (1.0)	658 (4.1)	128 (1.6)	149 (1.8)
Treated for infection on first day, n (%)	8487 (44.5)	7795 (47.9)	3837 (47.1)	3843 (47.2)
Enteral feeding on first day, n (%)	14 401 (75.5)	8593 (52.8)	4570 (56.1)	4555 (55.9)
Organisational factors				
Born in level 3 unit (NICU), n (%)	7963 (41.7)	7294 (44.8)	3525 (43.3)	3463 (42.5)
Transferred on first day, n (%)	810 (4.2)	1112 (6.8)	450 (5.5)	464 (5.7)

*'Maternal complications of pregnancy' includes gestational hypertension, pre-eclampsia, diabetes, gestational diabetes, prolonged rupture of membranes or suspected chorioamnionitis.
NICU, neonatal intensive care unit; PN, parenteral nutrition.

Table 2 Neonatal outcomes

	Entire cohort				Matched cohort					
	No PN group (N=19 080)		PN group (N=16 282)		No PN group (N=8146)		PN group (N=8146)			
		Missing data		Missing data		Missing data		Missing data	Treatment effect (95% CI)	P value
Survival, n (%)	18 838 (98.7)	0	16 059 (98.6)	0	7987 (98.0)	0	8057 (98.9)	0	0.91 (0.53 to 1.30)	<0.001*
Secondary outcomes: outcomes during admission										
Brain injury on imaging, n (%)	88 (0.5)	0†	182 (1.1)	0†	48 (0.59)	0†	73 (0.90)	0†	0.31 (0.05 to 0.57)	0.02
Bronchopulmonary dysplasia, n (%)	525 (2.8)	354	1923 (12.0)	234	302 (3.8)	198	619 (7.7)	106	3.9 (3.2 to 4.7)	<0.001*
Late-onset sepsis, n (%)	108 (0.6)	0†	441 (2.7)	0†	59 (0.73)	0†	179 (2.2)	0†	1.5 (1.1 to 1.8)	<0.001*
Necrotising enterocolitis, n (%)	521 (2.7)	0†	1518 (9.3)	0†	285 (3.5)	0†	660 (8.1)	0†	4.6 (3.9 to 5.3)	<0.001*
Need for surgical procedures, n (%)	123 (0.6)	0†	358 (2.2)	0†	69 (0.85)	0†	147 (1.8)	0†	0.92 (0.57 to 1.3)	<0.001*
Retinopathy of prematurity, n (%)	410 (4.9)	10 728	879 (6.9)	3504	272 (5.3)	3007	297 (5.4)	2642	0.12 (−0.73 to 0.97)	0.78
Seizures, n (%)	107 (0.6)	14	214 (1.3)	37	81 (0.99)	3	114 (1.4)	8	0.39 (0.06 to 0.72)	0.02
Weight Z-score, mean (SD)	0.12 (0.95)	245	−0.16 (1.0)	170	0.073 (0.98)	134	−0.024 (0.96)	77	−0.12 (−0.10 to −0.15)	<0.001*
Secondary outcomes: outcomes at 2 years										
Impaired ability to walk, n (%)	62 (3.9)	17 481	127 (4.4)	13 371	41 (4.1)	7157	44 (3.8)	6994	−0.25 (−1.9 to 1.4)	0.77
Blindness or visual impairment, n (%)	91 (5.8)	17 516	178 (6.2)	13 414	54 (5.5)	7173	73 (6.4)	7009	0.83 (−1.2 to 2.9)	0.42
Deafness or hearing impairment, n (%)	23 (1.5)	17 530	56 (2.0)	13 436	13 (1.4)	7183	19 (1.7)	7022	0.31 (−0.76 to 1.4)	0.57

*Indicates a statistically significant result (p<0.05). Secondary outcomes corrected for multiple comparisons using Holm-Bonferroni method.
†Amount of missing data uncertain as absence of data interpreted as absence of outcome.
PN, parenteral nutrition.

Conclusiones

- NP la primera semana de vida se asoció a mayor sobrevida al alta.

- Prematuros que recibieron NP la 1ª semana tuvieron más DBP, LOS, NEC y necesidad de cirugìas.

Observational cohort study of changing trends in non-invasive ventilation in very preterm infants and associations with clinical outcomes

- **Objetivo:** evaluar el cambio en el uso de la ventilación no invasiva en menores de 32 semanas y su relación con DBP.
- **Método:** cohorte retrospectivo, NHS-NNRD 2010 - 2017.
  - HFNC-any o CPAP-only.
- **Outcomes:** DBP (O2 a las 36s).
  - Muerte previo al alta.
  - DBP o muerte a las previo al alta.
  - LOS, NEC, DAP, HIV, LPV, ROP, Neumotórax, Corticoides post natales.

