

# Survey of use of inhaled NO in premature babies with hypoxic respiratory failure

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## Introduction

Despite the lack of clear evidence for the use of inhaled nitric oxide (iNO) in preterm babies with hypoxic respiratory failure (HRF), it is used in clinical practice<sup>1</sup>.

## Aims and Methods

A survey was conducted to gain an understanding of the use of iNO in preterm infants (≤32 weeks' gestation) with HRF in the UK.

The survey was distributed to Neonatology Consultants in Neonatal intensive Care Units (NICU) in 20 neonatal operational delivery networks (ODNs) in the UK via an online hyperlink.

Responses were collected from September 2016 to February 2017.

## Results

The overall response rate was 70% (14 out of 20 ODNs responded) 50% of the consultant neonatologists that responded to the survey have more than 10 years of experience as consultants.

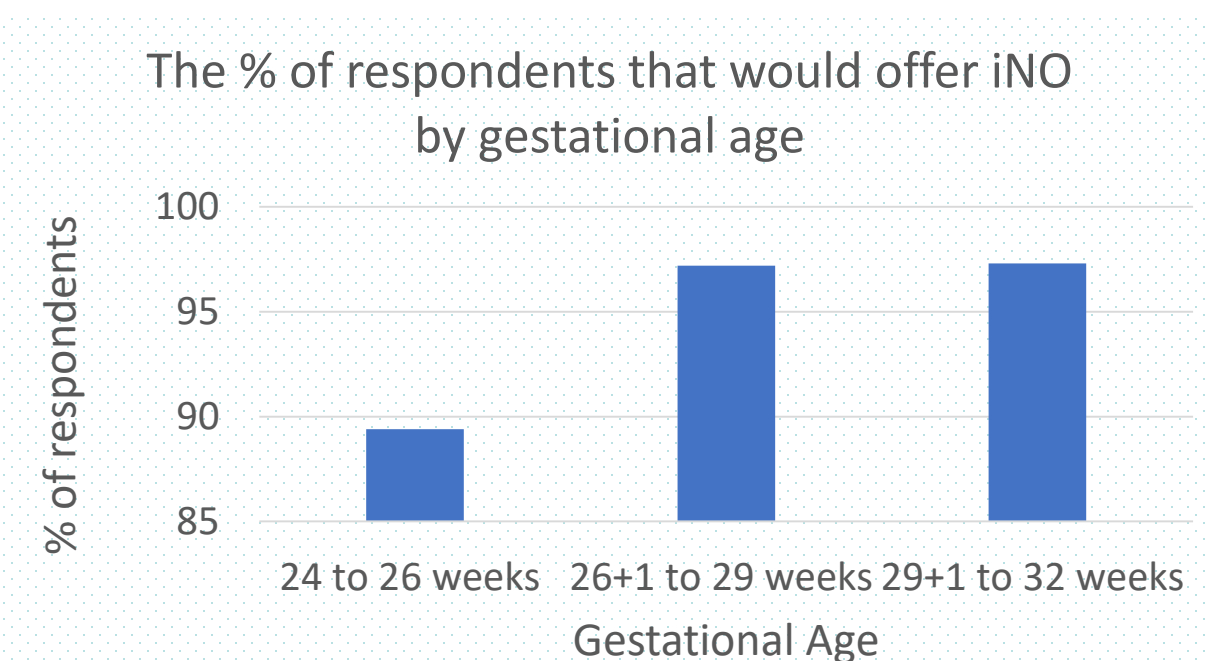
Clinical question: Will you offer iNO to a baby with HRF when there is:

1. no clinical evidence of PPHN or echocardiography (ECHO) available;
2. clinical evidence of PPHN but ECHO is not available;
3. clinical and ECHO evidence of PPHN?

