ALTE and gastro-oesophageal reflux

McGovern and Smith1 have embarked on the welcome development of an evidence based algorithm for the investigation of infants presenting with an apparent life threatening event (ALTE). Unfortunately, they do not distinguish between coincidence and causality. Recurrent vomiting occurs in over 60% of 4 month old babies,2 and it is therefore unsurprising that gastro-oesophageal reflux is commonly found in infants presenting with ALTEs. The aim of their study was to determine the diagnoses reported after the first evaluation of an ALTE, but the paper’s title then somewhat misleadingly refers to “causes” of ALTE.

Despite the fact that in six of the eight studies analysed, patients did not routinely undergo pH monitoring, one of the most common diagnoses made was “gastro-oesophageal reflux disease” (GOR). This begs the question as to whether most if not all of the children merely had physiological gastro-oesophageal reflux (GOR), wrongly defined as GORD, simply because of the ALTE under investigation—an unwarranted assumption of causality. Moreover, they fail to point out that the milk scans and contrast studies used in some of their cited studies have unacceptably low sensitivity and specificity in the diagnosis of non-physiological GOR.

Their suggested plan of investigation acknowledges that in around 50% of infants experiencing an ALTE, a careful history and examination will point to an underlying disorder. Conversely, in the absence of other abnormalities of the gastrointestinal tract concerned about the event, we do recommend a series of investigations, which may present with an ALTE.

We argue that there is no need to perform tests for GORD unless there is a suggestive clinical history such as vomiting during or after feeds, poor weight gain, feed reflux, etc. Under these circumstances pH monitoring (whatever its limitations) remains the investigation of choice. A reliance principally on contrast studies and clinical history is likely to mean that physiological “GOR” will be diagnosed as “GORD”. This may lead not only to unnecessary treatment, but also focus attention away from serious disorders including factitious illness.3 We regard pH monitoring in children who have experienced an ALTE but have no clinical pointers to GORD as being of little value, and contend that there is no evidence base for such an approach.

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Competing interests: none declared

Authors’ reply

We appreciate the thoughtful comments on our recent paper. The main points raised by Dr Punts and Booth are:

- Most of the studies in this review did not diagnose GORD by the accepted criteria
- The issue of causality was not addressed
- They recommend investigating for GORD only when there is corroborating clinical information because occult reflux does not cause apnoea.

We agree that the diagnosis of GORD disease requires a combination of clinical information and selective testing. We acknowledged in our paper that there were varying investigatory protocols for this disease. We were unable to review the diagnostic criteria for all studies. This reflects the lack of one standardised, well validated test. pH probes have limitations as well because they do not detect non-acid reflux. The clinicians in the studies reviewed reported GORD as a diagnosis after an ALTE, but did not say it caused the ALTE.

The issue of causality was clearly addressed in the discussion and we agree that it is a very important point for exactly the reasons which Drs Punts and Booth highlight. To repeat, we have said that the detection of a disorder after an ALTE does not necessarily mean that the two are associated. We noted that there was conflicting evidence as to whether or not the relation between GORD and ALTEs is causal. Even when an underlying disorder such as RSV infection (which seems to have a clear temporal relation with an ALTE) is detected, the question is still unresolved as to why some infants react to RSV infection with apnoea while others do not.

It is likely that several factors interact to produce an ALTE. We do not think the relation between GORD and apnoea has been clearly established in the medical literature. Drs Punts and Booth write that demonstration of a significant temporal relation between lower oesophageal acidification and apnoea is crucial in establishing a causal relation between the two. However, in an editorial review of GORD and infant apnoea, it is noted that GORD and apnoea may have a causal relation that is not necessarily temporal.4 Given the current state of conflicting evidence, it would seem reasonable to investigate the upper gastrointestinal tract according to our algorithm (see discussion below). We agree that the paper could be titled “Diagnoses reported after apparent life threatening events in infants: a systematic review”. The abstract, however, summarised the aims, results, and conclusions of the review.

We have not advocated a blanket investigation for GORD in all ALTEs. We have designed our algorithm with several selection points. The algorithm indicates that if the patient does not have a short, selfcorrecting episode around feeding (often physiological GORD), then a period of observation (including a review of history and examination) is indicated. Then, if the history suggests GORD, appropriate testing is performed. This is no different from the approach suggested by Drs Punts and Booth. If no cause is forthcoming and the clinician is concerned about the event, we do recommend a series of investigations, which include investigation of the upper gastrointestinal tract. Perhaps the algorithm would be more accurately written as investigation of the upper gastrointestinal tract instead of investigating for gastro-oesophageal reflux to acknowledge the possibility that anatomical abnormalities of the gastrointestinal tract may present with an ALTE.

The problem of ALTEs is one faced daily by front line clinicians. The purpose of our review was to try to bring some clarity and order to conflicting literature. We view this paper as a starting point for an evidence based approach. We invite further discussion.

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Competing interests: none declared

Reference


Diagnosis of iron deficiency anaemia

According to Wright et al, taken in isolation, a mean cell haemoglobin (MCH) of <25 pg is
Replacing mercury sphygmomanometer in paediatric clinical practice: is there a need for a consensus conference?

The definition of normal blood pressure (BP) values in adults and children is based on mercury sphygmomanometry, and standard mercury readings are the main basis for BP disease associations. Unfortunately, mercury has toxic effects on the environment and the mercury sphygmomanometer will have to be gradually replaced.