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Sand L, et al. Arch Dis Child Fetal Neonatal Ed 2022;107:F150-F155.

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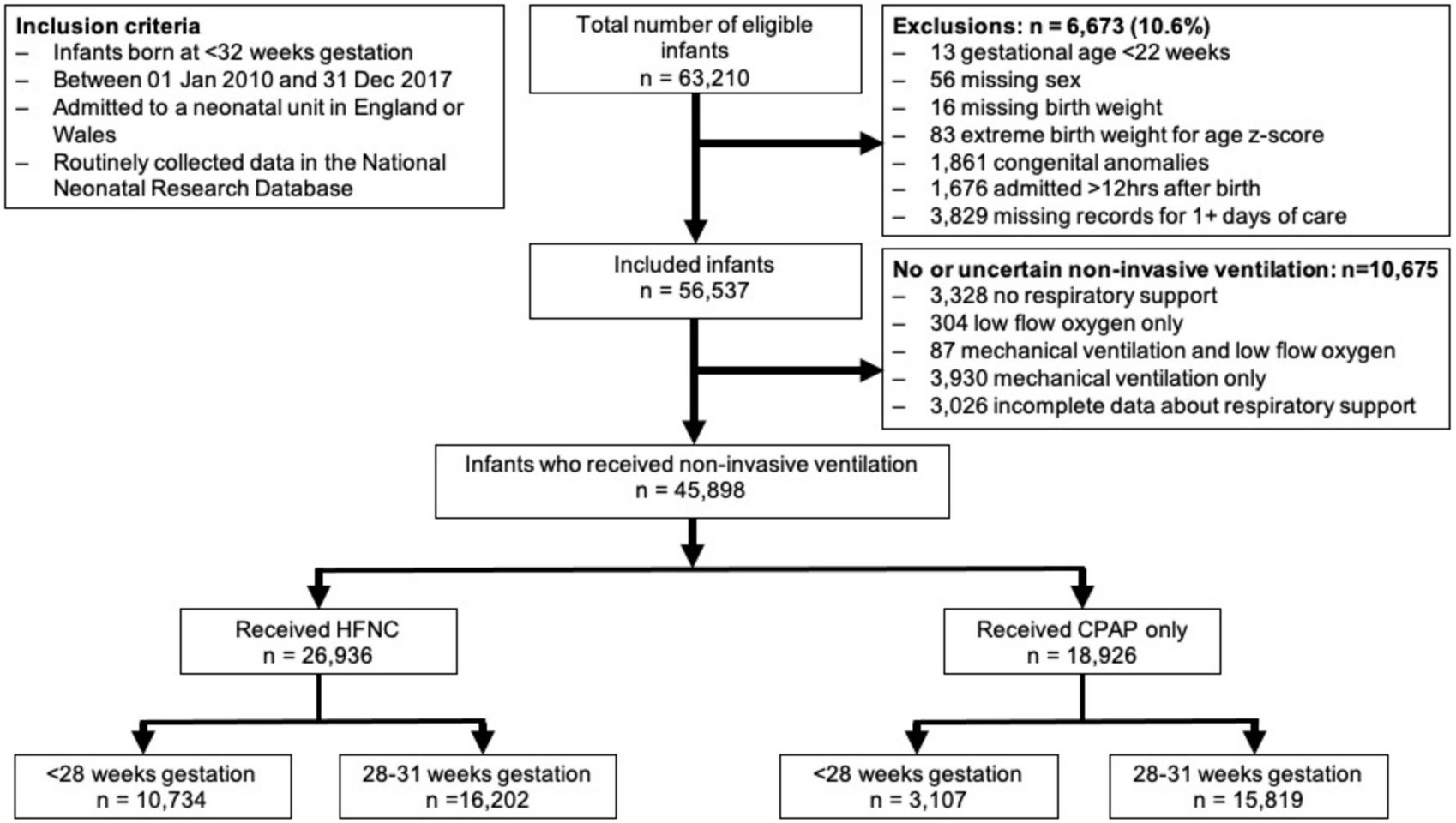
