A manual of neonatal intensive care, 4th edition


As an SHO, I bought the first edition of the Manual in 1982. It was a survival guide which provided safe certainties in the small hours of the night. It was small, light, and compact. There was no competition: the Roberton Manual was the book to have!

Nearly 20 years on, where has the 4th edition taken us? Bigger, certainly: a behemoth of a “small” manual with 550 pages. Not much taller or wider than its predecessors, but much thicker. The rather thin and closely typeset pages distinctly reminiscent of a Bible. Thirty four chapters and eight appendices. There’s an awful lot of information in here.

Road testing a book like this is quite a challenge. Clearly one should not ask it to perform in a manner for which it was not designed, and the authors helpfully explain in the preface that their aim “is to provide a guide for the management of the acute medical and surgical problems a resident is likely to encounter on a modern neonatal intensive care unit.” So I went for chapter 1, expecting it to plunge in where every resident is most nervous: resuscitation of the newborn.

Instead, I got “Organization of neonatal care”. Admittedly it is only six pages, but does a resident really need this in a practical manual? Especially since the big Roberton book is likely to be on hand in most neonatal units to provide this and much more detail on this subject. In the Manual, you have to wait until chapter 6 to get “Resuscitation”, with “Temperature control”, “Fluid & electrolytes”, “Enteral nutrition and parenteral nutrition”, all packed with science and philosophy coming first. How much physiology do you want or need in a practical manual? Not too much, I think.

So I tried again with the oxygenation index (OI). There must be many units where the OI is used as a pragmatic threshold for postponing nitric oxide or high frequency oscillation, and of course for referring for extracorporeal membrane oxygenation (ECMO). The resident will want to find the page with the formula for calculating OI, and how to deal with mm Hg versus kPa for the oxygen tension. To the index then—but no entry for oxygenation index. To the glossary of abbreviations at the front: there, sure enough, is OI. But where is it in the text? I could not find it under PPHN, or RDS, or ventilation. Eventually, by close reading, I found it mentioned under Meconium aspiration, and also under ECMO, but nowhere could I find the formula for calculating OI, from which this bizarre result will have been called away to the next problem, and if the formula is indeed there, he/she will have lost interest in finding it.

Residents are increasingly likely to be faced with ventilators that read out the tidal volume and minute volume, and display pressure-volume curves. They want to know how to use this information. They want to know what to do when babies on trigger ventilation drop their Pco2 to embarrassingly low levels. They want the formula for calculating the fractional excretion of sodium. They need to know that separate chest and abdomen radiographs give much better radiological information than “babygram” pictures. Sadly, they will be disappointed if they try to find such information in this book.

The 4th edition of the Manual seems to have lost the values of its roots. It feels like a pared down version of the big Roberton book, repackaged between smaller covers. It contains a level of detail that is unnecessary given the alternative sources of the material. It can be hard to find in a hurry the things you need, and some of the things you want are not there at all—or at any rate, I couldn’t find the information when I wanted it. The index is terrible. The only edition which comes to the same thing. And the alternative sources of the material. It can be hard to find in a hurry the things you need,...

Secondly the book recurrently ignores the realities of real-life practice. For example, promoting the regrowth of damaged neural tissue is only one of the many aspects of neonatal brain injury in terms of aetiology, epidemiology, diagnosis, management, and infant—for example, dilutional exchange for polycythaemia is said to be carried out in 10 ml aliquots, and does not recommend smaller volumes of 500 g whose total blood volume may be little more than 40 ml.

Thirdly the section on viral disease and transmission should be more detailed. ‘Low risk’ is not quantitated, and CMV is described variously as “largely inactivated by freezing” and (one page later) “does not survive freezing”—an inconsistency that leaves the reader feeling insecure about such an important safety issue.

Nevertheless this is a volume that is informative and attractive, from the cartoon of a neonate’s head (front cover) to the photograph of the three distinguished and pathologically cheerful authors at the end. For all professional staff there are 300 pages of clear descriptions containing information that will prove useful in organising investigations in the neonatal unit. There are also modern data which can be used to defend the embalmed SHO against the complaints of the consultant ward round. Every neonatal unit should purchase a copy. I predict that these valuable pages will be well thumbed within a month. I look forward to a further edition, and hope that it will extend its scope to include other laboratory disciplines such as genetics and electrophysiology. The three authors deserve success with this winner.