However, there is a rearguard movement to retain mercury until some satisfactory substitute can be found. We investigated the type of BP devices that are currently being used in Departments of Paediatrics in Greece. In a total of 76 departments, 30% use a mercury sphygmomanometer, 25% use automated devices, 25% use either mercury or automated devices, and 20% use an aneroid sphygmomanometer. Interestingly, 1 in 3 departments has the commonly used automated monitor “Dinamap” (several models); furthermore, half of these departments are using the model 8100. However, the accuracy of Dinamap monitors is questionable, especially the model 8100, which, when tested against the standard mercury sphygmomanometer, was found to detect mean systolic and diastolic BP values significantly above auscultatory readings.

We feel that replacement of mercury sphygmomanometer with automated devices has become increasingly common but, also, rather questionable in some countries, considering the lack of validated automated devices for the paediatric age group.

The recent “International Protocol” established by the European Society of Hypertension for validation of BP measuring devices, is designed for adults and does not make recommendations for children. Facing the beginning of new standard in clinical sphygmomanometry, there is little doubt that we need a consensus conference. Such a conference would help in making recommendations for endorsing the use of alternative devices as the optimal replacement for mercury devices. However, the development of appropriate validation standards for paediatric use of BP devices and the elimination of inaccurate monitors would improve our methods of BP measurement and interpretation.

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Competing interests: none declared

References


In contrast to a decade ago, there appears to be numerous paediatric “textbooks” on the market today, aimed primarily at medical students. The choice must appear somewhat overwhelming. Core paediatrics adds itself to this ever-growing list. As the title suggests, however, it does attempt to approach the subject from a different angle.

The book is set out in 40 distinct chapters. Each chapter approaches a familiar topic in a refreshing manner—likely to appeal to a student and in a way in which they can place the topic in context. For instance, a chapter on “Upper airway obstruction”, Core paediatrics presents this as “A boy with a coughing cough and breathlessness”. Other examples are “A child with a black eye”, “A tired teenager”, and so on.

The authors present each chapter in a systematic manner. A clinical case is presented—many of which the typical student is likely to encounter on any paediatric attachment. Realistic differential diagnoses are then presented, the same way in which a junior doctor may formulate impressions after clerking such a child. The authors then go on to consider each of the differential diagnoses at length, taking into account aetiology, pathology, investigations, and management. Frequently, the text pauses to present the reader with “Self-tests”. These questions are relevant to the clinical case and many are typical dilemmas that doctors face in planning management for unwell children. Some are presented as extended matching multiple choice type questions.

The authors stress the importance throughout, of history and examination, and guide the reader in eliciting key facts in the clinical cases. Throughout the book, information is presented in easy to read tables and diagrams, which appeal and break up the text. Relevant investigations are discussed at length, often with illustrations. Dilemmas are often centred around such investigations—for instance, how should a urine sample be obtained from young children when investigating for UTI? Further questions relate to interpretation of such investigations—ensuring a clinically relevant approach. Throughout the text, misleading “normal” test results are discussed as well as obvious positive test results. Management of various conditions is presented in a structured way, incorporating both immediate and long term issues. When relevant, drug doses are included—useful for junior doctors, as well as other tips such as writing child protection medical reports. The book approaches management of around clinical cases, presenting likely progress that a child may make.
while in hospital and any complications or side effects one may encounter. Finally each chapter ends with further sources of information including other textbooks and relevant articles, although pleasingly not an exhaustive list of documents!

Core paediatrics therefore is primarily aimed at medical students. It approaches paediatrics in a manner that a student is likely to understand well and encounter on an attachment. It moves away from a traditional system based approach, towards a clinical presentation based approach, while integrating basic science and pathology of each disease well. The text is also likely to be appealing to junior doctors embarking on a paediatric career who require refreshment of how children present when ill. The 40 presentations of unwell children that the book describes are likely to incorporate many such patients who will present to a department.

L J Phillips

Chief complaints in pediatrics


Have you ever wondered, looking at Wisteria, if the plant in front of you is right or left winded? Do you know how to tell? Once you know, it is easy. It is just the same with this publication. This is not a book, not even an eBook. Chief complaints in pediatrics is software. It is worthy clarifying this right at the start, as there are some practical consequences to this. After installation you will find its icon in the list of programs. If you simply follow the prompts, it will install itself to the main memory. If you then realise that you want to have it on your memory card you will have to go through uninstall and install (to the chosen location) procedure. As this is not a book, there are no numbered pages.

The interface is easy and intuitive, you will be able to do it all without looking into Help. The same unified interface can be found on all Skyscape products; if you have used Access, the popular free program that works like an extended medical calculator, you will find the familiar interface of Skyscape in this program. Chief complaints in pediatrics comes with an internal link to other Skyscape products that are already installed on your PDA.

The display is tidy: menu choices on the top, along the right side, and on the bottom of the screen, and text in the middle. The icons serve as shortcuts for the previously viewed page, main index, table of contents (with alphabetical list of topics), history (analogous to the same feature in Internet Explorer), links (to other Skyscape products on your device), and toggling arrows. There are also arrows to navigate back and forward within the text of the program, and a little pen which is an icon to tap if you want to add notes to the topic (and this includes the options on other on-screen elements). The menu notes at the bottom of the page is to edit (make annotation and bookmarks), view (change font size and access the Main Index), tools, and help. A pleasant feature of this software is the use of colour. There is a free trial download. This will allow you to assess if you like the interface and how the program works. It does not allow access to all of the topics, so you cannot make a judgment if the content is as rich as you would like it. For the list of topics see the “learning and demos” manual on the Skyscape website.