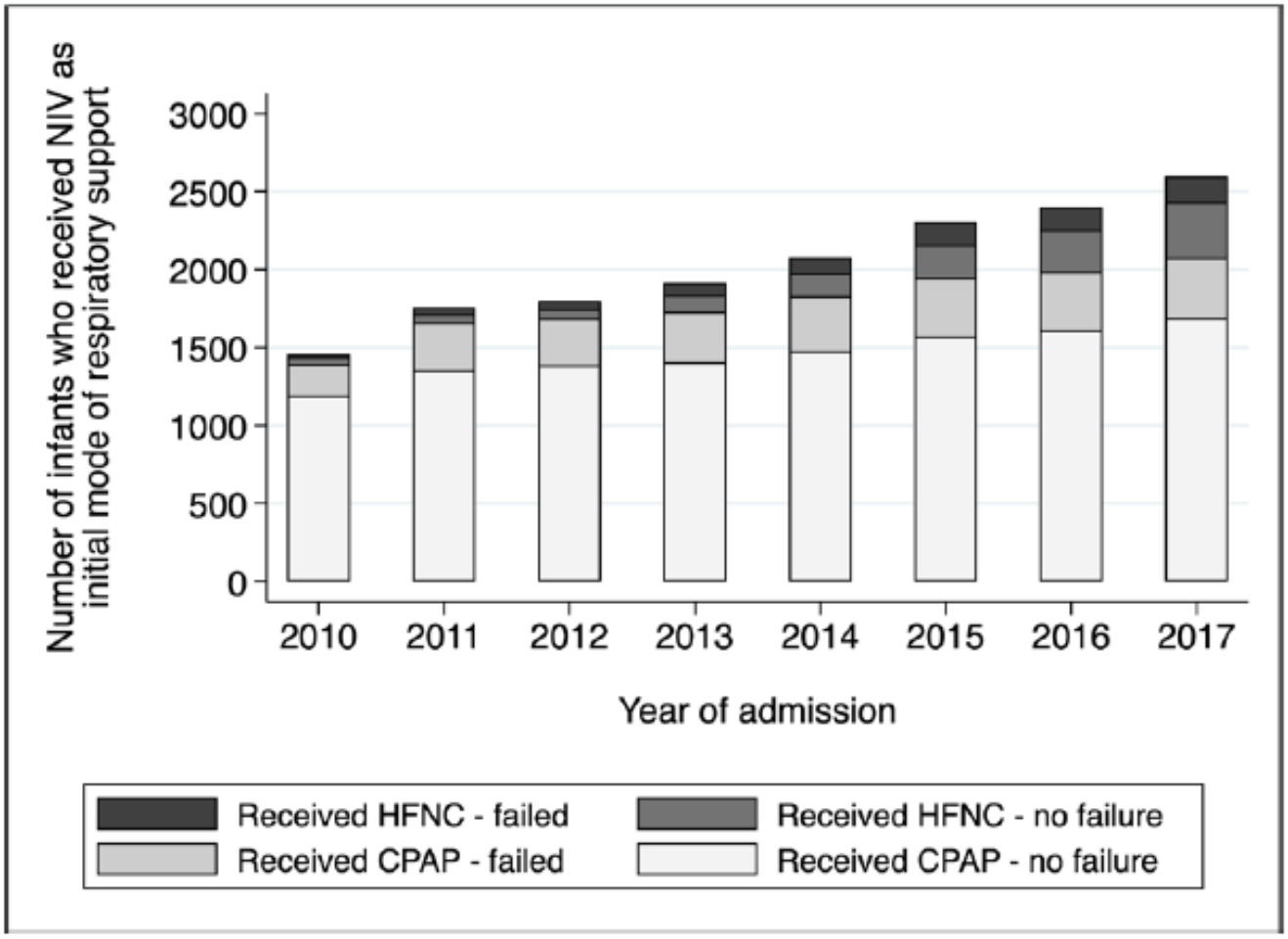
Supplementary information Figure 1. Very preterm infants who received NIV in neonatal units in England and Wales (2010-2017)



