



**THE BAPM NEONATAL DATASET -
for the annual reporting of data by
neonatal intensive care units**

**Report of a Working Party of
the British Association of Perinatal Medicine**

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BAPM Neonatal dataset (copyright © BAPM)

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Summary and recommendations

There is currently no standard format for neonatal annual reports. The British Association of Perinatal Medicine has recommended¹ standards for neonatal units providing intensive care which includes the production of an annual report.

This document briefly discusses some of the professional and other issues raised by collecting the information (page 2). It then sets out detailed proposals for the content of annual reports, which includes measures of the workload, activity and resources available (page 6).

Twelve different headings cover different aspects of the work of a unit. Tables clarify how the information should be made available (page 13). Two minimum datasets are defined in detail as appendices.

The first (from page 20) consists of 32 patient based items required for the report, and a further 8 data items not required for the report but commonly collected.

The second (from page 33) consists of 34 unit based data items, 18 of which define aspects of the nursing staff structure, and 8 the medical staffing structure; the number of livebirths, designated neonatal cots and transport arrangements are defined, as are daily censuses of nursing dependency levels and of refusals of requests for transfers in. Further details of some definitions are contained in a separate appendix on page 43.

It is recommended that:

- 1. The annual report proposals are piloted by units wishing to participate, in order to test feasibility**
- 2. BAPM starts preparations to collate annual reports**
- 3. BAPM prepares to collect a few key items from computerised units willing to participate (items 1 to 3, 8 to 19 and 27 to 32 of the patient dataset, and items 1 to 31 of the unit dataset), with the initial aim of being able to ascertain the number of inpatient and ventilator days in each unit undertaking neonatal intensive care, the nursing establishment and the medical staffing structure.**
- 4. The datasets are progressively extended to include two year follow up information consistent with the recommendations of the working groups convened by the NPEU².**
- 5. When next revised, some BAPM definitions of categories of intensive care would merit further refinement (see pages 29 & 30).**
- 6. The dataset is copyrighted by the BAPM. This could conceivably have commercial benefits in future relationships with information system suppliers.**

1. Introduction

- 1.1. The British Association of Perinatal Medicine (BAPM) document “Standards for Hospitals Providing Neonatal Intensive Care” recommends that:

“Each unit should provide... data concerning workload, activity and short term morbidity, which should be produced locally as an annual report. We wish to encourage the development of definitions for perinatal data to facilitate comparisons between units. Where possible such data should be compatible with current NHS and OPCS data collection systems.” (para 8.5.1.)¹

- 1.2. Following discussion at the Annual General Meeting of the Association in 1995 it was decided to identify a working group who would identify what might comprise a minimal dataset for such an annual report and develop suitable definitions to facilitate standardised data collection and meet the above standard.
- 1.3. The Working group met twice and held two teleconferences.

2. Two minimum datasets to support annual reports

- 2.1. The working party has developed specific proposals for the BAPM in response to the above. They are not intended to be restrictive, ie the overall format, detail and presentation should be determined by individual centres, and the actual contents will vary depending on what data are available.
- 2.2. It became clear that it would be beneficial if the definitions in the annual report were supported by two datasets, one consisting of patient based information and the second of unit based information. The definitions for annual reports and the two datasets that have been developed are, where possible, consistent with the BAPM Standards for Hospitals Providing Neonatal Intensive Care¹, with existing proposals for neonatal minimum datasets (in particular the 1994 report: Disability and perinatal Care: Measurement of Health Status at Two Years²), and with the definitions of terms produced by the Australian and New Zealand Neonatal Network³.
- 2.3. Two alternative approaches to facilitating comparison of the contents of annual reports have been considered. In the first, copies of the annual reports themselves are used; this would permit comparison between small numbers of units. Unless these were in a standard format, it would require considerable effort to collate these nationally: either a standard form or electronic file would need to be completed by each unit submitting a copy of their annual report to BAPM. The central collation of annual reports would allow BAPM to collect information to assist in the national monitoring of the delivery of neonatal intensive care services (as opposed to the creation of league tables of performance of neonatal units).
- 2.4. Alternatively, BAPM could develop a national database of neonatal intensive care services using the patient and unit datasets. These would be easier if submitted in electronic format (which would only be feasible for those units

having well maintained computerised information systems) although paper forms are a possible alternative. A number of other benefits might follow, including assistance in planning collaborative research projects, the coordination of follow up information, and national population data for professionals and public (for example national survival rates for extremely low birthweight babies admitted to neonatal intensive care to assist with information to support 'changing childbirth'). The information required by BAPM should not include any patient identifiers apart from the new NHS number.

2.5. These proposals raise a number of issues:

2.5.1. **Professional confidentiality:** The identity of each unit must be confidential to BAPM and the unit itself. Professionals need to have confidence that information held by BAPM will not be "used by managers" without their permission, or leak into the public domain.

2.5.2. **Patient confidentiality:** There is currently a debate within the health service about the safeguards required before patient identifiers are transferred within the NHS. The NHS executive have issued guidelines⁴ which permit the transfer of patient identifiers where this is necessary for audit, without written patient consent. The BMA's position⁵ is that explicit patient consent is required. It is the working party's view that any unit providing datasets including the NHS number should ensure that parents of babies admitted are informed as part of the written ward information, as in the NHS executive guidance.

2.5.3. **Incentive:** Units providing information could reasonably expect to be given back information on their own activity compared to national figures.

2.5.4. **Cost:** The proposal will have a financial cost, both to neonatal units and to BAPM.

2.5.5. **Feasibility:** Although many units hold computerised patient based records, it is unlikely that comprehensive information could be obtained from all units. The datasets in this document would allow those units already capable of recording more information to ensure that this was consistent with that held by other units.

2.5.6. **Technical:** There could be advantages in using an object orientated approach to designing the central database. This would help to reconcile incomplete or inconsistent data and would facilitate the addition of more data at a later date. The use of the new NHS number would be invaluable in allowing cross referencing between different units caring for the same baby. It could also help to overcome some of the difficulties with obtaining follow up information on babies that move. It is therefore most unfortunate that it will not be issued at the time of birth.

2.5.7. **Validation:** The Office of National Statistics (ONS, previously OPCS) holds information obtained from birth notifications, which include birthweight. In England and Wales, CESDI collects information about babies dying. In Scotland, detailed neonatal information is collected (SMR 11). The proposed version 5 Maternity Contract Minimum Data Set has been developed without paediatric input. It will include birthweight, gestation at delivery (mother's dates), mother's NHS

number, and whether the baby has received special or intensive care .
All are potential alternative sources of information.

- 2.6. Although the purpose of this dataset is to help units to collect important information about neonatal care, it should be recognised that all the measures of outcome suggested in this document reflect the health of the population served. Conclusions about the quality of neonatal or obstetric care cannot be drawn from comparisons between units. Even in the largest units, numbers are likely to be sufficiently small that inferences cannot be drawn from a single year's information.
- 2.7. During the discussions it became apparent that some development of the database would be necessary and that it would be necessary to reconsider, notably, the current categories of intensive care.
- 2.8. Furthermore, following the example of the Child Health System, there may be merit in copyrighting the dataset.

3. General principles

- 3.1 The principles governing the decisions about inclusion of individual items in the dataset were as follows:
 - 3.1.1 the dataset should be as small as possible;
 - 3.1.2 outcomes that measure the workload or activity of the unit are given priority;
 - 3.1.3 the structure and process measures collected should be those where there is evidence of benefit or a professional statement on desirable standards;
 - 3.1.4 where possible, data should be consistent with that currently collected, and with other datasets;
 - 3.1.5 the information should be robust, ie based on raw data, capable of validation, unambiguous, and not liable to a need for frequent change.
- 3.2 Although rates are commonly presented, for most units the small numbers in any one year will result in wide confidence intervals and large variations between successive years.
- 3.3 The timescale for annual reports should run from 1st January, ie the calendar year, to be consistent with WHO recommendations. Although contracting in the NHS is undertaken by financial year, it will still be possible to present reports to purchasers if required.
- 3.4 Information on inborn babies should be reported separately from outborn babies. Inborn babies transferred before birth need to be reported separately from those born to mothers booked at each unit. There may be some merit in further separating out those babies referred specifically to fetal medicine departments.

- 3.5 It is recognised that some aspects of the annual report will be difficult to complete if data are not patient based and collected on computer.
 - 3.6 Graphs are often the most effective way of presenting data, but it can be difficult to extract information from them. Information should therefore also be available as tables. Where possible, both numbers (numerator and denominator) should be stated (eg number of babies dying and total number at risk). A set of tables is provided by way of illustration, following the recommendations for annual reports.
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4. Recommendations for the contents of annual reports from neonatal units follow. These include illustrative tables (which can be obtained in electronic format from BAPM) and two datasets with detailed definitions to support annual reports, presented as appendices. The one exception is the recommendation to list the research and audit activity of the unit (item 12), where data definitions are not attempted.