The content of Chief complaints in pediatrics is organised so as to be useful to a clinician presented with a diagnostic puzzle. The table of contents takes us to a long (over 150) list of topics arranged in alphabetical order in the Main Index. All topics are “complaints”: symptoms, signs, or laboratory findings. Information about each topic is grouped under the following headings: description and definition, history of the present illness, past medical history and family history, physical examination, differential diagnosis (most common and then expanded), and the next steps in the work up. True to its title, Chief complaints in pediatrics deals with the common problems. It will be most useful as a quick look up tool when deciding on differential diagnosis and on what investigation could be done. The program is designed as a diagnostic aid and does not contain any information about treatment or prognosis.

In summary: the program works really well, is easy to use, and very functional. My only reservation is that many paediatricians would find it too basic in content. For a trainee it seems a good investment.

E Posner

Pediatric physical diagnosis electronic atlas


Today, medical education faces huge challenges. The patient contact time essential for developing clinical acumen has been progressively eroded by increased trainee numbers, reduced working time, reduced training duration, shifts, and encroachment of non-medical professional and non-clinical medical areas. Skills labs have evolved to cover basic skill sequences, but there remains a gap between core skills and clinical practice. An obvious approach is to “can the experience”, using modern technology to bridge the hiatus, ensuring some exposure at least to core conditions. There are various ways of developing such collections: the proprietary way, as here, or by using the Internet, for example at www.brisdoc.ac.uk/bht, www.hon.ch/HONmedia, www.healthcentral.org, or www.peir.org.

This single DVD comes in a large glossy box with significant dead space. The authors are American, mainly from the Children’s Hospital of Pittsburgh. The resource consists of “over 2500 visual representations of a broad range of common and uncommon pediatric disorders”. There are over 40 video and audio clips too. The images can be saved to a separate area (like a shopping trolley on the web), then transferred to PowerPoint. The video and audio can be navigated to on the disc and transferred using cut-and-paste. The license does not allow materials to be integrated into other teaching resources (for example, question banks), nor can the PowerPoint presentations be placed on the web or intranet. Images can be viewed without annotations, but there is no interactive self-assessment (that is, scoring or review of wrong answers).

The term “physical diagnosis” is used broadly, and is not restricted to clinical signs. For example, x-ray pictures, blood films, karyotypes, and diagrams are all included. It also includes many medical children, for example in the section on child development. The resource quality is generally good to excellent, with most images presented as full colour JPGs. The highlights for me were the video clips of different forms of epilepsy. These bring to life an otherwise difficult topic. I was a little disappointed with the quality of some of the heart sounds. Coverage is inevitably incomplete: for example, there were excellent radiographs of pneumocystis, mycoplasma, and tuberculous pneumonias, but none of typical lobar pneumonias or bronchiolitis.

Searching is rudimentary, either by one of 23 chapter headings and scrolling through the thumbnails or by using a simple search string (US spellings) through the annotations. There is no metadata, but audio/video files can be accessed separately using tabs. This means that there is a learning curve associated with using the resource effectively with the potential to miss media that are in it. With repeated use its value increases greatly.

It is an excellent and reasonably comprehensive resource for an academic or hospital to have available for teaching purposes, particularly those with slow or difficult internet access. A huge amount of work has gone into its production and the authors are to be congratulated. It provides a good way to learn most classical presentations for examination, particularly DCH and Part 2, though the text version may allow for a more structured approach. I shall certainly be using it for my own teaching. I suspect that the restrictions of DVD capacity, publishing cycle (versioning), searching, and copyright will prove to be long term disadvantages compared with the web based approach. It is worth remembering that, while multimedia are useful they are no substitute for the “real thing”. The clinical experience engages the whole brain at sensory, intellectual, cerebellar, and emotional levels. We are still far from virtual reality here, but this resource is certainly an advance on a traditional textbook with text and few illustrations.

C Melville

The treatment of gait problems in cerebral palsy


I settled down to read this book, thinking it would be instructive and enjoyable—and I was not disappointed. Basic principles are clearly explained in the text and are well illustrated with appropriate clinical examples and case studies, supplemented by the CD-ROM.
Jim Gage is a master in the use of automated gait analysis to rationalise surgical decision-making for children with walking disorders, and, with his wealth of experience, accumulated over more than 20 years, is a very appropriate editor for this volume. The clarity of his own thought processes is evident in his explanation of biomechanical principles applied to the complex dynamic gait problems encountered in children with cerebral palsy. A particular highlight is his chapter on the biomechanics of normal gait. His fellow contributors are all acknowledged experts in their own fields and complement his contributions well.