NIV (CPAP o HFNC) 1° día

- Durante todo el período el 28.8% recibió NIV el 1° ddv.
  - 6.2% de los < 28s
  - 38.6% de los 28-31s
- Incremento de 22.5% a 35.1% en uso de NIV el 1° ddv.
  - Mayor incremento en 28-31s (29.7% a 46.5%)
- CPAP como apoyo inicial en 25.3% de ingresos, de los cuales 18.3% requirió conexión a VMI la 1° semana.
  - Falla de CPAP: 31.5% en < 28s vs 17.5% en 28-31s.
- HFNC como apoyo inicial en 3.5% de ingresos, de los cuales 37.5% requirió CPAP o VMI la 1° semana.
  - Falla de HFNC: 59% en < 28s vs 34.7% 28-31s.

Apoyo respiratorio 1° día



- 1.3 veces en uso de CPAP (21.5 a 28%).
- 7 veces uso de HFNC (1 a 7%).
- Mayor incremento de subgrupo 28-31s.

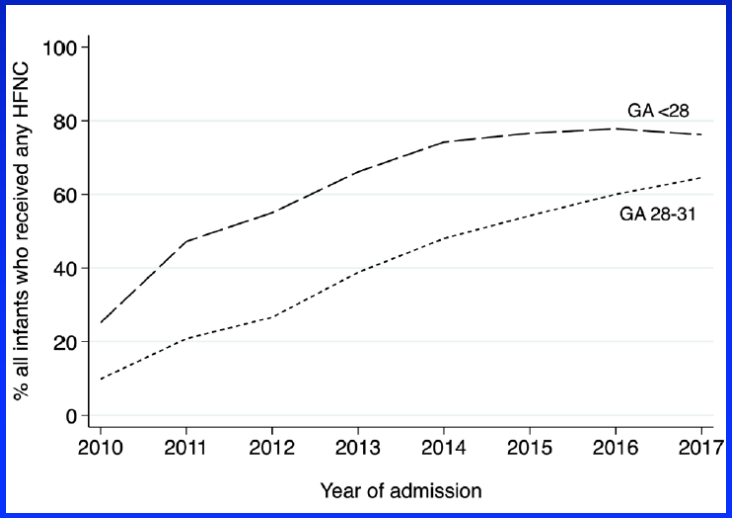
Uso de CPAP durante estadía en Neo

- Incremento de 68.5% a 80.2% en 2017 (p<0.001).

Year	Received invasive ventilation as initial mode, n	Subsequently received CPAP, n (%)	Number of days of CPAP received, median (IQR)	Day of care CPAP first received, median (IQR)
CPAP use following initial mechanical ventilation				
2010	3636	2708 (74.5)	13 (4–29)	3 (2–7)
2011	3896	2989 (76.7)	14 (4–31)	3 (2–6)
2012	4056	3202 (78.9)	14 (5–30)	3 (2–6)
2013	4175	3407 (81.6)	11 (4–26)	3 (2–6)
2014	4039	3331 (82.5)	12 (4–27)	3 (2–7)
2015	4186	3463 (82.7)	11 (4–26)	3 (2–7)
2016	4237	3542 (83.6)	11 (4–25)	3 (2–7)
2017	4162	3465 (83.3)	11 (3–25)	3 (1–7)
All	32 387	26 107 (80.6)	12 (4–27)	3 (2–7)

Uso de HFNC durante estadía en Neo

- Incremento de 14.3% a 68% en 2017 (p<0.001).



Year	Received invasive ventilation or CPAP as initial mode, n	Subsequently received HFNC, n (%)	Number of days of HFNC received, median (IQR)	Day of care HFNC first received, median (IQR)	Number of days of both HFNC and CPAP, median (IQR)
HFNC use following initial mechanical ventilation or CPAP					
2010	5030	792 (15.7)	6 (2–14)	17 (6–45)	1 (1–2)
2011	5556	1794 (32.3)	8 (2–20)	18 (5–40)	2 (1–4)
2012	5741	2269 (39.5)	9 (3–23)	14 (5–34)	2 (1–4)
2013	5905	2994 (50.7)	11 (4–25)	9 (3–27)	2 (1–5)
2014	5870	3494 (59.5)	12 (4–28)	7 (3–22)	3 (1–6)
2015	6136	3950 (64.4)	14 (5–29)	6 (3–19)	3 (1–7)
2016	6222	4255 (68.4)	13 (5–28)	5 (2–15)	3 (1–7)
2017	6239	4357 (69.8)	13 (5–29)	5 (2–14)	3 (1–7)
All	46699	23905 (51.2)	11 (4–27)	7 (3–23)	3 (1–6)

Outcomes neonatales: HFNC-any vs CPAP-only

	All infants (n=45 862)	HFNC (n=26 936)	CPAP only (n=18 926)	aOR or median difference (95% CI)
Dichotomous outcomes, n (%)				
BPD n=44 271* †	15 472 (34.9)	12 336 (47.0)	3136 (17.4)	2.98 (2.81 to 3.15)‡
Death before discharge n=45 862†	1598 (3.5)	678 (2.5)	920 (4.9)	0.19 (0.17 to 0.22)‡
BPD or death before discharge n=45 862†	17 063 (37.2)	13 008 (48.3)	4055 (21.4)	2.46 (2.33 to 2.60)‡
Late-onset sepsis	18 784 (41.0)	13 234 (49.1)	5550 (29.3)	1.81 (1.72 to 1.90)‡
NEC (confirmed)	8111 (17.7)	5670 (21.0)	2441 (12.9)	1.34 (1.26 to 1.43)‡
NEC requiring surgery	1479 (3.2)	1065 (4.0)	414 (2.2)	1.19 (1.03 to 1.36)
PDA requiring surgery	936 (2.0)	751 (2.8)	185 (1.0)	2.08 (1.73 to 2.50)‡
IVH (grade 3/4)	2180 (4.7)	1558 (5.8)	622 (3.3)	0.94 (0.84 to 1.06)
Periventricular leukomalacia	1046 (2.3)	715 (2.7)	331 (1.7)	1.24 (1.06 to 1.44)
ROP requiring treatment	2372 (5.2)	2032 (7.5)	340 (1.8)	1.73 (1.52 to 1.96)‡
Pneumothorax	1915 (4.2)	1337 (5.0)	578 (3.1)	1.59 (1.41 to 1.78)‡
Received postnatal steroids	2869 (6.3)	2400 (8.9)	469 (2.5)	1.93 (1.71 to 2.18)‡