Recommended Definitions for Contents of Annual Reports

It is recommended that the following information be included in reports:

1. **Survival to 28 completed postnatal days (the end of day 27, the first day being day 0), discharge home and to 12 months of age for all babies, expressed as birthweight groups:**

- 2,500 grams or more
- 1,500 to 2,499 grams
- 1,250 to 1,499 grams
- 1,000 to 1,249 grams
- 750 to 999 grams
- 500 to 749 grams
- less than 500 grams

Both the numerator and denominator should be included where possible. Babies with congenital malformations should be included. Although the birthweight groups are designed to be compatible with FIGO recommendations, a separate table is required to take account of stillbirths and lethal congenital malformations (*see appendix A, page 14*). It is acknowledged that especially among the smallest babies, those who are liveborn but not known to the neonatal service may not be included. In units accepting referrals from other centres, the numbers of babies at risk of death may not be known for some birthweight groups: the numbers of babies dying in each birthweight group should then be reported. Information on survival at discharge home may not be available for babies transferred to another unit. Twelve month survival will need to be reported at the next annual report.

(see table page 13)

2. **Survival to 28 completed postnatal days, discharge home and to twelve months of age for all babies, expressed by completed week of gestation:**

- <23 weeks
- 23 weeks (ie 23 weeks 0 days to 23 weeks 6 days)
- 24 weeks
- 25 weeks
- 26 weeks
- *etc up to 33 weeks*
- 34 to 36 weeks
- 37 or more weeks

This is of more practical help to Obstetricians in making clinical management decisions than survival by birthweight. Units may wish to aggregate weeks together in a graphical representation of survival by gestation or aggregate information from more than one year for this purpose. Both the numerator and denominator should be reported, including all babies with congenital malformations. In units accepting referrals from other centres, the numbers of babies at risk of death may not be known for some gestation groups: the numbers of babies dying in each gestation group should then be reported. Information on survival at discharge home may not be available for babies transferred to another unit. Twelve month survival rates will need to be reported at the next annual report.

CRIB scores are intended to adjust for differences in clinical severity when comparing hospital mortality between different units. However, the score is still being evaluated, and it is currently felt to be premature to include this information in annual reports. Units are encouraged to collect the necessary information, to allow subsequent analysis, and the components of the score are listed in appendix B.

(see table page 15)

3. Intensive and special care activity:

- 3.1. The number of booked inborn babies admitted to the intensive care or special care baby unit, expressed as a percentage of the total booked births served* by the unit. This is a measure of the degree to which babies are separated from their mothers after birth.
- 3.2. ** If other units' births are included, these should be named, and their birth rates stated, if known.*
- 3.3. The numbers of intensive care days in the year (levels 1 and 2 reported separately) (for details of definition see appendix D, page 44).
- 3.4. The numbers of special care days for all babies whilst on the neonatal unit in the year (BAPM definition) (for details of definition see appendix D). It is acknowledged that many babies receive special care on postnatal and transitional care wards, but information on these babies is difficult to obtain.
- 3.5. The numbers of babies receiving level 1 intensive care at any stage during their admission.
- 3.6. The numbers of babies receiving level 2 but not level 1 intensive care.
- 3.7. The numbers of babies receiving special but not intensive care.

Items 3.2 to 3.6 may be reported separately for singletons and multiple births (twins and higher order births). This gives an indication of their contribution to the unit's activity. They should also be reported separately for booked inborn babies, to give an indication of the proportion of activity generated by these babies.

(see table page 16)

4. Experience with respiratory support:

- 4.1. The number of infants of all gestation receiving mechanical ventilation via an endotracheal tube (at any rate and of any type) at any stage, excluding infants receiving ventilatory support solely in the delivery room for the purpose of resuscitation at birth.
- 4.2. The number of infants of all gestation receiving CPAP via any route (or of nasopharyngeal ventilation) but not mechanical ventilation.
- 4.3. The total number of days of mechanical ventilation received by babies of all gestation (defined as in 4.1).
- 4.4. The total number of days of CPAP received by babies of all gestation, whether or not infants received mechanical ventilation.
- 4.5. The number of babies receiving supplemental oxygen at 28 days.

4.6. The number of babies discharged home on oxygen therapy.

(see table page 16)

5. Early neonatal encephalopathy⁶.

The number of babies with early encephalopathy consistent with grades 2 and 3 hypoxic ischaemic encephalopathy as described by Sarnat. The number of deaths per thousand booked inborn livebirths should also be reported for these babies. Where the denominator is unknown, as in outborn babies, the numbers of babies with early neonatal encephalopathy should be reported. It is emphasised that the reporting of these babies does not necessarily imply any single, specific aetiology. (for details of definition see appendix D, page 43)

(see table page 16)

6. Screening and surveillance policies.

- 6.1. The current unit policy for cranial ultrasound surveillance of preterm infants. Number of babies actually examined as a proportion of those intended to be examined.
- 6.2. The current unit policy for screening for retinopathy of prematurity. Number of babies actually screened as a proportion of those intended to be screened. The number of babies with retinopathy of prematurity receiving treatment.
- 6.3. The current unit policy for screening for sensorineural hearing loss. Number of babies actually screened as a proportion of those intended to be screened.

(see table page 17)

7. The number of babies admitted to the unit who died on the neonatal unit, and the number receiving post mortem examinations.

Although this is a measure of the unit's success in obtaining post mortems, it gives no indication of the quality of post mortems, and the rate of post mortems will be influenced by the prevalence of some religions in the population. Those wishing to audit the quality of post mortem reports are referred to the method described by Ian Rushton⁷.

(see table page 17)

8. Cot numbers:

The total number of cots in the neonatal intensive care unit. The number of designated intensive care cots in the unit. It is recognised that the latter is open to different interpretations. Units wishing to maintain information which better identifies nursing workload are referred to the published work of the Northern Neonatal Network⁸. For all nursing dependency levels combined, the following information should be given:

- 8.1. the maximum number of cots occupied
- 8.2. the number of cots that would have accommodated babies on all but three days in the year (ideally obtained from the daily record of cot occupancy, but if not available this could be extractable from dates of admission and discharge held on PAS). It should be noted that this figure does not take account of transfers out of the unit when full. (For details of the dependency levels, see appendix D, page 45).

(see table page 17)

9. Transfers in and out of the neonatal intensive care unit:

- 9.1. The total number of postnatal transfers in and out of the unit for specialist care, for medical*, surgical, cardiac or other care. These four reasons for transfer may be reported together or separately. This will identify neonatal units providing surgical &/or cardiac care, and those providing neonatal intensive care for other maternity units. Babies normally treated on the unit but transferred out because the unit is unable to provide care should be reported separately.
- 9.2. Whether the unit provides a transport service. If so, whether a medical and nursing team is available, separate from the staff providing neonatal intensive care.
- 9.3. The number of babies for whom the unit provided transport to and from other units, separately reported for those requiring intensive care during transfer.
- 9.4. The total number of babies where requests for in-utero or postnatal transfer into the unit were refused. This information is difficult to maintain accurately, but is included because of its importance.

**This does not include infants transferred in to the unit from home births, delivery areas or other (eg postnatal) wards in the same hospital nor those transferred out of the unit to another ward or neonatal unit for convalescence prior to discharge home.*

(see table page 18)

10. The nursing establishment for the Special Care/Intensive Care Unit.

- 10.1. The funded and filled nursing establishments, expressed as whole time equivalents by function, including clinical support staff, health care assistants, clinical practice nurses (with and without specialty qualification) and professional support staff (the level of clinical service commitment reported separately).
- 10.2. Whether the establishment includes a senior nurse with neonatal experience and managerial responsibility. Whether the establishment includes a designated nurse responsible for further education and in-service nurse training.
- 10.3. The number of extra nursing hours undertaken above contracted hours, including the use of 'bank' nurses, expressed as number of hours of nursing time delivered in the year.
- 10.4. The number of nurses in whole time training (eg either 405 students or student midwives) attached to the neonatal unit in the year. The number of other nurse learners is reported separately.
- 10.5. The annual nursing turnover and sickness rates.

(see table page 18)

11. The medical staffing structure of the neonatal unit.

- 11.1. The number of consultants with a majority of clinical sessions committed to neonatal care. Whether 24 hour cover is provided by consultants with principal duties to the neonatal intensive care unit.
- 11.2. Whether 24 hour resident cover is provided by doctors who have completed at least one year general professional training in paediatrics, including 6 months experience of neonatal intensive care. The number and grade of middle grade medical staff contributing to the on call rota, and whether on call commitments are shared with paediatrics.
- 11.3. Whether the neonatal intensive care unit has 24 hour resident cover by a Senior House Officer or more experienced professional at all times. The number of Senior House Officers, doctors of other grades and Advanced Neonatal Nurse Practitioners contributing to the resident cover.