The below table summarises the results, showing the percentage of consultants surveyed who would offer iNO:

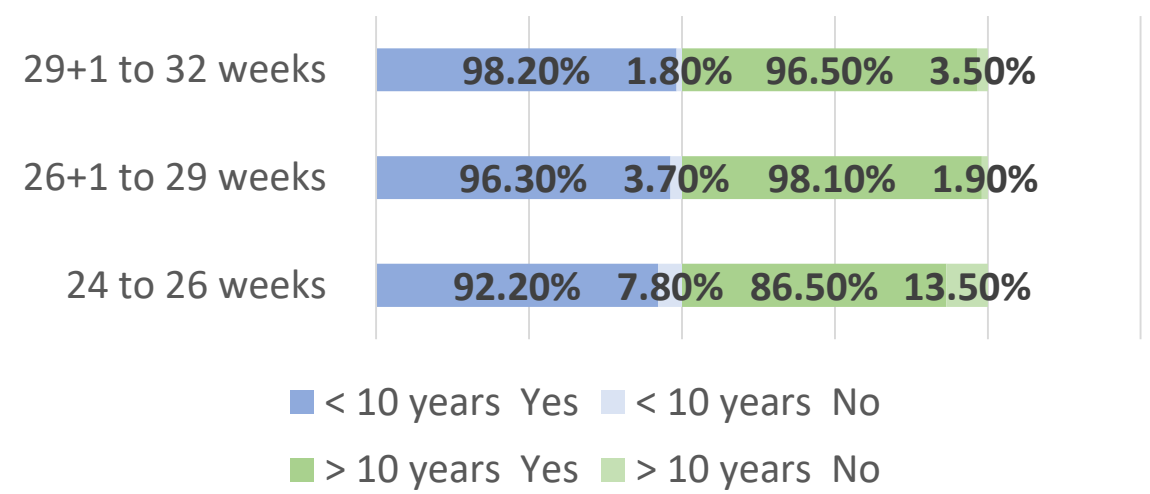
| Gestational age | Absence of clinical evidence of PHN and ECHO not available | Clinical evidence of PPHN and ECHO not available | Clinical and ECHO evidence of PPHN |
|-----------------|--|--|------------------------------------|
| 24- 26 weeks    | 55/104 (52.9%)   | 84/105 (80.7%)                                   | 93/ 105 (89.4%)                    |
| 26+1- 29 weeks  | 71/108 (65.7%)   | 100/108 (92.6%)                                  | 105/107 (98.1%)                    |
| 29+1- 32 weeks  | 72/113 (63.7%)   | 107/113 (94.7%)                                  | 110/114 (97.4%)                    |

A similar percentage of consultant neonatologists would offer iNO in either the 26+1 to 29 week gestation group or the 29+1 to 32 week gestation group.



The following graph shows the percentage of neonatologists that would offer iNO according to the number of years experience they have as consultants.

1: Clark RH, et al, The changing pattern of inhaled nitric oxide use in the neonatal intensive care unit. J Perinatal. 2010

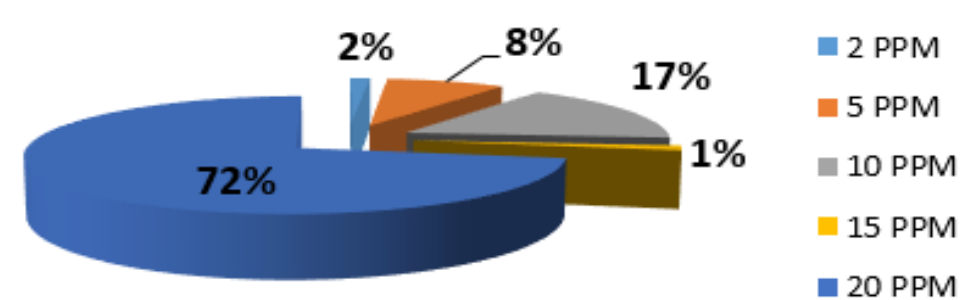


Across all gestations most neonatologists do not see IVH (Grade III/IV) as a contraindication for the use of iNO (57% for 24 to 26 weeks, 61% for 26+1 to 29 weeks and 63% 29+1 to 32 weeks).