I A Laing Simpson Centre for Reproductive Health, St George’s Hospital, London SW17. UK; ian.laing@lgm.scot.nhs.uk

PostScript

BOOK REVIEWS

Neonatology & laboratory medicine


Neonatology & laboratory medicine is a novel concept and a valuable addition to our literature. The book brings together a clinical biochemist, a neonatologist, and a medical microbiologist as authors in a successful attempt to describe appropriate laboratory investigation and clinical management of the neonate. This paperback aims to provide junior doctors, laboratory scientists, and neonatal nurses with background information that will help solve common neonatal problems. The chapters deal systematically and with common biochemical and infective problems that may befall neonates. There are also sections on breast feeding, parenteral nutrition, and parenteral therapies. It finishes with appendices including normal reference ranges and a useful glossary.

The expenditure of £30 rewards the reader with more than 300 pages which are clear and well arranged. Tables and flow diagrams are easy to dip into. More senior readers may be frustrated that the book is not referenced, but recommended reading is provided at the end of each chapter.

Three small criticisms and suggestions for the next edition.

- The chapter entitled “Drugs and the neonate” is too short. The figure referring to biochemical and haematological monitoring sites only 11 drugs, ignoring commonly used drugs such as vescurosin, insulin, surfactant, salbutamol, 5-fluorocytosine, and steroids. Even those lucky 11 have curious omissions—for example, the oliguria and fluid retention associated with indomethacin.

- Secondly the book recurrently ignores the unusual demands of the extreme preterm infant—for example, dilutional exchange for polycythaemia is said to be carried out in 10 ml aliquots, and does not recommend smaller volumes of 500 g whose total blood volume may be little more than 40 ml.

- Thirdly the section on viral disease and transmission should be more detailed. ‘Low risk’ is not quantitated, and CMV is described variously as “largely inactivated by freezing” and (one page later) “does not survive freezing”—an inconsistency that leaves the reader feeling insecure about such an important safety issue.

Fetal and neonatal brain injury: mechanisms, management and the risks of practice, 3rd edition

Edited by D K Stevenson, W E Benitz, P Sunshine. Cambridge: Cambridge University Press, £140.00, pp 926. ISBN 0521806917

Brain injury remains a common theme in a large proportion of survivors of extreme prematurity and/or neonatal encephalopathy. The headline rates of significant disability have been largely unchanged despite the enormous advances in neonatal intensive care of the post-surfactant era, and more subtle educational difficulties are later declared in many others. It is essential that clinicians continue to strive for a deeper understanding of the mechanisms of brain injury to not only guide conventional management, but also look ahead to the future strategies in which neuroscientific advances may translate into plausible clinical strategies—for example, promoting the regrowth of damaged neural tissue across an area of periventricular leukomalacia.

The strength of a textbook such as this is to give an in depth overview of many aspects of brain injury. This is accomplished well by a distinguished list of mostly United States based contributors, who consider the many aspects of neonatal brain injury in terms of aetiology, epidemiology, diagnosis, management, and...
long term outcome. A section on medico-
legal issues makes interesting reading, although it is not directly applicable to the
British judicial system. Surprisingly little
although is not directly applicable to the
greater use of illustrations
Readers will be encouraged to catch up with
the background neuroscience
taken to relate the bedside management to
of cerebral palsy, but otherwise the range of

References
1 Bosscher D, Van Caille-Bertrand M, Van Dyck K,
et al. Thickening infant formula with digestible and
indigestible carbohydrates: availability of calcium,
iron, and zinc in vitro. J Pediatr
2 Huang RC, Forbes DA, Davies MW. Feed
thicker for newborn infants with gastro-
eesophageal reflux (Cochrane Review).Cochrane
3 Carroll AE, Garrison-MO, Chrostka DA. A systema-
tic review of nonpharmacological and nonsurgi-
cal therapies for gastroesophageal reflux in infants.
4 Mallett AK, Wise A, Rawlin R. Hydrolaccolloid
food addititives and rat coeliac mucosal enzymatic
5 Mercier JC, Hartmann JF, Cohen R, et al. [Inental
occlusion and enterocolitis caused by