The main focus is the correction of problems with gait and the text illustrates how gait analysis can provide clear insight into the safety and efficacy of potential surgical intervention. The book is divided into five sections. Early chapters cover the neuroanatomical, neurophysiological, and biomechanical background; further sections are devoted to patient assessment, gait pathology in cerebral palsy, treatment options including detailed discussion of orthopaedic surgery, and assessment of outcome. The role of the multi-disciplinary team is emphasised. The kinematics and kinetics of gait together with biomechanical modelling are covered in detail (and here the reader may just start to feel a little insecure in his knowledge of mathematics!). The chapters on treatment demonstrate the logical differentiation between the primary, fixed problem—that is, the neurological injury itself; the secondary biomechanical problems, resulting from abnormal growth forces, which are amenable to treatment; and the tertiary compensatory problems which do not require treatment per se. Patterns of gait pathology are discussed with specific attention to hemiplegia, diquadruplegia, and crouch gait, and the respective surgical solutions. Illustrative case studies are included and the data on the CD-ROM facilitates correlation between the clinical picture and the kinematic plots. The treatment section is instructive and worthy of careful delineation. Each chapter is devoted to non-operative treatment modalities including botulinum toxin and intrathecal baclofen. Perhaps the section on botulinum toxin is a little lengthy, but this is perhaps due to the growing popularity of this treatment. From the initial child’s drawing on the front cover, there are a number of helpful illustrations, photographs, and x-ray pictures that aid the guide and its reader. The presentation of the text leads your eyes through the various subheadings; important ideas are highlighted with the use of minor cut road signs that are supposed to elicit an emergency stop.

The first few chapters set minor trauma in its context and present the basics of a gait assessment. Despite recent opposition to the use of such terminology, the reader is offered several interesting statistics on accidents and the outline of how strategies in society can prevent injuries and trauma and management is given its rightfully prominent position as the foundation for good holistic care of the child. An overview of general wound and soft tissue management follows before the guide leads the reader through chapters exploring various locations of the body. Each chapter carries a concise description of the various minor injuries that can affect the area, accompanied by useful x-ray pictures, X-ray pictures, and orthopaedic texts may now be circumvented.

More specific injuries such as minor burns are covered before reaching chapters that explore the difficulties of front-line medicine that have recently been exposed by the continuing media interest in child protection. The chapter on non-accidental injury is regularly signposted with danger points. Davies makes one profound point about the current discussion of MNEs which will resonate with many doctors, “You could be forgiven for thinking that paediatricians are perhaps obsessed by the subject but the reality is that delay in diagnosis is still common, and the diagnosis itself can be extremely difficult to make, and the repercussions of either a ‘false negative’ or ‘false positive’ can be very damaging.” The following chapter helps explain the forensic and medicolegal aspects of assessing children with suspicious injuries, or those that might require personal presence in a court of law.

The final chapter looks at practical procedures. Most of us know how to negotiate the examination of the ear, nose, and throat, but how do you tie a sling? If your first aid is a little rusty, then here lies your solution. In the book from the guide comes a “Blue- Peter” solution with a paperclip and sticky-backed plasters. Overall the guide is a useful, concise aid to managing minor trauma, and would be a valuable reference for any emergency department. It collects together wisdom on the assessment and management of problems not easy to obtain elsewhere; apart from the experienced casualty nurse.

The Chailey approach to postural management, 2nd edition

Edited by Teresa E Pourtenney, Catherine M Mulchahy, Sandy M Clarke, Elizabeth M Green. Chailey Heritage Clinical Services, 2004, £30.00, pp 194. ISBN 0954-4283902

Disorders of posture are a frequent feature of neurological disability. These often limit a child’s ability to function efficiently and access his/her environment. They also tend to progress in time with a potential for further loss of abilities, orthopaedic complications (such as scoliosis and hip dislocation), and secondary pain. Therefore professionals who work with these children find themselves constantly battling to maintain and, if possible, correct these abnormal postures. I often find myself in the situation of having to recommend interventions or prescribe expensive and sometimes cumbersome postural equipment for which only little evidence of efficacy is to be found in the medical literature. I was therefore looking forward to reading The Chailey approach to postural management in which I hoped to find some answers to my predicaments.

This book presents the approach developed over 20 years of research and clinical practice at the Chailey Heritage Clinical Services, a centre that has acquired national recognition in the management of children with complex physical disabilities. It progressively brings the reader to understand the principles of a postural analysis and how to solve postural problems. The pedagogic style is very much that of a training manual, with multiple questions and activities targeted at the reader, and it was no surprise to learn that Active Design Ltd (the company who manufacture the postural equipment described in this book) run courses using this volume as their reference material. The theoretical basis that underpins the approach is concisely but clearly described in a series of chapters on the relevant aspects of biomechanics, neuropsychology, motor control, and motor learning theories. The book is well referenced and the text is supported by a number of excellent illustrations.

The management programme per se relies mainly on the 24 hour provision of postural
Cerebral palsy, principles and management

M Wheater

Management of the motor disorders of children with cerebral palsy, 2nd edition


There has been an interval of 20 years since publication of the first edition of this book, and this second edition reflects the progress in this field. David Scuttton has invited two colleagues, Dianne Damiano from the USA, and Margaret Maayston, originally from Australia to join him as editors, and together they have commissioned contributions from an international group of experts who reflect the current approach to care. The book is written primarily for therapists but there is much of value for paediatricians.

The introduction describes current treatment dilemmas. In the past, physiotherapy programmes were based on philosophies of care. Modern management is based on clinical principles with a scientific rationale for their use. Evidence for their efficacy is emerging, and there is a growing literature to help us, to use the book. A well-organised, clear and concise introduction to the conditions which fall under the heading of cerebral palsy, and an update on management, of the difficulties which come with it, would be welcome.

Unfortunately, Cerebral palsy, principles and management, does not fill the bill. As I read, I felt like a diver, struggling deeper into a hole it is meant to help them, to神经系统 with some pearls, but aware that there would be few, if any, to take home, and increasingly frightened of drowning.