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Outcomes neonatales: HFNC-any vs CPAP-only

	All infants (n=45 862)	HFNC (n=26 936)	CPAP only (n=18 926)	aOR or median difference (95% CI)
Continuous outcomes, median (IQR)				
Number of days of invasive ventilation*	2 (0–6)	3 (1–9)	1 (0–3)	0.0 (–2.1 to 2.1)‡
Number of days of NIV*	12 (4–36)	24 (8–46)	5 (2–13)	6.3 (5.7 to 6.9)‡
Number of days of respiratory support*	22 (6–61)	41 (11–77)	7 (3–25)	9.5 (9.1 to 9.9)‡
Length of stay (days)*	55 (40–80)	66 (47–91)	44 (34–59)	8.7 (8.3 to 9.1)‡

Conclusiones

- En red británica hubo aumento significativo en el uso de NIV, principalmente de HFNC tanto como apoyo inicial como posterior.
- Meta-análisis de RCT no muestran aumento de BPD con HFNC, pero incluyen pocos PT > 28s.
- PT que reciben HFNC requirieron apoyo respiratorio, días de O2 y hospitalizaciones más prolongadas.
- Se sugiere selección individualizada del uso de HFNC para mejorar los outcomes en el uso de HFNC.

Original research

OPEN ACCESS

Administration of parenteral nutrition during therapeutic hypothermia: a population level observational study using routinely collected data held in the National Neonatal Research Database

Setting: NHS neonatal units in England, Scotland and Wales. Participants 6030 term and near-term babies, born 1/1/2010 and 31/12/2017, who received therapeutic hypothermia; 2480 babies in the matched analysis.

Results: 1475/6030 babies **(25%) received parenteral nutrition.** In comparative matched analyses, the rate of **culture positive late onset infection was higher in babies that received parenteral nutrition** (0.3% vs 0.9%; difference 0.6; 95% CI 0.1, 1.2; p=0.03), but treatment for presumed infection was not (difference 0.8%, 95% CI −2.1 to 3.6, p=0.61). **Survival was higher in babies that received parenteral nutrition** (93.1% vs 90.0%; rate difference 3.1, 95% CI 1.5, 4.7; p<0.001).

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Temporal trends of in utero and early postnatal transfer of extremely preterm infants between 2011 and 2016: a UK population study

Setting: Neonatal units in England, Scotland and Wales. Extremely preterm infants 23+0 - 27+6 weeks from 2011 to 2016.

Results: 14719 infants were included ; 4005 (27%) underwent IUT; and 3042 (20.7%) had PNT.
IUTs decreased significantly between epochs.
PNTs increased 8.1% to 10.2%.
Survival to 90 days of age was significantly lower in infants undergoing PNT compared with IUT (HR 1.31, 95% CI 1.18 to 1.46), with the greatest differences observed in infants <25 weeks.

Original research

Life-threatening bronchopulmonary dysplasia: a British Paediatric Surveillance Unit Study

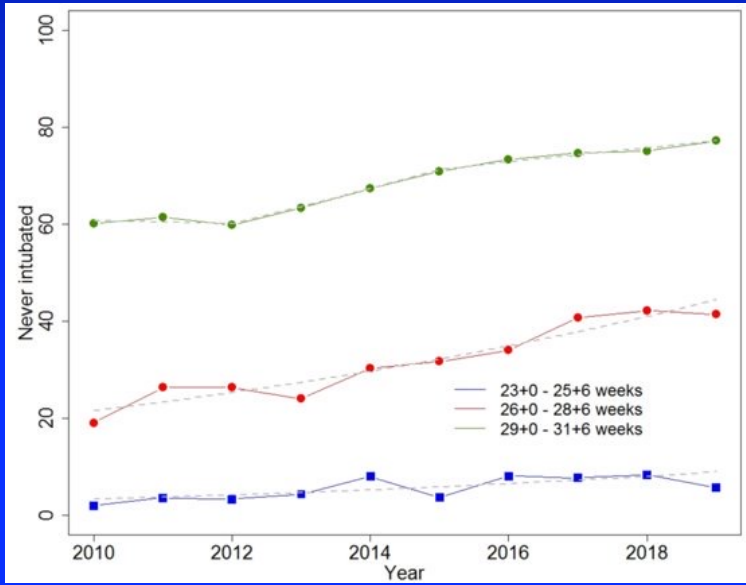
Life-threatening BPD: need for positive pressure respiratory support or pulmonary vasodilators at 38 weeks CGA in infants born <32 weeks. British Paediatric Surveillance Unit from June 2017 to July 2018.