(see table page 19)

12. Research and audit projects with which the unit is involved.

Including participation in multi-centre, randomised controlled trials. Each published project should be listed, with reference. Audit projects undertaken during the year should be listed.

Supporting information

There follows a list of data items required to support the contents of the annual report described above. These consist of two datasets, one of patient based data and the other of unit based data. These datasets allow the preparation of the whole annual report apart from the list of research and audit projects.

The appendices give an example of the annual report in table form (pages 13 to 19). These are available from BAPM in electronic format at a small fee. It is for individual units to decide whether they wish to represent information graphically as well. There are more detailed definitions of each of the two datasets (patient based data on pages 20 to 32 and unit based data on pages 33 to 41), and a further appendix D (page 43) giving more details where required. It is emphasised that these definitions should be adhered to scrupulously in order to ensure that information from different units is comparable.

TWO MINIMUM DATASETS TO SUPPORT ANNUAL REPORTS

Patient Based Data

32 items and 8 optional data points

1. Name of hospital [**].
 2. Mother's NHS number
 3. Postcode of mother's residence at birth
 4. Planned place of delivery at booking
 5. Place of birth
 6. Reason for change in place of birth
 7. Baby's NHS number
 8. Date of birth
 9. Time of birth
 10. Source of admission to unit
 11. Reason for admission to unit
 12. Date of admission
 13. Date of discharge, transfer or death
 14. Discharge or transfer destination
 15. Reason for discharge or transfer
 16. Birthweight
 17. Best estimate of gestation at delivery
 18. Plurality
 19. Whether postmortem performed
 20. Time of death
 21. Early neonatal encephalopathy
 22. Retinopathy of prematurity examination
 23. Retinopathy of prematurity stage
 24. Therapy for retinopathy of prematurity
 25. Cerebral ultrasound (as per policy)
 26. Hearing screening (as per policy)
 27. Days of ventilation (ETT)
 28. Days of CPAP
 29. Number of level 1 intensive care days
 30. Number of level 2 intensive care days
 31. Number of special care days
 32. Date of final added oxygen therapy
- Gender
 - Air leak requiring drainage
 - Worst changes of IVH
 - Ventricular size
 - Cystic leucomalacia
 - Highest appropriate % inspired O₂
 - Lowest appropriate % inspired O₂
 - Worst base excess
- *These data points are defined in the dataset (appendix B) and comprise definitions for items which many units will collect, but do not form part of the minimum dataset*

Unit based data

34 items to describe unit structure/staffing

1. Name of hospital [**variable common to both datasets]
 2. Number of livebirths
 3. Number of designated intensive care cots
 4. Number of designated special care cots
- Nursing staff:**
5. Funded professional support staff establishment
 6. Professional support staff in post
 7. Clinical service provided by professional support staff
 8. Funded specialty qualified clinical practice nurses
 9. Clinical practice nurses (specialty qualified) in post
 10. Funded non specialty qualified clinical practice nurse establishment
 11. Clinical practice nurses (not specialty qualified) in post
 12. Funded health care assistant establishment
 13. Health care assistants in post
 14. Funded clinical support staff establishment
 15. Clinical support staff in post
 16. Number of extra nursing hours above contracted
 17. Number of nurses in training
 18. Number of nurse learners
 19. Senior nurse with managerial responsibility
 20. Nurse responsible for further education
 21. Annual nursing turnover rate
 22. Annual nursing sickness/maternity rate
- Medical staff:**
23. Number of consultants with major involvement in neonatal care
 24. Consultant 24 hour cover
 25. Resident middle grade 24 hour cover
 26. Middle grade cover shared with paediatrics
 27. Number of middle grade doctors providing cover
 28. Resident SHO 24 hour medical cover
 29. Number of professionals contributing to 24 hour resident cover
 30. Number of advanced neonatal nurse practitioners contributing to medical rota
 31. Neonatal transport service
 32. Babies receiving levels A & B care
 33. Babies receiving levels C & D care
 34. Transfer in requests refused

APPENDICES

Appendix A: Illustrative example of annual report tables

[1] Survival by birthweight (see page 6)

(A) INBORN/BOOKED AT THE HOSPITAL

Birthweight	numbers of livebirths*	deaths before 28 days	survival (%)	deaths before discharge home	survival (%)	deaths before 12 months	survival (%)
≥2,500 g							
1,500 - 2,499 g							
1,250 - 1,499 g							
1,000 - 1,249 g							
750 - 999 g							
500 - 749 g							
< 500 g							

*among inborn babies booked at the hospital. Includes babies born before arrival and those delivered at the unit but not booked for delivery at any maternity unit.

(B) TRANSFERRED IN TO THE HOSPITAL

Birthweight	numbers of inborn transfers*	numbers of outborn transfers**	deaths before 28 days	deaths before discharge home
≥2,500 g				
1,500 - 2,499 g				
1,250 - 1,499 g				
1,000 - 1,249 g				
750 - 999 g				
500 - 749 g				
< 500 g				

* inborn babies booked elsewhere and transferred in before birth

** outborn babies transferred in after birth.

Where the unit provides the intensive care service for other units, separate tables may be produced for each unit served. where denominator information is known, use the structure of table 1A, otherwise use table 1B.

(C) PERINATAL MORTALITY STATISTICS COMPATIBLE WITH FIGO RECOMMENDATIONS⁹.

FIGO recommend that these data should only apply to the maternity unit population, as in 1 (A) above:

	Birthweight	
	500-999 gms	1,000 gms +
Number of total births (livebirths & stillbirths)		
Number with lethal congenital malformation*		
Number of stillbirths (>24 weeks gestation)		
Number with lethal congenital malformation*		
Number of early neonatal deaths (less than 7 completed days)		
Number with lethal congenital malformation*		
Number of late neonatal deaths (7 to 28 completed days)		
Number with lethal congenital malformation*		

* see appendix D (page 45) for definition

[2] Survival by gestation (see page 6)

(A) INBORN AND BOOKED AT THE HOSPITAL

Gestation	numbers of livebirths*	deaths before 28 days	survival (%)	deaths before discharge home	survival (%)	deaths before 12 months	survival (%)
37+ weeks							
34 to 36 weeks							
33 weeks							
32 weeks							
31 weeks							
30 weeks							
29 weeks							
28 weeks							
27 weeks							
26 weeks							
25 weeks							
24 weeks							
23 weeks							
<23 weeks							

*among inborn babies booked at the hospital. Includes babies born before arrival, and those delivered at the unit but not booked for delivery at any maternity unit.

(B) TRANSFERRED IN TO THE HOSPITAL

Gestation	numbers of inborn transfers*	numbers of outborn transfers**	deaths before 28 days	deaths before discharge home
37+ weeks				
34 to 36 weeks				
33 weeks				
32 weeks				
31 weeks				
30 weeks				
29 weeks				
28 weeks				
27 weeks				
26 weeks				
25 weeks				
24 weeks				
23 weeks				
<23 weeks				

* inborn babies booked elsewhere and transferred in before birth

** outborn babies transferred in after birth.

[3] Intensive and special care activity (see page 7)

(A) PROPORTION OF BIRTHS ADMITTED TO NEONATAL UNIT

total number of babies born in the maternity unit*	total inborn babies admitted to the neonatal unit*	percent

* inborn babies booked at the hospital. Includes babies born before arrival and those delivered at the unit but not booked for delivery at any maternity unit.

(B) INTENSIVE/SPECIAL CARE ACTIVITY

1* 2* 3*

numbers of level 1 intensive care days in the year			
numbers of level 2 intensive care days in the year			
numbers of special care days in the year			
numbers of babies receiving level 1 intensive care at any stage during their admission			
numbers of babies receiving level 2 intensive care at any stage during their admission			
numbers of babies receiving special but not intensive care			

*1=singletons, 2=twins & higher order births, 3=inborn (as in 3A)

[4] Respiratory support provided (see page 7)

Number of infants receiving mechanical ventilation	
Number of infants receiving CPAP but not mechanical ventilation	
Number of days of mechanical ventilation delivered	
Number of days of CPAP delivered	

Number of babies receiving supplemental oxygen at 28 days age	
Number of babies discharged home on oxygen therapy	

[5] Early neonatal encephalopathy consistent with HIE (see page 8)

Source of referral	numbers of livebirths	numbers with grade 2	numbers with grade 3	numbers of deaths before discharge	numbers of deaths before 12 months
Inborn, booked					
in-utero transfer	Not applicable				Not applicable
transferred after birth	Not applicable				Not applicable
born before arrival or not booked for delivery at a maternity unit	If known				If known

[6] Screening and surveillance policies (see page 8)

(A) HEAD ULTRASOUND SURVEILLANCE

Current policy (Summary)	
number of babies intended to have cranial ultrasound	
number of babies actually having cranial ultrasound(s)	
proportion examined of those intended	