The most striking obstacle is the language. A substantial proportion of the book reads as if mechanically translated by a computer unfamiliar with conventional English medical phrases. So there are such novelties as EPH-gestosis, superior and inferior kinetic nerves, elbow and cuff, and futhervestibular or the palate plates. I liked the idea of suspicious newborns, but was less happy to read about non-functional children. And when it came to the “batrachoidal state of the trunk”, I began to wonder if I had carelessly strayed into a botany or zoology text. So there are problems with reading and writing. The arithmetic is not too hot either—I was surprised to be told that “there have been more than 200 years since the first description of cerebral palsy made by Little in 1843”.

How time flies!

Twenty four authors contributed. The editing has been light, and there is considerable repetition of information between, and sometimes even within, chapters. Mispriqts abound. Some illustrations are not of good definition, duplicated, or reversed, and their relevance is not always obvious. Legends are not always accurate. One of the tables is in three languages. Of the 131 references in the bibliography to the first chapter, only 104 are referred to in the text. Conversely, 10 references in the text have no corresponding entry in the bibliography. Feeling despondent, I checked the 12 references to published papers by Little—all were inaccurate and one paper (admittedly the best known) appeared twice.

No doubt form is less important than substance. But it was not just the distractions of form that made it impossible in all but a very few chapters to shell out a pearl. I was unable to decipher the meaning of considerable portions of the book. There is undesirable grit as well—controversial advice regarding anticonvulsants, annual pertussis immunisation, and treatment of undescended testicles by hormone injection in preference to orchidopexy, to take three random examples. And any candidate for MRCPIH who holds a baby upside down by one leg to test the Collis II reaction as depicted in chapter on therapeutic concepts, is likely to fail. Another child on the same page appears to be being smothered beneath an ample bosom. I cannot recommend this book.
Again, yes—for two reasons: firstly, this is a rapidly changing field, and the old edition is now out of date; and secondly, the quality of this edition, especially the photographs, makes it a delight to read.

**Paediatric oncology, 3rd edition**


The first thing that struck me as a newcomer to this 3rd edition of *Paediatric oncology* is the heavy alliteration of title and editors. The next was that exactly the book I have been looking for—both to have with me in the clinic and on the ward, and to dip into at night. It is a good size: heavy enough to promise sufficiently dense text to be of real use and yet light enough to be carried in the hand. The paper is pleasingly thick, so that the print is easily legible, and both the black and white photographs and the colour plates are very clear. As a haematologist, I could have wished for a little more morphology, but overall the balance between picture and print is good. The layout makes the chapters readable, and even the sections which looked rather daunting with prose running in unbroken paragraphs over several columns were in practice simple to read.

The content is broken up into five parts: Scientific and diagnostic principles; Diagnosis and management of individual cancers; Advances in therapy: megatherapy; Advances in therapy: targeted therapy; and Late effects and supportive care. Each part is then divided into appropriate chapters. I particularly liked the use of boxes at the end of each chapter to recap key points. The reference lists are extensive and helpful in pointing to significant papers.

The text and the references have all been updated, and, given the length of time needed to get such a tome to press, are reasonably current. The list of contributors represents recognised experts in the various fields, and is drawn predominantly from the United Kingdom, making this a very relevant book for clinical practice here. However, I found myself craving an chapter on acute leukaemia a little disappointing. I felt the discussion rather overlooked the UKALL trials, concentrating instead on other protocols, and in particular the ALL-BFM trials—reflecting the author’s own experience. This is, of course, relevant and of interest, but given that this is the most common childhood malignancy, and that this book is presumably aimed predominantly at a British audience, seemed to be a significant weakness.

This book is already a standard on the shelf of paediatric oncologists and haematologists. Would I recommend it for a general paediatrician or a haematologist working in a district general hospital? Yes, definitely. Is it worth upgrading from the last edition? Again, yes—for two reasons: firstly, this is a

**Childhood epilepsy: language, learning and behavioural complications**


Given that Alexander the Great, Julius Caesar, Cardinal Richelieu, and Lenin all suffered from epilepsy it is clear that epilepsy does not preclude future career success. The prominence of sufferers within the higher echelons of the creative arts is striking. Dostoyevsky, Flaubert, Molière, and Byron are just a handful of names that immediately spring to mind. Van Gogh’s most creative period coincided with the time when his epilepsy was at its worst. And yet, we know that epilepsy can have a dramatic and disastrous effect on the cognitive and language abilities of our paediatric patients. It is hard not to be moved by West’s description of how his son regressed following the development of infantile spams. We hear similar stories time and again in paediatric clinics of how an apparently normal baby arrests developmentally and then regresses coincident with the onset of infantile seizures.

It must be equally distressing to be the parent of a child with Landau-Kleffner syndrome (LKS). One day you have a previously chatty 3 year old who suddenly is unable to understand what you are saying to them. Their speech and behaviour deteriorates and, to cap it all, they develop seizures.

We do not understand the relation between epilepsy and the cognitive, behavioural, and linguistic disorders of Landau-Kleffner and West’s syndromes. The introduction of critical neural synapses and pathways. However, the resolution of such electrographic disorder and clinical seizures may not, unfortunately, coincide with any cognitive or language improvement.

We search for effective treatments for these disorders. The breadth of different treatments used suggests that we are uncertain where to target our therapeutic approaches. For example, in LKS, steroids often improve the situation, but is it because they are modifying some infectious or autoimmune process or through their action at the GABA-A receptor? Indeed our treatments may exacerbate the situation. Virtually all the anticonvulsant drugs have been associated with behavioural and cognitive problems.