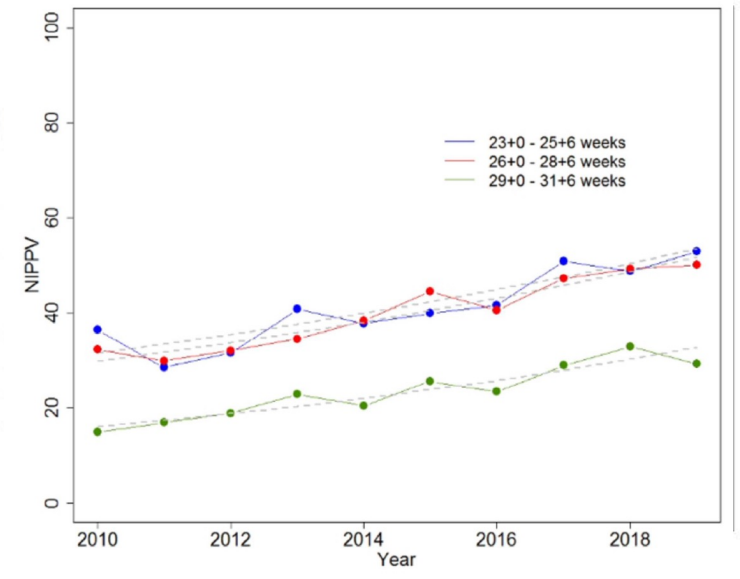
Results: incidence of **13.9 (95% CI: 11.8 to 16.3) per 1000 live births <32 weeks**. Median gestation 26.1 weeks, and birth weight 730 g. More affected infants were male (62%). Fifteen died at median age 159 days or 49.6 weeks CGA. **60.6% received postnatal steroids and 23.4% pulmonary vasodilators.**
Death (16%) and/or major neurodevelopmental impairment (37.3%) or long-term ventilation (23.4%) were significantly associated with need for invasive ventilation near term and pulmonary hypertension.

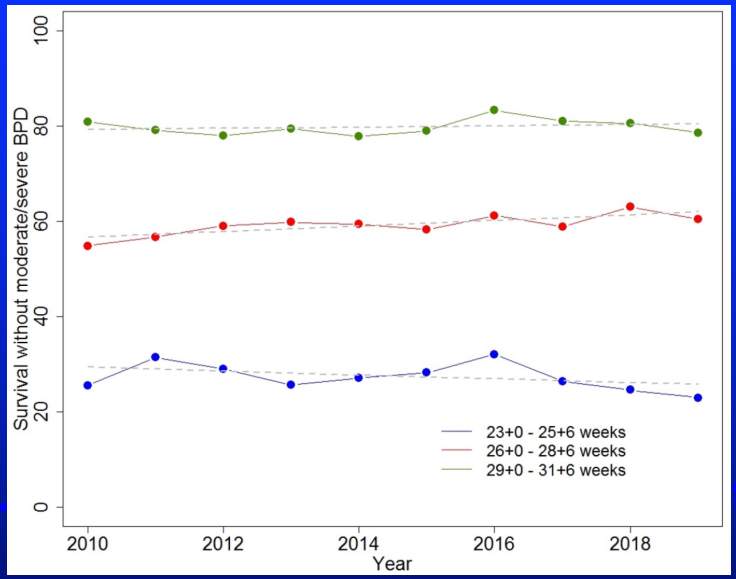
Table 2 Respiratory support and medications received pre-discharge