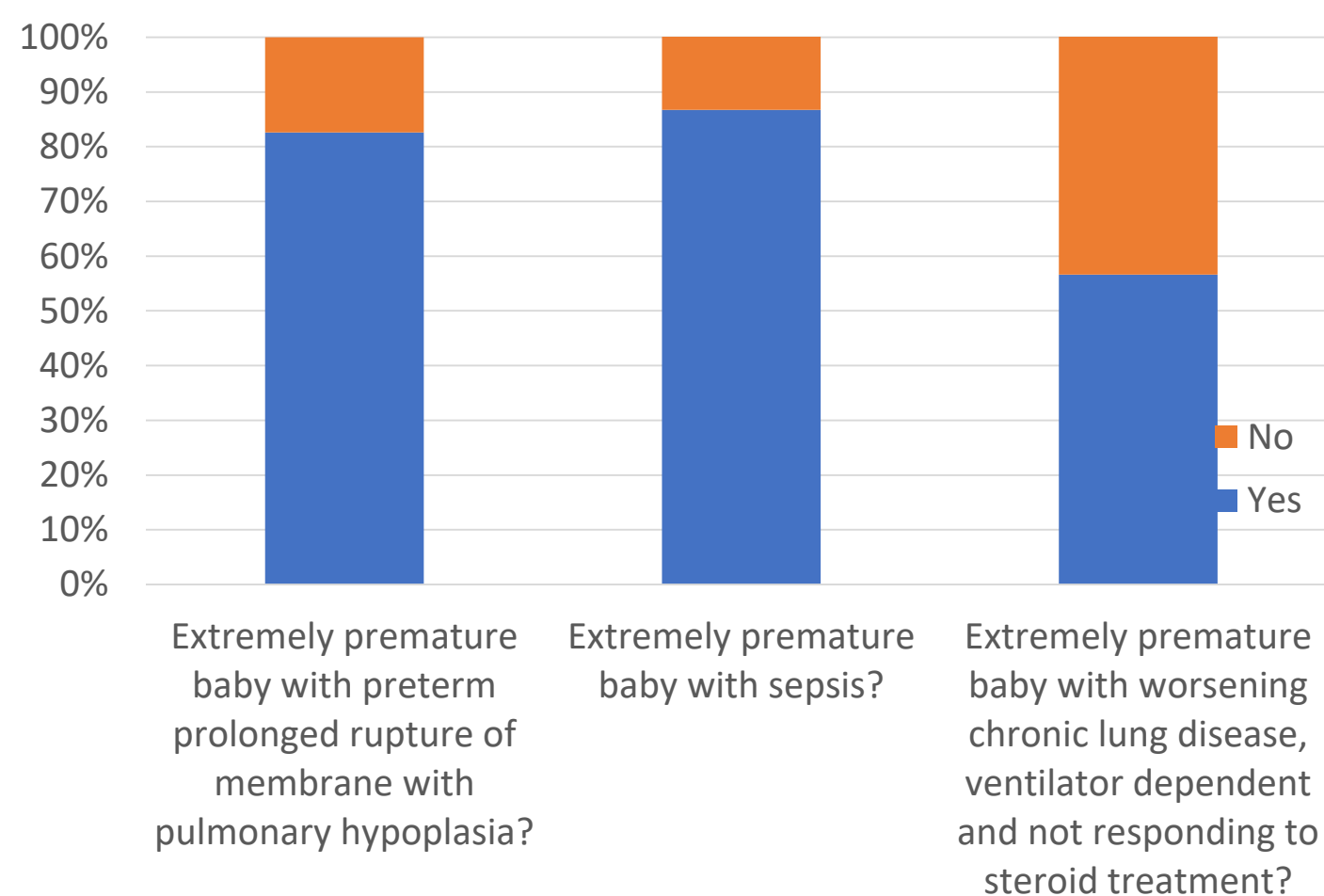
Respondents were asked about the starting dose they would administer; 72% of the consultants said they would use a starting dose of 20 PPM making this the most common starting dose.

The majority of neonatologists would administer a maximum dose of 20 PPM when given a range between 10-40 PPM.

Chart 9. Starting dose of Nitric Oxide Therapy



Would you offer iNO to infants who have HRF and proven pulmonary hypertension (ECHO evidence) in the following scenarios?



## Conclusion

- More than half the neonatologists would offer iNO to an extremely premature baby with HRF in absence of clinical evidence of PPHN
- The threshold for offering iNO to babies with HRF in the 26+1-29 weeks gestation group was similar to that for the 29+1 to 32 week gestation group.
- Years of experience didn't have an impact on the threshold to offer iNO.
- More than 50% of neonatologists don't consider IVH (Grade III/IV) a contraindication.
- HRF in a preterm baby due to preterm prolonged rupture of membranes with pulmonary hypoplasia and sepsis was a preferred clinical situation to offer iNO than HRF in a baby with worsening chronic lung disease and ventilator dependent refractory to steroid treatment.