Of course, I am exaggerating the state of confusion in this area … but only slightly. I turned to Professor Svoboda’s book on this subject, looking for some clarity and direction. It is a veritable goldmine of anecdote and case reports. A lifetime of reading and clinical experience are condensed here. It would be wrong to say that this is an evidence-free area. Svoboda documents a wealth of studies, references, and data.
PediSuite 5.0


PediSuite is produced by Medical Wizards, a company founded in 2000 by a practising physician. The program is large and consists of 15 modules. Within each module there are numerous options. The selection of calculations, regimes and protocols is huge. Getting to know the content is time well spent as the information that you will be looking for you would usually want to know quickly.

This is software that aims to be a powerful calculator rather than an information source. Consequently, most of the modules contain some basic information about the topic but “the meat” of the program is numerous calculators that instantly work out dosages, speed of infusion, body mass index, croup score, etc for a given child. The interface is fairly intuitive and once you know what it contains no further guidance is required to be able to use it proficiently. There is one point where I stumbled and for some time thought that the program was freezing the PDA: within many modules you need to enter data about a child (usually weight) before you are allowed to access the content of the module. You also cannot exit these modules until you enter a number in the calculator. This is not a problem once you know it but I was just about to contact the Medical Wizards company when I cracked this.

In most of the modules the information is given in a cascade of windows. For example, within module PALS you choose “desired item”, let’s say bradycardia. The next window asks for the type of rhythm; from the options you choose “stable” and then the management of the problem pops up.

The modules include paediatric advanced life support (PALS) protocols, some basic paediatric data like normal vital signs values, laboratory results or immunisation schedules, a mini-poison centre, and growth charts. There are modules calculating various values relating to fluid balance and infusion rates, also for critical care infusions. Several extensive drug databases provide information about various groups of drugs (level medication, sedation, emergency, over the counter, ...). There is also a general index.

For the users on this side of Atlantic it has to be noted that PediSuite is an American product. In the PALS module, in case of asystole use of a “turkey baster” is recommended. In treatment of shock, you can give a push of “LR”. Some names of the drugs are not so familiar, many dosing regimes are different to those in mainstream UK use, and many investigation results are in different units. While it can complicate use of the information provided it also reminds us that there are many ways of skinning a cat (and surely many ways of basting a turkey?). I was glad to note that centimetres and kilograms can be used in the calculations.

It is difficult in brief words to convey how rich and versatile is the content of this software. I have spent hours playing with it and have used it for several weeks at work. I still am not sure if it is possible to calculate fractional sodium excretion is not there, or if I have simply not found it. A module “PediCalc” contains 14 different calculators. Some I thought unusual: “CHF and thrombolysis risk” or “oxygen tank routine”… I have simply not found it. A module for a given child, and give information about speed of infusions, compatibility, volume of suspension, etc. There is also a general index.

The best advice in the book is contained in one of the prefatory pages—consult a solicitor whenever in doubt. Don’t leave it until the issue is so contentious as to need deciding by the Courts. If you can develop a relationship with a legal adviser, this, the authors say, will be more valuable than any book. Although this may appear to be a free advert for solicitors, it is sound advice: your professional indemnity association and your Trust’s solicitors should already be paid for.

This is the second edition of a 1996 book that expanded on the authors’ condensation (in previous writings) of The Children Act 1989 to include related legislation. The new edition includes explanations for professionals dealing with children of The Human Rights Act 1998, The Children (Leaving Care) Act 2000, and The Mental Health Act 1983, revised in 1998 by a new Code of Practice. It will need further updating when and if the intended new Mental Health Act becomes law. The authors tread with great clarity through the confusing overlap of the Children Act and the existing Mental Health Act—which should be clarified by the new Act. They cover what you can and can’t do to children in hospital, and how age and the Gillick principle should affect clinicians’ decisions.

The book is written in commendably clear language, with a layout that encourages selective reading. If it has a significant fault, it is the lack of clinical details to flesh out the plentiful legal cases. It may seem to some like a primer for students of law, but it is in fact intended for, and essential for, practising clinicians.

Every department of child health should have a copy of this book, as well as every CAMHS service.
LETTERS

Rejoinder to Eigenmann PA, Haenggeli CA, Food colourings and preservatives—allergy and hyperactivity (Lancet 2004;364:823–4) and an erratum

Eigenmann and Haenggeli have commented on a paper we recently published concerning additive and hyperactivity in children. This commentary gives a seriously misleading account of the findings of the study. Eigenmann and Haenggeli claim that “the term ‘hyperactivity’ seems to be used synonymous to ADHD.” We deliberately did not use the term ADHD as a criterion for recruitment into the study. This is a diagnostic term requiring a set of explicit criteria to be met and is of doubtful validity when applied to 3 year olds. The definition of hyperactivity we used for this study was one based on the risk of subsequent behavioural difficulties in middle childhood which we had established previously in a longitudinal study of an epidemiologically ascertained sample of 3 years olds.1,4

The study used screens for atopy (AT) and for hyperactivity (HA) applied to a total population of 2400 7 year olds to identify cases from the following design: “Children were entered into the four group randomised, placebo controlled, double blind, crossover challenge study. The four groups were in a 2×2 between group design with the following groups: HA/AT, non-HA/AT, HA/non-AT, and non-HA/non-AT.”1,4 Eigenmann and Haenggeli observe that “…families interested in hyperactivity seem to be over-represented” and on this basis conclude that “…results from this study should not lead to recommendations for the general population.” The presence of hyperactivity was one of the inclusion criteria of the food challenge phase of the study and consequently occurs in about half of the cases. A substantial proportion of children were included in the food challenge phase by design. Full details of participant flow were given in a diagram (fig 1 in our paper) as recommended in the CONSORT statement for reporting randomised trials.3

The separate issue of sample attrition through each of the stages of the study was considered carefully and we concluded that the findings from the group completing the food challenge phase would indeed hold for the general population.