(B) RETINOPATHY OF PREMATURITY

Current policy (Summary)	
number of babies intended to have screening examination	
number of babies actually having retinal examination	
proportion examined of those intended	
number of babies receiving treatment for retinopathy	

(C) SENSORINEURAL HEARING LOSS

Current policy (Summary)	
number of babies intended to have hearing screening	
number of babies actually having hearing screening	
proportion examined of those intended	

[7] Proportion of babies dying with post mortem examination (see page 8)

Number of babies dying on the neonatal unit	
Number in whom any postmortem examination was undertaken (includes partial pathological examination)	

[8] Cots and occupancy levels (see page 8)

Total number of cots in the unit	
Number of designated intensive care cots	
Maximum number of cots occupied	
Number of cots that would have accommodated babies on all but 3 days in the year	

[9] Transfers in and out of the unit (see page 9)

Direction of transfer	BABIES TRANSFERRED BY MAIN REASON FOR TRANSFER					unit full	total
transfer for specialist care.....						
	medical	surgical	cardiac	other			
transfers in						N/A	
transfers out							

TRANSPORT SERVICE

Does the unit provide a transport service?	Yes/No
Is a separate medical and nursing team available for transfer?	Yes/No

Direction of transfer	BABIES TRANSFERRED BY THIS UNIT	
	requiring intensive care during transfer	not requiring intensive care during transfer
transfers in		
transfers out		
Total number of babies where requests for in-utero or postnatal transfer to the unit were refused.		

[10] The nursing establishment of the unit (see page 9)

Nurse category	Whole time equivalents	
	Funded establishment	Filled establishment*
Professional support staff		
Clinical service from professional support staff		
Clinical practice nurses (specialty qualified)		
Clinical practice nurses (non specialty qualified)		
Health care assistants		
Clinical support staff		

* at 31st December

The number of extra nursing hours above contracted	
The number of nurses undertaking training attached to the unit	
The number of nurse learners on the unit	
Senior nurse with managerial responsibility (yes or no)	
Nurse responsible for further education (yes or no)	
Annual nursing turnover rate (%)	
Annual nursing sickness/maternity rate (%)	

[11] Medical staffing structure (see page 10)

Number of consultants with majority of clinical sessions devoted to neonatal care	
24 hour cover is provided by consultants whose principal duties are to the neonatal unit?	Yes/No
Is there 24 hour resident cover from doctors with at least one year of general professional training in paediatrics including 6 months of neonatal intensive care?	Yes/No
Number of middle grade medical staff contributing to on call rota Grades of middle tier of medical staff contributing to on call rota	
Are on call commitments by middle grade doctors contributing to the on call rota shared with paediatrics?	Yes/No
Is the unit covered by a resident SHO or more experienced professional at all times?	Yes/No
Number of doctors of at least SHO grade contributing to the on call rota	
Number of advanced neonatal nurse practitioners contributing to medical rota	

[12] Research and audit (see page 10)

Number of research projects with which the unit was involved during the year	
List of research publications involving the unit (with references):	
List of audit projects involving the unit:	

Appendix B: Patient based minimum dataset for annual neonatal reports

Used for each inpatient patient episode occurring on a neonatal intensive care unit before the baby is discharged home. The approach taken here (where more than one patient episode per baby may occur) will be able to deal with babies who are transferred between units. This differs from the Australian & New Zealand neonatal network whose dataset (with one record per baby) has been developed for a different organisation of services, each baby being cared for at one location (the registration hospital)³.

The hospital where the neonatal intensive care unit is situated is a key data item. The recognised NHS code for the hospital is recommended for local use. However, for the purpose of transferring data to BAPM, a different code known only to BAPM and the individual unit will be used.

Item 1:	Name of hospital
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The hospital location of the neonatal intensive care unit where the baby is admitted.
Classification/coding:	A numerical code representing the hospital unit.
Justification:	This allows data to be analysed by hospital delivering neonatal intensive care.
Timing:	On admission
Comment:	The coding of information assists in maintaining confidentiality.
Item 2:	Mother's NHS number
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Mother's unique NHS number
Classification/coding:	NHS number format
Justification:	This can be used for linking to information about the mother.
Timing:	At the time of birth
Consistent with:	Maternity contract minimum dataset, version 5 (item 7)
Item 3:	Postcode of mother's residence at time of birth
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Valid postcode at the time of booking. Where the first part of the postcode is 4 digits, leave no space before the second part of the postcode.
Classification/coding:	Unspecified, 7 digit label.
Justification:	This item can be used to derive the geographical distribution of babies; it will link to the corresponding enumeration district code to facilitate comparisons with ONS data; a deprivation score can be derived for the enumeration district.
Timing:	At admission.
Consistent with:	Maternity contract minimum dataset, version 5 (item 8)

Item 4:	Planned place of delivery at booking
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Type of place at which mother booked for her confinement. The first intended place of delivery by the health care professional in consultation with the woman.
Classification/coding:	* = <i>unknown</i> 0 = <i>this hospital (by definition providing consultant care)</i> 1 = <i>another hospital providing consultant care</i> 2 = <i>another hospital providing no on site medical facilities</i> 3 = <i>home birth</i> 4 = <i>other</i> 5 = <i>none of the above (no antenatal care provided)</i>
Justification:	Required to analyse pregnancy outcome according to the place of planned delivery.
Timing:	On admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 18)
Item 5:	Place of birth
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Actual place of baby's birth.
Classification/coding:	* = <i>unknown</i> - information not available 0 = <i>this hospital (by definition consultant care)</i> 1 = <i>another hospital providing consultant care</i> 2 = <i>another hospital providing no on site medical facilities</i> 3 = <i>home birth</i> - birth occurred at home 4 = <i>other, includes born before arrival</i> - born in an ambulance, a car etc.
Justification:	Place of birth is an important factor associated with outcome.
Timing:	On admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 27)
Item 6:	Reason for change in place of birth
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The reason for the baby's actual place of birth differing from the planned place of birth.
Classification/coding:	* = <i>unknown</i> - information not available 1 = <i>decision made during pregnancy</i> - change of address 2 = <i>decision made during pregnancy</i> - for clinical reasons 3 = <i>decision made during pregnancy</i> - for other reasons 4 = <i>decision made during labour</i> - for clinical reasons 5 = <i>decision made during labour</i> - for other reasons 6 = <i>occurred unintentionally during labour</i> 7 = <i>not applicable</i> : same as place of booking or unbooked
Justification:	Some babies transferred between units before birth are high risk babies transferred to fetal medicine departments. Unplanned births outside maternity unit carry significant risks
Timing:	On admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 28)

Item 7:	Baby's NHS number
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Baby's unique NHS number.
Classification/coding:	NHS number format
Justification:	This is the best unique identifier both for use at a local level, and for record linkage in babies receiving care in more than one unit and for follow up information.
Timing:	When issued. This will not be at the time of birth, but it is hoped that the number will be available in time for use in reporting centrally.
Consistent with:	Maternity contract minimum dataset, version 5 (item 31)
Item 8:	Date of birth
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Date of birth of the patient.
Classification/coding:	DD / MM / YY
Justification:	Required to derive patient age for analysis by age at admission or discharge as required.
Timing:	On admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 37)
Item 9:	Time of birth
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Time of birth of the patient (24 hour format).
Classification/coding:	HH:MM
Justification:	Required to derive accurate age at death.
Timing:	On admission
Item 10:	Source of admission to unit
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Source of admission to the neonatal intensive care unit.
Classification/coding:	* = <i>unknown</i> ; information not available. 1 = <i>this hospital</i> , includes born before arrival 2 = <i>another hospital</i> ; transferred from another hospital after birth by their staff. 3 = <i>postnatal retrieval</i> ; baby retrieved from another hospital after birth by the neonatal retrieval team.
Justification:	Outcome differences have been shown between inborn babies and outborn babies. Describes movement of a high risk group.
Timing:	On admission

Item 11:	Reason for admission to unit
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Source of admission to the neonatal intensive care unit.
Classification/coding:	* = <i>unknown</i> ; information not available. 1 = <i>specialist medical care</i> , includes primary admission from within maternity for neonatal care 2 = <i>surgery</i> ; infant admitted for surgical care (includes transfers for neurosurgery, etc) 3 = <i>cardiac care</i> - infant admitted for cardiac medical &/or surgical care 4 = <i>convalescence</i> - includes transfers back from specialist medical, surgical or cardiac care elsewhere
Justification:	Identification of babies admitted for different reasons. Assists in establishing movements of babies undergoing multiple transfers.
Timing:	On admission
Item 12:	Date of admission
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The date on which an inpatient commences an episode of care.
Classification/coding:	DD / MM / YY
Justification:	Required to identify period in which inpatient episode occurs and for derivation of length of stay. Assists in record linkage in babies transferred between units.
Timing:	On admission
Consistent with:	ANZNN ³ .
Item 13:	Date of discharge, transfer or death
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The date on which an inpatient completes an episode of care, either because of death, transfer to another ward or hospital, or because of discharge home.
Classification/coding:	DD / MM / YY
Justification:	Required to identify period in which inpatient episode occurs and for derivation of length of stay. Assists in record linkage in babies transferred between units.
Timing:	On discharge
Consistent with:	ANZNN ³ .