Vertical transmission of

Cribrotransformation of

An infant developed early respiratory distress
day after delivery at 34 weeks gestation after
prolonged rupture of membranes. Cribrotransformation of
freundii was cultured from a maternal mid-
stream urine sample at delivery. C freundii,
resistant to ampicillin but sensitive to genta-
micin, cephalosporins, and ciprofloxacin, was
isolated from neonatal blood cultures taken
on admission. Gram negative rods were seen
on microscopy of cerebrospinal fluid (CSF),
with no white cells and 730 red cells per high
power field. CSF protein was 1.26 g/l and
glucose 3.0 mmol/l, with blood glucose of
4.9 mmol/l. No organisms grew on CSF
culture. Ampicillin and gentamicin were
ina in the neonatal period.
Neonatal infection with
freundii species is usually acquired in a nosocomial fashion, and
causes septicemia, meningitis, and
brain abscesses associated with a high
morbidity and mortality. Eleven cases of
vertical acquired Cribrotransformation of
freundii infection have been reported.1 However, the only
previous report of vertical transmission of
freundii describes a 32 week infant in whom
the organism was identified from maternal
high vaginal swab and infant gastric aspirate,
but not from blood cultures.2 Neonatal
septicemia with meningitis, as in our
patient, has not been previously described.
Cribrotransformation of differ from other organisms caus-
ing neonatal meningitis by being able to
replicate within brain capillary epithelium, perhaps accounting for the propensity of this organism for causing cerebral abscesses. However, including this case, this complication appears to be confined to late onset disease, with possible explanations being the early use of antibiotics, and absence of a putative virulence factor.

The combination of cefotaxime and an aminoglycoside is recommended for neonatal Gram negative meningitis, but CSF concentrations of gentamicin may only be marginally above the minimum bactericidal concentration of Gram negative organisms. Ciprofloxacin has been shown to be effective in Gram negative meningitis, and should be considered in the treatment of this condition.1

Recruitment failure in early neonatal research
Rates of neurodevelopmental handicap are high among extremely low birthweight survivors, and the first 48 postnatal hours probably give the greatest opportunity for preventing damage. However, at this time, families are in turmoil and may have difficulty in coming to terms with a small baby with a life threatening illness. Researchers are reluctant to approach parents who are in any way distressed, because of the difficulty in ensuring valid consent. Consequently researchers are reluctant to approach parents who are in any way distressed, because of the difficulty in ensuring valid consent. Therefore, researchers are reluctant to approach parents who are in any way distressed, because of the difficulty in ensuring valid consent.

With additional local research ethics committee approval, we tried to recruit women at high risk of delivering before term from 26 weeks gestation. The consent process was more complex in this group, as the explanation had to include information about standard neonatal care and procedures. Parents in this group were given 24 hours to come to a decision. Figure 1 shows that, of 28 eligible babies, only five were recruited. Eight out of nine mothers approached antenatally gave consent, but only two of their babies were studied, as three did not meet the entry criteria and the other three were born elsewhere.

What went wrong? Since the Griffiths report, the emphasis has been on obtaining fully informed parental consent, and the research team has to ensure that the parents thoroughly understand the research and its implications. Research where parents signed consent forms, but later claimed that they did not understand the research, was heavily criticised. Consequently researchers are reluctant to approach parents who are in any way distressed, because of the difficulty in ensuring valid consent. If it is important for early neonatal research to continue, we urgently need agreement on a sensitive, humane and realistic framework that is acceptable to both parents and clinical researchers alike.