The study found significantly greater increases in hyperactive behaviour reported by parents when the children were given the active compared to the placebo challenge. The statement by Eigenmann and Haenggeli that “parents’ observations can be easily explained by their expectations” is puzzling. The parents, children, and the person collecting the behaviour ratings were blind as to the food challenge being taken by the child over these periods. Consequently “expectations” cannot account for the effects we identified based on changes during the active and placebo periods. This does not hold for the reduction in hyperactivity we observed during the withdrawal phase which, as we discussed in the paper, was not blinded and was greater than that for the placebo versus active periods. This would be expected if the withdrawal effect alone was influenced by parental expectations.

The final part of the Eigenmann and Haenggeli commentary is concerned with the use of diet changes as treatments for hyperactivity. Our study showed that the effects of food colourings and the benzoate preservative were not restricted to or more strongly present for children with atopy or hyperactivity. Consequently our conclusions did not relate to the treatment of children with hyperactivity but rather to the preventive public health issue of whether food additives are having a general detrimental effect on children’s behaviour. The final conclusion from the paper was “…if additives have an effect at all, it is via a pharmacological effect which is best exemplified by the non-IgE dependent histamine release. We believe that this suggests that benefit would accrue for all children if artificial food colours and benzoate preservatives were removed from their diet. These findings are sufficiently strong to warrant attempts at replication in other general population samples and to examine whether similar benefits of the removal of artificial colourings and sodium benzoate from the diet could be identified in community samples at older ages.” We are now conducting just such a replication.

Erratum

While preparing this rejoinder, we have discovered an error in the reporting of the composition of the above mix in the paper. The sentence that reads:

“The active drink included 20 mg in total of artificial food colourings (sunset yellow, tartrazine, carminosine, and ponceau 4R; 5 mg of each) (Forrester Wood, Oldham, UK) and 45 mg of sodium benzoate (J Loveridge, Southampton, UK).”1,4

should have read:

“The active drink included 20 mg in total of artificial food colourings (sunset yellow 5 mg, tartrazine 7.5 mg, carminosine 2.5 mg, and ponceau 4R 5 mg) (Forrester Wood, Oldham, UK) and 45 mg of sodium benzoate (J Loveridge, Southampton, UK).”1,4

References


Developmental delay versus developmental impairment

The use of the term delay should be replaced by impairment because of parental perception of the meaning of delay as applied to development. I would like to draw attention to my experience of parents’ perception of the language we use in describing children and their ability.

It is common practice to refer to children who are detected to be significantly behind in achieving developmental milestones to be developmentally delayed. In talking to prospective adoptive parents I have become aware of how misleading this phrase is in describing to prospective adopters what we mean.

The general population has a perception of delay to mean something that will get there in the end, rather like a train being delayed, but reaching its destination eventually. It has taught me to use the term impairment rather than delay so that I do transmit to prospective adopters the true meaning of what I am trying to describe.

I wonder if as a profession we would consider examining our use of this term delay and possibly re-educating our profession to use the term impairment because it does not suggest that the child will be normal eventually.

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Palivizumab prophylaxis in haemodynamically significant congenital heart disease

Patients with congenital heart disease (CHD) have been reported by many authors to have high rates of hospitalisation, morbidity, and mortality associated with respiratory syncytial virus (RSV) lower respiratory tract illness.1,4,5 However, in a recent paper in Archives of Disease in Childhood, Duppenthaler et al reported a substantially lower incidence of
RSV hospitalisation in patients with “haemodynamically significant” CHD.

They suggest that the rate of hospitalisation in their population of patients from the Canton of Bern, Switzerland was as much as four times lower than rates previously reported in the United States. Based on these results they concluded that the unrestricted use of palivizumab to prevent RSV hospitalisation was justified.

There are several possible methodological reasons for the disparity in RSV hospitalisation rates in the calculations of both the numerator and denominator. With respect to the numerator, Duppenthaler’s methods would miss all of the nosocomial RSV disease. Furthermore, ascertaining the true incidence of RSV hospitalisation would require that all CHD patients admitted to the hospital undergo RSV screening, as was done in the international multicentre trial, not just those with symptoms judged typical of RSV.

Finally, in a previous paper by the same authors in the first four years of the study (1997/98–2000/01), 12 of 497 patients studied aged <5 years were identified with CHD compared to 6 of 449 aged <2 years in this study. In the previous study encompassed children under the age of 5, the difference of six patients between the first study and this one would imply that children who were hospitalised were between the ages of 2 and 5 (making a strong case for palivizumab prophylaxis in that age group), or they were deemed to have haemodynamically insignificant heart disease (making a case for prophylaxis in this group or questioning the definition of haemodynamically significant heart disease).