Item 14:	Discharge or transfer destination
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The destination of the baby at discharge from the neonatal unit at completion of an episode of care.
Classification/coding:	* = <i>unknown</i> ; information not available 1 = <i>discharge home</i> ; baby discharged to care of mother or to substitute carer. 2 = <i>transfer to another ward</i> in the same hospital. 3 = <i>transfer to another hospital</i> 5 = <i>died</i> ; before transfer elsewhere.
Guide for use:	Transfer for non-specialist care to be used for transfers to convalescent units not providing intensive care.
Justification:	Required to assist in record linkage in babies transferred between units, or between wards in a hospital.
Timing:	On discharge
Item 15:	Reason for discharge or transfer
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Source of admission to the neonatal intensive care unit.
Classification/coding:	* = <i>unknown</i> ; information not available. 0 = <i>death of baby</i> 1 = <i>fit for discharge home</i> or to substitute care 2 = <i>specialist medical care</i> not normally provided on this unit 3 = <i>surgery</i> ; infant transferred for surgical care (includes transfers for neurosurgery, etc) 4 = <i>cardiac care</i> - infant transferred for cardiac medical &/or surgical care 5 = <i>unit is unable to provide care</i> for a baby normally treated on the unit 6 = <i>convalescence</i> - includes transfers to another ward or unit after specialist medical, surgical or cardiac care
Justification:	Assists in establishing movements of babies undergoing multiple transfers.
Timing:	On admission
Item 16:	Birthweight
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The first weight of the baby obtained after birth (record in grams), ideally within an hour of delivery.
Classification/coding:	4 digit numbered field representing birthweight in grams.
Justification:	Birthweight is an important indicator of pregnancy outcome, a major risk factor for neonatal mortality and morbidity, and is required to analyse perinatal services for high risk babies.
Timing:	On admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 36). ANZNN ³ .

Item 17:	Best estimate of gestation at delivery
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The best estimate of gestation at the time of delivery in completed weeks. This will normally be based on the postmenstrual age, but may be modified on the basis of antenatal ultrasound scan. Where the gestation at delivery is unknown, this is based on the postnatal estimate of maturity.
Classification/coding:	2 digit numbered field representing the number of completed weeks.
Justification:	The gestational age is an important determinant of outcomes.
Timing:	On or soon after admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 25).
Item 18:	Plurality
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The total number of births resulting from this pregnancy, followed by the order of the baby in a multiple birth.
Classification/coding:	* = <i>unknown</i> 11 = <i>singleton</i> 12 = <i>first of twins</i> 22 = <i>second of twins</i> 13 = <i>first of triplets</i> 23 = <i>second of triplets</i> - etc.
Guide for use:	Plurality of a pregnancy is determined by the number of livebirths or by the number of fetuses that remain in utero at 20 weeks' gestation and that are subsequently born separately. In multiple pregnancies if gestational age is unknown, only live births of any birthweight or gestational age, or fetuses weighing 400g or more are taken into account in determining plurality. Fetuses aborted before 20 completed weeks or fetuses compressed in the placenta at 20 or more weeks are excluded.
Justification:	Multiple pregnancy increases the risk of complications during pregnancy, labour and birth and is associated with higher risk of perinatal morbidity and mortality. Birth order is required to analyse pregnancy outcome according to birth order and identify the individual baby resulting from a multiple birth pregnancy.
Timing:	On admission
Consistent with:	Maternity contract minimum dataset, version 5 (item 32). ANZNN ³ .

Item 19:	Whether postmortem performed
Scope:	All babies dying before discharge or transfer from the neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Whether a postmortem was undertaken.
Classification/coding:	* = unknown 0 = <i>no postmortem performed</i> 1 = <i>full postmortem performed</i> 2 = <i>partial postmortem performed</i> 9 = <i>not applicable</i> - baby alive at discharge
Justification:	Used to determine postmortem rates.
Timing:	At death

Item 20:	Time of death
Scope:	All babies dying before discharge or transfer from the neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The time of death of the baby.
Classification/coding:	HH:MM
Justification:	Used to calculate days of survival, an important outcome.
Timing:	At death

Item 21:	Early neonatal encephalopathy
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The presence of an encephalopathy consistent with the pattern described by Sarnat and described in the appendix on page 43.
Classification/coding:	0 = <i>no encephalopathy</i> , or grade 1 encephalopathy 2 = <i>grade 2 hypoxic ischaemic encephalopathy</i> 3 = <i>grade 3 hypoxic ischaemic encephalopathy</i> * = <i>unknown</i>
Guide for use:	There is no separate code for grade 1 hypoxic ischaemic encephalopathy: babies should be classified as 0. Inclusion of babies does not necessarily imply a specific aetiology.
Justification:	Grades 2 and 3 hypoxic ischaemic encephalopathy are associated with a significant adverse risk.
Timing:	At discharge.

Item 22:	Retinopathy of prematurity (ROP) examination
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The examination of eyes for ROP was completed consistent with the national recommendations.
Classification/coding:	0 = <i>no</i> , examination was not completed 1 = <i>yes</i> , eyes examined consistent with recommendations. 2 = <i>not appropriate</i> ; eye screening policy does not apply
Justification:	Allows estimation of adherence to local retinopathy surveillance policy.
Timing:	At discharge.

Item 23:	Retinopathy of prematurity (ROP) stage
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Worst stage of ROP in either eye prior to going home.
Classification/coding:	0 = <i>none seen</i> ; no changes seen 1 = <i>stage I</i> ; demarcation line 2 = <i>stage II</i> ; ridge 3 = <i>stage III</i> ; ridge with extraretinal fibrovascular proliferation 4 = <i>stage IV</i> ; retinal detachment - subtotal 5 = <i>stage V</i> ; retinal detachment - total. 6 = <i>not examined</i> ; no eye examination performed, or not appropriate
Justification:	ROP remains a significant consequence of very preterm birth.
Timing:	At discharge.
Consistent with:	Royal college of ophthalmologists/BAPM guidelines page 12 ¹⁰

Item 24:	Therapy for retinopathy of prematurity
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Any therapy used to treat retinopathy of prematurity ie laser or cryotherapy.
Classification/coding:	0 = <i>no therapy</i> for ROP received 1 = <i>yes</i> ; therapy given for ROP * = <i>unknown</i>
Justification:	Therapy for ROP is a secondary indicator of the severity of disease.
Timing:	At discharge.
Consistent with:	ANZNN ³ .

Item 25:	Cranial ultrasound screen according to local policy
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Whether the baby received cranial ultrasound screening according to the local policy.
Classification/coding:	0 = <i>no</i> , was not screened as per policy 1 = <i>yes</i> , cranial ultrasound screening performed 2 = <i>not appropriate</i> ; local screening policy does not apply * = <i>unknown</i>
Justification:	Allows estimation of adherence to local cranial ultrasound policy.
Timing:	At discharge.
Item 26:	Screened early for sensorineural hearing loss according to policy
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Screening for sensorineural hearing loss was completed consistent with the national recommendations.
Classification/coding:	0 = <i>no</i> , examination was not completed 1 = <i>yes</i> , screened consistent with recommendations. 2 = <i>not appropriate</i> ; screening policy does not apply
Justification:	Allows estimation of adherence to local hearing loss screening policy.
Timing:	At discharge.
Item 27:	Days of respiratory support via an endotracheal tube, e.g. intermittent positive pressure or oscillatory ventilation
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Total number of days of ventilation via an endotracheal tube, at any rate and of any type. Any period of ventilation in 24 hours constitutes a day. The 24 hour period runs from midnight to midnight; however, units may use any other 24 hour period, eg 9am to 9am, as long as this remains consistent.
Classification/coding:	3 digit numbered field representing ventilation days.
Justification:	Used to calculate the unit's experience of ventilation.
Timing:	At discharge

Item 28:	Days of continuous positive airways pressure (CPAP)
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Total number of days of CPAP via any route and of nasopharyngeal ventilation. Any use of CPAP in 24 hours where ventilation has not been used constitutes a day. The 24 hour period runs from midnight to midnight; however, units may use any other 24 hour period, eg 9am to 9am, as long as this remains consistent.
Classification/coding:	3 digit numbered field representing CPAP days.
Guide for use:	The highest level of assisted ventilation therapy that has been used in any 24 hour period is used.
Justification:	Used to calculate the unit's experience of CPAP.
Timing:	At discharge
Item 29:	Number of level 1 intensive care days
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Total number of days of level 1 intensive care (BAPM ¹¹ , see page 44). Any period of level 1 intensive care in 24 hours constitutes a day. The 24 hour period runs from midnight to midnight; however, units may use any other 24 hour period, eg 9am to 9am, as long as this remains consistent.
Classification/coding:	3 digit numbered field representing number of level 1 intensive care days.
Guide for use:	The highest level of intensive care for any 24 hour period is used.
Justification:	Used to estimate the intensive care experience of the unit.
Timing:	Ideally collected each day that the baby receives intensive care.
Comment:	When next revised, some BAPM definitions would merit further refinement.
Item 30:	Number of level 2 intensive care days
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Total number of days of level 2 intensive care (BAPM ¹¹ , see page 44). Any period of level 2 intensive care in 24 hours where level 1 intensive care was not used constitutes a day. The 24 hour period runs from midnight to midnight; however, units may use any other 24 hour period, eg 9am to 9am, as long as this remains consistent.
Classification/coding:	3 digit numbered field representing number of level 2 intensive care days.
Guide for use:	The highest level of intensive care for any 24 hour period is used.
Justification:	Used to estimate the intensive care experience of the unit.
Timing:	Ideally collected each day that the baby receives intensive care.
Comment:	When next revised, some BAPM definitions would merit further refinement.