	Number of infants	Starting age (days)	Starting CGA (weeks)	Total duration (days)	Postnatal age last received (days)
Respiratory support					
Invasive ventilation	91/92 (98.9%)	0 (0–0; 0–2)	26.4 (24.6–28.1; 23.3–31.3)	29 (17–51; 1–238)	50 (22–98)
Nasal CPAP/BiPAP	89/92 (96.7%)	20 (6–39; 0–152)	29.6 (27.7–32.1; 24.3–48.7)	27 (14–45; 2–297)	84 (49–103)
Nasal high flow	84/92 (91.3%)	49.5 (28–84; 0–161)	33.6 (31.1–37.1; 27.7–50.7)	40.5 (22–64; 4–156)	109 (89.5–143)
Medications					
PDA closure	36/94 (38.6%)	7.5 (5–14.5; 0–34)	26.3 (25.3–27.1; 23.9–31.9)	–	–
Ibuprofen	33 (91.7%)				
Paracetamol	4 (11.1%)				
Postnatal steroid	57/94 (60.6%)	26 (14–48; 0–185)	29.7 (27.9–33.4; 24.6–55.9)	23 (14–44)	91 (57–150)
Diuretics	82/94 (87.2%)	32 (17–51; 3–204)	31.1 (29.1–34.5; 25.4–34.5)	90 (49–123)	128 (101–169)
Inhaled steroid	16/94 (17.0%)	96.5 (60–126; 9–231)	39.4 (35.0–46.5; 26.4–61.1)	21 (5–74)	132 (104–183)
Inhaled bronchodilators	8/94 (8.5%)	124.5 (120–192; 100–231)	45.4 (42.4–56.6; 40.9–61.1)	14 (5–27)	148 (134–209)
Sildenafil	22/94 (23.4%)	–	–	44 (18–132)	–

Temporal trends in respiratory care and bronchopulmonary dysplasia in very preterm infants over a 10-year period in Spain







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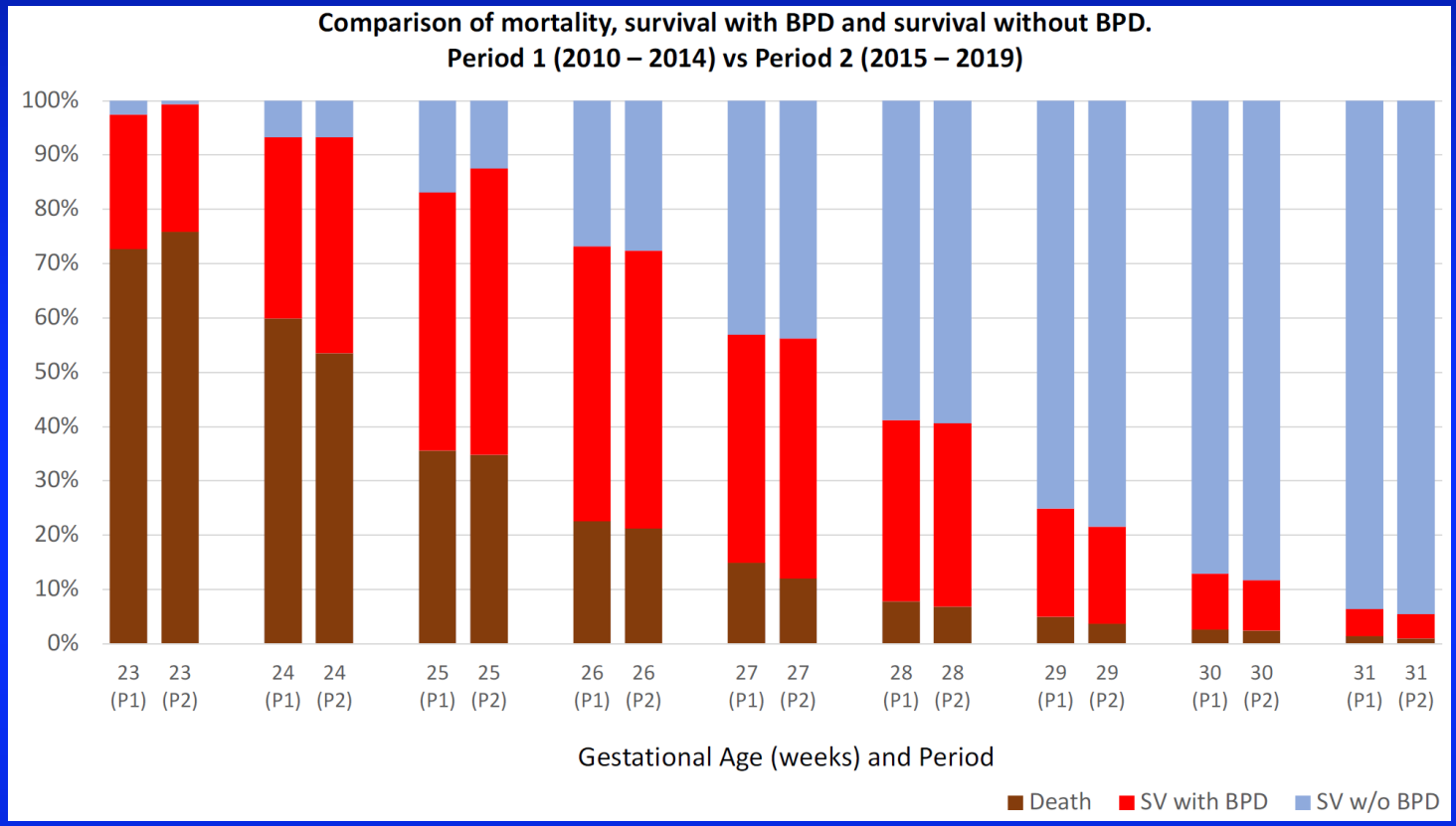