S Nicklin, S A Spencer
Neonatal Unit, University Hospital North Staffordshire (NHS) Trust, Newcastle Road, Stoke on Trent ST4 6GG, UK, andy.spencer@uhns.nhs.uk
doi: 10.1136/adc.2003.043711

Gestational age in the literature
In neonatology, the correct gestational age (GA) is extremely important, as the viability and survival of the premature baby depend on it. A difference of a few hours or a day can have a substantial impact on the survival and long term morbidity of premature babies. Doctors are trained to report the GA of a premature baby in exact days—for example, 26+4 (GA = 26 completed weeks and 4 days). Reporting the GA in this format helps in understanding and assessing the postnatal and maturational age of premature babies. One would therefore expect GA to be reported exactly in the literature, especially in articles, studies, and trials dealing with survival and morbidity in premature babies. In fact, descriptions of GA are extremely ambiguous in most articles. An example of this ambiguity is survival at 26 weeks GA is...
Fever in the neonatal period

This is in reference to the recent article by Maayan-Metzger et al.1 The clinical implication of the study is questionable. It is difficult to make a prospective decision on retrospective data. What should a clinician do if a nontreatment in extremely tiny babies. Semin Neonatol 1996;1:297–304.

Fever in the neonatal period

This is in reference to the recent article by Maayan-Metzger et al.1 The clinical implication of the study is questionable. It is difficult to make a prospective decision on retrospective data. What should a clinician do if a nontreatment in extremely tiny babies. Semin Neonatol 1996;1:297–304.

References


Home phototherapy in the United Kingdom

Although successful home treatment of neonatal jaundice using fibre-optic phototherapy units has been reported elsewhere,2 we are not aware of any such provision in the United Kingdom. We have introduced a regional home phototherapy programme in Tayside, Scotland and wonder if our initial experience would be of interest to others.

Before introducing the service, hospital and community midwives undertook training covering inclusion criteria (physiological jaundice in well, term infants), the treatment protocol, equipment (nursing, Oculos), and the assessment of parental competence. The protocol conditions were: a daily capillary serum bilirubin (SBR), discussing all results with a paediatrician; basing treatment on SBR results; and an SBR measured after discontinuing phototherapy. Parents underwent a one hour “training” session (equipment use and advice on feeding, skin care, and temperature control) and were given written advice. Tayside Committee on Medical Research Ethics advised that ethical approval for the programme and written consent were not required, as the treatment being offered was not novel.

Between February and August 2002, 28 families were offered home phototherapy in Tayside: six refused (difficulties with feeding, distance from home to hospital, and parental choice). The mean birth weight was 3245 g (range 2240–4220), with a median gestation of 38 weeks (range 35–41). Mean maternal age was 30 years (range 17–41). Twenty (91%) infants were breast fed. Ten were first born. Seven families lived in affluent areas and two in areas of high deprivation.1 Phototherapy started at a median age of 5.5 days (range 1–13). Eight infants received all their phototherapy at home. Mean treatment duration was 47.3 hours (range 17.5–97.0) with a median decrease in SBR of 16 hours. Up to 12 phototherapy units were in use at one time. Community midwives spent on average 60 minutes on the first home visit. Subsequent visits were shorter. Poor compliance, without compromise to either infant, was identified in two families and rectified quickly. No other adverse incidents were reported, and there was no equipment failure. All parents preferred home phototherapy to inpatient treatment. Community midwives have been happy to continue the programme.

We believe this is the first report of a home phototherapy programme in the United Kingdom. With appropriate training and enthusiastic community support, it appears to be a feasible, safe, and well accepted by families and staff. We would encourage others to consider establishing such programmes.

We are grateful to the rest of the Tayside Home Phototherapy Project Team (J. Dalzell, A. Jarvis, M. Meldrum, V. Samson) and the community midwives who contributed to the success of the project. This project was supported by a grant from the Scottish Executive Health Department – Innovative Fund for Children’s Services.

M Walls, A Wright, P Fowlie Neonatal Intensive Care Unit, Ninewells Hospital and Medical School, Dundee DD1 9SY, Scotland, UK

L Irvine Department of Epidemiology, University of Dundee, Ninewells Hospital and Medical School

R Hume Maternal and Child Health Sciences, University of Dundee, Ninewells Hospital and Medical School

Correspondence to: Dr Fowlie; peter.w.fowlie@tuft.scots.nhs.uk
doi: 10.1136/adc.2003.034868

References


Thickening milk feeds may cause necrotising enterocolitis

P Clarke and M J Robinson

Arch Dis Child Fetal Neonatal Ed 2004 89: F280
doi: 10.1136/adc.2003.036392