Item 31:	Number of special care days
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Total number of days of special care (BAPM ¹¹ , see page 44). Exclude any day when the baby has received intensive care at any time in the 24 hour period. The 24 hour period runs from midnight to midnight; however, units may use any other 24 hour period, eg 9am to 9am, as long as this remains consistent.
Classification/coding:	3 digit numbered field representing number of special care days.
Justification:	Used to estimate the special care experience of the unit.
Timing:	Ideally collected each day that the baby receives care.
Comment:	When next revised, some BAPM definitions would merit further refinement.

Item 32:	Date of final added oxygen therapy
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Date supplemental oxygen (O ₂) finally ceased (appropriately).
Classification/coding:	DD / MM / YY
Guide for use:	Any use of supplemental oxygen in any one 24 hour period constitutes a day. Any route of oxygen administration is used. If oxygen is ceased, and then the baby required more supplemental O ₂ for the same illness, use final day of all the days that supplemental oxygen was used. However, do not include days of oxygen for subsequent illnesses such as oxygenation after surgery, RSV etc. If the baby never received supplemental oxygen leave blank. If the baby received only, say, 5 hours of oxygen on day one, use the date of birth. If the baby only received supplemental oxygen prior to this admission, enter date of final added oxygen therapy prior to this admission. If the baby received supplemental oxygen after discharge or transfer from the unit use the discharge date (item 13) here.
Justification:	Age last in supplemental oxygen is used to describe chronic lung disease, a major morbidity.
Timing:	At discharge.
Consistent with:	ANZNN ³ .

Item 33:	Gender
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The sex of the baby.
Classification/coding:	* = <i>unknown</i> 1 = <i>male</i> 2 = <i>female</i> 3 = <i>ambiguous</i> or indeterminate
Justification:	Required to analyse information by sex.
Timing:	On admission
Consistent with:	ANZNN ³ .

Item 34:	Air leak requiring drainage
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	The presence of any form of air leak requiring drainage (either transient, excluding diagnostic needling of chest, or continuous drainage). Pulmonary air leaks may include pneumothorax, pulmonary interstitial emphysema, pneumomediastinum, pneumopericardium, pneumoperitoneum, and subcutaneous or surgical emphysema.
Classification/coding:	0 = <i>no air leak</i> requiring drainage present 1 = <i>yes, air leak</i> requiring drainage * = <i>unknown</i>
Justification:	Air leak is a major morbidity, associated with some treatments.
Timing:	At discharge.
Consistent with:	ANZNN ³ .
Item 35:	Maximum changes of intraventricular haemorrhage (IVH)
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Most severe changes of intraventricular haemorrhage (IVH) seen on either side by either ultrasound or postmortem examination.
Classification/coding:	0 = <i>Not examined</i> by ultrasound or postmortem 1 = <i>No haemorrhage or localised haemorrhage</i> 3 = <i>Blood clot</i> forming a cast of the lateral ventricle and extending beyond the atrium 4 = <i>Intraparenchymal haemorrhage</i> * = <i>unknown</i>
Justification:	Correlation between more severe changes and poor outcome.
Timing:	At discharge.
Source:	Levene M I, de Crespigny L Ch. Classification of intraventricular haemorrhage ¹² .
Item 36:	Ventricular size
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Ventricular size at the ultrasound closest to six weeks of age. Ventricular index is measured (in mm) as the furthest lateral extent of each ventricle from the midline measured at the level of foramen of Munro. The worse side is used for coding.
Classification/coding:	0 = <i>not examined</i> 1 = <i>normal</i> 2 = <i>abnormal</i> , ie <4mm above 97th centile; see appendix D 3 = <i>severe</i> , ie >4mm above 97th centile; see appendix D * = <i>unknown</i> .
Justification:	Ventricular dilatation has a strong association with outcome.
Timing:	At discharge.
Source:	Levene ¹³

Item 37:	Cystic leucomalacia
Scope:	All babies admitted to a neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Changes in brain parenchyma seen at the scan closest to six weeks of age.
Classification/coding:	0 = <i>not examined</i> 1 = <i>normal</i> 2 = <i>abnormal</i> * = <i>unknown</i> .
Justification:	Periventricular and sub-cortical cysts have a strong association with outcome.
Timing:	At discharge.
Item 38:	Highest appropriate percentage inspired oxygen concentration (%) in first 12 hours
Scope:	All babies of birthweight 1500 grams or less or gestational age less than 31 weeks admitted to the neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Highest appropriate inspired O ₂ , recorded as percentage, between first admission to NICU and 12 hours after birth.
Classification/coding:	3 digit numbered field representing inspired O ₂ recorded as a percentage.
Justification:	This data is used for the calculation of the Clinical Risk Index for Babies (CRIB) score ¹⁴ (<i>see appendix D for details</i>).
Timing:	Before discharge.
Item 39:	Lowest appropriate percentage inspired oxygen concentration (%) in first 12 hours
Scope:	All babies of birthweight 1500 grams or less or gestational age less than 31 weeks admitted to the neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Lowest appropriate inspired O ₂ , recorded as percentage, between first admission to NICU and 12 hours after birth.
Classification/coding:	3 digit numbered field representing inspired O ₂ recorded as a percentage.
Justification:	This data is used for the calculation of the Clinical Risk Index for Babies (CRIB) score ¹⁴ .
Timing:	Before discharge.
Item 40:	Worst base excess in first 12 hours
Scope:	All babies of birthweight 1500 grams or less or gestational age less than 31 weeks admitted to the neonatal intensive care unit
Level of enumeration:	Each separate care episode of the baby on the neonatal intensive care unit before discharge home.
Definition:	Worst base deficit (mmol/l) recorded between first admission to NICU and 12 hours after birth.
Classification/coding:	3 digit numbered field correct to one decimal place. May have negative values.
Justification:	This data is used for the calculation of the Clinical Risk Index for Babies (CRIB) score ¹⁴ .
Timing:	Before discharge.

Appendix C: Unit-based minimum dataset for annual neonatal reports

This consists of information about the unit over the previous year. It can then be used with the patient based dataset to produce the information required for the annual report. Item 1 in this dataset is identical to item 1 in the patient based dataset. Item 2 is a figure obtained at the end of the year. Items 3 to 19 are a census of facilities at the year end. Items 20 to 22 are to be collected each day through the year (although midnight to midnight are recommended, any time may be used as long as it is consistent within the unit).