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Un Nuevo Concepto en Medicina Perinatal

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Original research

Direct swallowing training and oral sensorimotor stimulation in preterm infants: a randomised controlled trial

Effects of direct swallowing training (DST) alone and combined with oral sensorimotor stimulation (OSMS) on oral feeding ability in < 32 weeks.
Control: two times per day sham intervention **Vs**
DST: DST and sham interventions, each once a day **Vs**
DST+OSMS: DST and OSMS interventions, each once a day.

Results: 63 control; 63 DST; 60 DST+OSMS.
The mean time from start to IOF (independent oral feeding) differed significantly between the control, DST and DST+OSMS groups (21.1, 17.2 and 14.8 days).

Compared with non-intervention, DST+OSMS significantly shortened the time from start to IOF (effect size: −0.49; 95% CI: −0.86 to –0.14; p=0.02), **whereas DST did not.**
The proportion of feeding volume taken during the initial 5min, an index of infants' actual feeding ability when fatigue is minimal, increased earlier in the DST+OSMS than in the DST.

Conclusion: in very preterm infants, DST+OSMS led to the accelerated attainment of IOF compared with nonintervention, whereas DST alone did not. The effect of DST+OSMS on oral feeding ability appeared earlier than that of DST alone.

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- Videos

Trial of aerosolised surfactant for preterm infants with respiratory distress syndrome

Evaluate safety of an aerosolised surfactant, SF-RI 1, administered via nasal nCPAP and a prototype breath synchronisation device (AeroFact), to preterm infants with RDS.

Multicentre, open-label, dose-escalation study with historical controls, Royal Hospital for Women, Sydney.

Infants 26 weeks - 30 weeks gestation who required nCPAP 6–8 cmH2O and FiO2 <0.30 at <2 hours of age.

In part 1, infants received a single dose of 216mg/kg of aerosolised surfactant.

In part 2, infants could receive up to four doses of aerosolised surfactant.

Table 2 AeroFact treatment and short-term tolerance of treatment

	Part 1	Part 2
n	10	21
AeroFact treatment, n (%)		
1 dose	10 (100)	13 (62)
2 doses	–	4 (19)
3 doses	–	4 (19)
Dosing tolerance within 2 hours of treatment, n (%)		
Nasal congestion requiring suctioning	1 (10)	1 (5)
Dosing tolerance within 4 hours of treatment, n (%)		
Transient bradycardia	0	1 (5)
Increased RSS >5 above baseline	0	1 (5)
Required intubation	1 (10)	4 (19)

Table 3 Outcome of AeroFact-treated infants and matched historical controls

	Part 1			Part 2		
	AeroFact	Control	P value	AeroFact	Control	P value
n	10	30		21	63	
Primary outcomes, n (%)						
Met study treatment failure criteria	4 (40)	11 (33)	0.72	6 (29)	30 (48)	0.20
Received instilled surfactant	4 (40)	14 (47)	>0.99	6 (29)	29 (46)	0.20
Survived	9 (90)	30 (100)	0.25	20 (95)	63 (100)	0.25
Survived without BPD	8 (80)	22 (73)	>0.99	16 (76)	43 (68)	0.59

Original research

OPEN ACCESS

Characteristics of neonatal herpes simplex virus infections in Germany: results of a 2-year prospective nationwide surveillance study

2-year prospective nationwide surveillance 2017 - 2018.
Postnatal age of ≤60 days and a positive HSV PCR or HSV culture from skin, mucous membrane, vesicles or conjunctival smear, blood or cerebrospinal fluid were included in the study.

Results: 37 cases were analysed. **29 patients who exhibited no or only mild clinical symptoms were discharged home** without organ damage or neurological abnormalities. **Four patients showed significant neurological impairment**, **one patient required liver transplantation** and two patients died during in-patient treatment.
The 2-year incidence of neonatal HSV infections was 2.35 per 100.000 live births and disease-specific mortality was 0.13 per 100.000 live births.
In 20 cases, an orofacial HSV infection was present in one or more family members. Active maternal genital HSV infection was reported 3 cases.