Item 1:	Name of hospital
Scope:	The neonatal intensive care unit
Level of enumeration:	The hospital providing neonatal intensive care.
Definition:	The hospital location of the neonatal intensive care unit.
Classification/coding:	A numerical code representing the hospital unit.
Justification:	This allows data to be analysed by hospital delivering neonatal intensive care.
Timing:	The year end
Comment:	The coding of information assists in maintaining confidentiality.
Item 2:	Number of livebirths
Scope:	All babies delivered in the population directly served by the neonatal intensive care unit.
Level of enumeration:	The maternity service covered by the neonatal intensive care unit.
Definition:	The number of livebirths in the population served by the maternity unit. Livebirth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or no the umbilical cord has been cut or the placenta is attached.
Classification/coding:	5 digit numbered field representing the number of livebirths.
Guide for use:	Only include the births in the population served exclusively by the neonatal unit.
Justification:	This provides denominator information for calculating the rate of admission to the neonatal unit.
Timing:	The year end
Item 3:	Number of designated neonatal intensive care cots
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of intensive care cots that the unit is contracted to provide. This does not imply that this number of intensive care cots is fully staffed.
Classification/coding:	2 digit numbered field representing the number of intensive care cots.
Justification:	Used to reconcile staffing levels and actual intensive care cot usage with designated numbers of cots (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 4:	Number of designated neonatal special care cots
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of special care cots that the neonatal intensive care unit is contracted to provide. This does not imply that this number of special care cots is fully staffed.
Classification/coding:	2 digit numbered field representing the number of special care cots.
Justification:	Used to reconcile staffing levels and actual special care cot usage with designated numbers of cots (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 5:	Funded professional support staff establishment
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of funded whole time equivalent professional support staff. This includes the senior nurse manager, ward manager, neonatal nurse practitioners, educators, outreach nurses, family care team, quality nurses and research nurses.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of funded nurses.
Guide for use:	If the establishment had changed during the year, report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 6:	Professional support staff in post
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of whole time equivalent professional support staff in post. This includes the senior nurse manager, ward manager, neonatal nurse practitioners, educators, outreach nurses, family care team, quality nurses and research nurses.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of nurses in post.
Guide for use:	Report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 7:	Clinical service provided by professional support staff
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of whole time equivalent professional support staff providing a clinical service. This includes the senior nurse manager, ward manager, neonatal nurse practitioners, educators, outreach nurses, family care team, quality nurses and research nurses.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of nurses providing a clinical service.
Guide for use:	Report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 8:	Funded specialty qualified clinical practice nurses
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of funded whole time equivalent clinical practice nurses with a specialty qualification in neonatal intensive care.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of funded nurses.
Guide for use:	If the establishment had changed during the year, report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 9:	Clinical practice nurses (specialty qualified) in post
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of whole time equivalent clinical practice nurses in post having a specialty qualification in neonatal intensive care.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of nurses in post.
Guide for use:	Report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 10:	Funded non specialty qualified clinical practice nurses
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of funded whole time equivalent clinical practice nurses without a specialty qualification in neonatal intensive care.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of funded nurses.
Guide for use:	If the establishment had changed during the year, report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 11:	Clinical practice nurses (non specialty qualified) in post
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of whole time equivalent clinical practice nurses in post not having a specialty qualification in neonatal intensive care.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of nurses in post.
Guide for use:	Report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 12:	Funded health care assistant establishment
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of funded whole time equivalent health care assistants providing support to the neonatal intensive care unit.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of funded health care assistants.
Guide for use:	If the establishment had changed during the year, report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 13:	Health care assistants in post
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of whole time equivalent health care assistants in post providing support to the neonatal intensive care unit.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of health care assistants in post.
Guide for use:	Report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 14:	Funded clinical support staff establishment
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of funded whole time equivalent clinical support staff. This includes ward clerks, housekeepers, receptionists and health service assistants. It does not include porters, medical physics or laboratory staff.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of funded clinical support staff.
Guide for use:	If the establishment had changed during the year, report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 15:	Clinical support staff in post
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of whole time equivalent clinical support staff in post. This includes ward clerks, housekeepers, receptionists and health service assistants. It does not include porters, medical physics or laboratory staff.
Classification/coding:	A 4-digit numbered field correct to one decimal place representing the whole time equivalent number of clinical support staff in post.
Guide for use:	Report the arrangements operating at the end of the year.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 16:	Number of extra nursing hours above contracted
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of hours of nursing time provided other than by staff within their contracted regular hours. This includes extra duties above contracted provided by nurses in post as well as nursing hours provided by bank nurses.
Classification/coding:	A 5 digit numbered field representing the number of hours of nursing time.
Justification:	Used to assess the adequacy of nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 17:	Number of nurses in training
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of nursing staff in training attached to the neonatal intensive care unit. Includes for example course 405, 415, project 2000, midwifery students. Excludes nurse learners.
Classification/coding:	2 digit numbered field representing the number of nursing staff in training at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 18:	Number of nurses learners
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of nurse learners on the neonatal intensive care unit. Includes all nurses with less than 6 months' experience in the specialty and not qualified in the specialty. Excludes nurses in training.
Classification/coding:	2 digit numbered field representing the number of nurse learners at the end of the year.
Justification:	Used to assess the adequacy of trained nursing staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 19:	Senior nurse with managerial responsibility
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	Whether the neonatal nursing establishment includes a senior nurse with neonatal experience and managerial responsibility, who is solely responsible for the neonatal service.
Classification/coding:	0 = no; post does not exist 1 = yes; post exists
Justification:	Used to assess the adequacy of neonatal nursing management (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 20:	Nurse responsible for further education
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	Whether the neonatal nursing establishment includes a designated nurse responsible for further education and in-service nurse training.
Classification/coding:	0 = <i>no</i> ; post does not exist 1 = <i>yes</i> ; post exists
Justification:	Used to assess the adequacy of neonatal nursing in service training (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 21:	Annual nursing turnover rate
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of terminations of employment per year divided by the average number of employees for the unit. Includes all staff described under items 6, 9, 11, 13 and 15.
Classification/coding:	A 4-digit field representing the turnover rate, expressed as a percentage.
Justification:	Used to assess the stability of the neonatal nursing service.
Timing:	At the year end
Item 22:	Annual nursing sickness and maternity rate
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of hours of sickness and maternity leave per year divided by the total contracted hours for the unit. Includes all staff described under items 6, 9, 11, 13 and 15.
Classification/coding:	A 4-digit field representing the sickness and maternity rate, expressed as a percentage.
Justification:	Used to assess the adequacy of the neonatal nursing service (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 23:	Number of consultants with major involvement in neonatal care
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of consultant paediatricians attached to the neonatal intensive care unit with 6 or more sessions devoted to neonatal intensive care.
Classification/coding:	2 digit numbered field representing the number of consultants with majority interest in neonatal intensive care at the end of the year.
Justification:	Used to assess the consultant staffing (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 24:	Consultant 24 hour cover
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	Whether 24 hour cover to the neonatal intensive care unit is provided by consultants with principal duties to the unit.
Classification/coding:	0 = no; 1 = yes; cover provided by consultants with major interest.
Justification:	Used to assess the arrangements for consultant cover (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 25:	Resident middle grade 24 hour cover
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	Whether 24 hour resident cover is provided by doctors who have completed at least one year general professional training in paediatrics, including 6 months experience of neonatal intensive care.
Classification/coding:	0 = <i>no</i> ; 1 = <i>yes</i> ; resident cover provided by experienced middle grade doctors.
Justification:	Used to assess the arrangements for experienced resident cover (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 26:	Resident middle grade cover shared with paediatrics
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	Whether 24 hour resident middle grade on call commitments are shared with paediatrics.
Classification/coding:	0 = <i>no</i> ; 1 = <i>yes</i> ; resident middle grade cover shared with paediatrics 2 = <i>not applicable</i> ; no resident middle grade cover
Justification:	Used to assess the arrangements for experienced resident cover (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 27:	Number of middle grade doctors providing 24 hour cover
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of middle grade medical staff contributing to the 24 hour on call rota for neonatal intensive care.
Classification/coding:	2 digit numbered field representing the number of middle grade doctors contributing to the on call rota.
Justification:	Used to assess the arrangements for experienced resident cover (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end

Item 28:	Resident SHO 24 hour medical cover
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	Whether 24 hour resident cover is provided by a Senior House Officer or more experienced professional at all times. This may include neonatal nurse practitioners.
Classification/coding:	0 = <i>no</i> ; 1 = <i>yes</i> ; resident cover provided by experienced professionals.
Justification:	Used to assess the arrangements for resident medical cover (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 29:	Number of professionals contributing to 24 hour resident cover
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number of Senior House Officers, doctors of other grades and Advanced Neonatal Nurse Practitioners contributing to the resident cover.
Classification/coding:	2 digit numbered field representing the number of professionals contributing to the on call rota.
Justification:	Used to assess the arrangements for resident cover (BAPM standards for hospitals providing neonatal intensive care, 1996 ¹).
Timing:	At the year end
Item 30:	Number of Advanced Neonatal Nurse Practitioners
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The number Advanced Neonatal Nurse Practitioners contributing to the medical rota.
Classification/coding:	3 digit numbered field representing the number of whole time equivalents to one decimal place.
Timing:	At the year end
Item 31:	Neonatal transport service
Scope:	The year of the report
Level of enumeration:	The neonatal intensive care unit.
Definition:	The availability of a transport service to the hospital and capable of providing medical and nursing neonatal intensive care support during transport to or from another hospital.
Classification/coding:	0 = <i>no service available</i> ; 1 = <i>comprehensive</i> ; available 24 hours, 7 days a week, and staffed separately from the neonatal intensive care unit; 2 = <i>shared</i> ; as for comprehensive, but shared between different units; 3 = <i>partial</i> ; either available only at certain times or achieved by making alternative arrangements for neonatal cover outside of contracted staffing.
Guide for use:	If the service had changed during the year, report the arrangements operating at the end of the year.
Justification:	Used to monitor the availability of neonatal transport services (BAPM neonatal intensive care standards, 1996 ¹).
Timing:	At the year end.

Item 32:	Babies receiving levels A & B high dependency care
Scope:	The year of the report
Level of enumeration:	Each day in the year.
Definition:	The maximum number of babies receiving nursing categories A and B high dependency care on the unit at any one time during the day. <i>For details of the nursing categories of high dependency care see appendix D.</i>
Classification/coding:	2 digit numbered field representing the number of babies receiving category A and B high dependency care.
Justification:	Used to reconcile nursing staffing levels and numbers of babies receiving levels A and B high dependency care. From the daily census, the average, maximum and 99th percentile cot occupancies may be derived. Use of these categories to assess nursing requirements has been published ⁸ .
Timing:	Daily in retrospect
Item 33:	Babies receiving levels C & D high dependency care
Scope:	The year of the report
Level of enumeration:	Each day in the year.
Definition:	The maximum number of babies receiving nursing categories C and D high dependency care on the unit at any one time during the day. <i>For details of the nursing categories of high dependency care see appendix D.</i>
Classification/coding:	2 digit numbered field representing the number of babies receiving category C and D high dependency care.
Justification:	Used to reconcile nursing staffing levels and numbers of babies receiving levels C and D high dependency care. From the daily census, the average, maximum and 99th percentile cot occupancies may be derived. Use of these categories to assess nursing requirements has been published ⁸ .
Timing:	Daily in retrospect
Item 34:	Transfer requests to the neonatal unit refused
Scope:	The year of the report
Level of enumeration:	Each day in the year.
Definition:	The total number of babies where requests for in-utero or postnatal transfer in to the unit were refused.
Classification/coding:	2 digit numbered field representing the number of babies known to have had a request for transfer refused. Babies subsequently accepted elsewhere or to the reporting neonatal unit on a subsequent day are included.
Justification:	Used to document difficulties encountered by other units accessing the neonatal intensive care facilities.
Timing:	Daily in retrospect

Appendix D: further definitions

Hypoxic ischaemic encephalopathy⁶

	MILD (grade 1)	MODERATE (grade 2)	SEVERE (grade 3)
<u>Level of consciousness</u>	hyperalert	lethargic	stuporose
<u>Neuromuscular control</u>			
muscle tone	normal	mild hypotonia	flaccid
posture	mild distal flexion	strong distal flexion	intermittent decerebration
stretch reflexes	overactive	overactive	decreased or absent
segmental myoclonus	present	present	absent
<u>Complex reflexes</u>			
suck	weak	weak or absent	absent
Moro	strong: low threshold	weak: incomplete; high threshold	absent
oculovestibular	normal	overactive	weak or absent
tonic neck	slight	strong	absent
<u>Autonomic function</u>	generalised sympathetic	generalised parasympathetic	both systems depressed
pupils	mydriasis	miosis	variable; often unequal; poor light reflex
heart rate	tachycardia	bradycardia	variable
bronchial & salivary secretions	sparse	profuse	variable
gastrointestinal motility	normal or decreased	increased; diarrhoea	variable
<u>Seizures</u>	none	common; focal or multifocal	uncommon (excluding decerebration)

for fuller description see reference⁶

British Association of Perinatal Medicine/Neonatal Nurses Association - Categories of Neonatal Care¹¹

Intensive care (level 1):

Provided for babies:

- [1] Receiving assisted ventilation (including intermittent positive airway pressure, intermittent mandatory ventilation, and constant positive airway pressure) and in the first 24 hours after its withdrawal.
- [2] Of less than 27 weeks' gestation for the first 48 hours after birth.
- [3] With birth weight of less than 1000 g for the first 48 hours after birth.
- [4] Who require major emergency surgery for the preoperative period and post operatively for 48 hours.
- [5] On the day of death.
- [6] Being transported by a team including medical and nursing staff.
- [7] Who are receiving peritoneal dialysis.
- [8] Who require exchange transfusions complicated by other disease processes.
- [9] With severe respiratory disease in the first 48 hours of life requiring a fractional inspired oxygen concentration (FiO₂) of >0.6.
- [10] With recurrent apnoea needing frequent intervention, for example over five stimulations in eight hours or resuscitation with intermittent positive pressure ventilation (IPPV) two or more times in 24 hours.
- [11] With significant requirements for circulatory support, for example inotropes, three or more infusions of colloid in 24 hours, or infusions of prostaglandins.

Intensive care (level 2):

Provided for babies:

- [1] Requiring total parenteral nutrition.
- [2] Who are having convulsions.
- [3] Being transported by a trained skilled neonatal nurse alone.
- [4] With arterial line or chest drain.
- [5] With respiratory disease in the first 48 hours of life requiring an FiO₂ of 0.4-0.6.
- [6] With recurrent apnoea requiring stimulation up to five times in an eight hour period or any resuscitation with IPPV.
- [7] Who require an exchange transfusion alone.
- [8] Who are more than 48 hours' postoperative and require complex nursing procedures.
- [9] With tracheostomy for first two weeks.

Special care:

Provided for babies:

- [1] Requiring continuous monitoring of respiration or heart rate or by transcutaneous transducers.
- [2] Receiving added oxygen.
- [3] With tracheostomy after first two weeks.
- [4] Being given intravenous glucose and electrolyte solutions.
- [5] Who are being tube fed.
- [6] Who have had minor surgery in the previous 24 hours.
- [7] Who require terminal care but not on the day of death.
- [8] Being barrier nursed.
- [9] Undergoing phototherapy.
- [10] Receiving special monitoring (for example frequent glucose or bilirubin estimations).
- [11] Needing constant supervision (for example babies whose mothers are drug abusers).
- [12] Being treated with antibiotics.

Northern Neonatal Network Nursing Dependency levels¹⁵

High dependency special care

- Category A** * Infants requiring artificial respiratory support
- Category B** *
- * Infants requiring 40% or more oxygen
 - * Infants whose entire fluid intake is provided intravenously
 - * Infants whose current weight is less than 1000 gms
 - * Infants with a stoma, or a pleural, peritoneal, or urethral drain in place

Low dependency special care

- Category C** *
- * Infants receiving less than 40% supplemental oxygen
 - * Infants receiving some intravenous fluid
 - * Infants who are being at least partially tube fed
 - * Infants currently weighing between 1000 and 1750 grams
 - * Infants who have had a fit, or a sustained (>20 sec) apnoeic attack during the previous 24 hours
- Category D** * Bottle or breast fed infants, weighing more than 1,750 grams admitted for observation only

A lethal malformation⁹

“A working definition of lethal malformation is a congenital anomaly regarded to be the primary cause of death during the fetal and neonatal period.” For example, an infant with diaphragmatic hernia who died during surgery would be deemed to have died as a result of a lethal malformation. On the other hand, an infant with a hare lip that died of meningitis would not.

Ventricular size¹³:

<u>Gestation (weeks)</u>	<u>97th centile (mm)</u>	<u>4mm above 97th centile</u>
27	10.0	14.0
28	10.1	14.1
29	10.4	14.4
30	10.7	14.7
31	11.1	15.1
32	11.7	15.7
33	12.0	16.0
34	12.5	16.5
35	12.7	16.7
36	13.1	17.1
37	13.2	17.2
38	13.3	17.3

CRIB score¹⁴:

For babies of birthweight 1500 grams or less or gestational age less than 31 weeks.

Factor	Criterion	Score
Birthweight (grams)	>1,350	0
	851-1350	1
	701-850	4
	≤700	7
Gestation (weeks)	>24	0
	≤24	1
Congenital malformations*	none	0
	not acutely life-threatening	1
	acutely life-threatening	3
Maximum base excess in first 12 hours (mmol/L)**	> -7.0	0
	-7.0 to -9.9	1
	-10.0 to -14.9	2
	≤ -15.0	3
Minimum appropriate inspired O₂ in first 12 hours	≤40%	0
	41 to 60%	2
	91 to 100%	3
		4
Maximum appropriate inspired O₂ in first 12 hours	≤40%	0
	41 to 80%	1
	81 to 90%	3
	91 to 100%	5

*Excluding inevitably lethal malformations

**For example, -3.0mmol/L scores 0, -16.0 mmol/L scores 3

Appendix E: other data items considered for inclusion

A number of other potential measures of workload or activity were considered. They were not incorporated for reasons including difficulties in definition and interpretation. However, they are listed here for consideration at some future stage:

- Breast feeding rates (all babies or those discharged from intensive care)
- Multiple birth rates by gestation
- Number of teaching days held
- Number of nursing staff sent on courses
- Percentage of time spent on neonatal activities by consultants
- Resuscitation policy (which deliveries require a paediatrician's presence)
- Number of babies with necrotising enterocolitis with and without surgery
- Number of babies with patent ductus arteriosus with and without surgery
- Positive blood culture rates
- Presence of major congenital abnormality
- Number of pulmonary air leaks
- Number of abnormal ultrasound scans
- Outcome (mortality) by CRIB score

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