With respect to the denominator, the author used the International Classification of Diseases (ICD) coding as a screen for patients with haemodynamically significant CHD for entry into the cardiology registry. However, the ICD system does not allow for severity adjustment and therefore does not distinguish between haemodynamically significant and insignificant disease. In our recent multicentre trial, we defined haemodynamically significant CHD as patients with cyanotic CHD, single ventricle physiology, or those with acyanotic CHD that required medical therapy. Over this time, this would account for only about 35–40% of all the CHD patients. This would have significantly reduced the number of patients in the denominator, increasing RSV hospitalisation incidence. Secondly, no attempt was made to verify the accuracy of screening utilizing the ICD system, which might have resulted in missed patients with CHD due to inaccurate and/or inconsistent coding. Third, the calculations are based on years of observation, as written, was assumed to equal the number of child-years. This would be true if every child were born on 1 July; however, if births are spread out over 12 months the number of child-years would be halved.

Thus, if the numerator were increased (for the reasons stated above) by perhaps one and one-half to two times and the denominator were decreased by two times (even just to account for accrual of patients over child-years of observation), the actual calculated hospitalisation rate per 100 child-years would be between 3.5 and 4 times higher than the rates quoted in tables 3 and 4. These rates would then be comparable to the rates of CHD in the USA. In support of this statement is a brief recalculation of their data. The total birth cohort observed over six years was 54,947. There were 813 RSV hospitalisations which would give a rate of 29.6 per 1000 children per year, similar to other developed countries. Finally, the calculation of relative risks for hospitalisation uses a referent group that is not low risk, but includes children with prematurity and chronic lung disease, that would unfairly bias the relative risk in a lower direction. Furthermore, in the correct referent group there would be the low risk group as was done by Boyce and colleagues.

We would agree with the authors that unrestricted use of palivizumab in CHD patients is not warranted. The intention was never to use the drug indiscriminately in CHD patients as evidenced in the cardiac trial that restricted its use in truly haemodynamically significant young CHD patients. We disagree with the use of an NNT analysis to justify this statement. An NNT analysis only factors in the cost from a single RSV hospitalisation. But the CHD infant with RSV is likely to incur additional morbidity and mortality related to future hospitalisations and/or treatment, especially when it comes to surgical correction, and thus raises the cost of care. Also, NNT analysis takes only a payer’s perspective, and ignores the societal component of pharmacoeconomics. As healthcare providers, it is our responsibility to use costly drugs in a responsible manner, while also ensuring that these patients receive the treatment/prevention from which they would clearly benefit.

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References

Authors’ reply
We greatly appreciate the interest of Feltes and Simoes in our study, but we are somewhat surprised by the intensity of their allegations. The large number of unrelated flaws they claim to find in the methods we used suggests that Feltes and Simoes have a fundamentally different view of how RCTs and the data should be interpreted. In our opinion, their critique is mostly unjustified and requires a firm rebuttal.

It is true that nosocomial infections were not included in our study.1 We did not claim otherwise. However, adding for instance a 14% rate of nosocomial RSV infections as reported for the placebo arm in their study (9 of 63 cases),2 would not translate into a major change in the calculated RSV hospitalisation incidence.

It is also correct that RSV tests were not conducted in CHD patients admitted for reasons other than respiratory tract disease, but we do not reject the claim that RSV testing was performed only in patients with typical RSV symptoms. Symptoms and signs leading to RSV testing are detailed in the method section of our paper1 and encompass the vast majority of presentations caused by RSV.

Furthermore, it is unclear why Feltes and Simoes here compare our observational study with their randomised controlled trial (RCT),2 which has been obviously led to a substantially lower case catchment, but may not reflect real life this well known limitation of RCT. It would have been more appropriate to compare our study with the Tennessee Medicaid Study by Boyce and colleagues,3 which we used as the comparator study. In this study, however, only 6% of cases were specifically coded as RSV infection; 94% were coded as “bronchitis”4. Thus, it appears obvious that our case catchment was not inappropriate but insensitive. It is also worth mentioning here that our method of diagnosing RSV had undergone in-house validation.5

In our previous study,6 we did not focus on CHD cases. During the six years study period described in the present study, there were 21 hospitalisations among CHD patients <24 months of age, 11 of which were considered by the cardiologist as haemodynamically significant. In addition, three cases in children >24 months of age, all haemodynamically significant. During the first four years of the study period covered also by our previous study,1 there were additional three cases in children <24 months of age, six of which were considered haemodynamically significant. During the subsequent two years, there were 12 cases. Of these, nine cases occurred in patients <24 months of age and were haemodynamically significant in four.

We did not—as Feltes and Simoes apparently assume—use ICD codes for case catchment. As stated in the method section,7 the ICD codes 020–026 describe cases included in the database. The large groups of haemodynamically insignificant VSD, ASD, and PDA are not included. All cases included in the registry were “CHD requiring medical therapy”. It follows that the definition of haemodynamically significant CHD used in our study to create the denominator is quite similar to the definition used by them.8 Their claim that the true denominator of CHD in our study was only 35–40% of what we used, is incorrect in our opinion. Again, our main comparator study7 used a less stringent definition of CHD (ICD-9 codes 743–747) which did not address the issue of haemodynamic significance, and was thus more likely to report estimates of low precision.
Feltes and Simoes also claim that we got it wrong with the “child-years” and thus overestimated that denominator by a factor 2. Objection! We agree that RSV exposure only occurs in approximately half of the child-years, and that total child-years should be divided by factor 2 for calculation of incidence per child-year of RSV season. However, we compared our incidence rates with those of Boyce and colleagues,1 which were already corrected for this discrepancy (that is, our data in table 3 were compared to the column entitled “Hospitalisations per 1000 child-years” in table 1 of Boyce’s paper, p. 867,2 which were multiplied by factor 2). Had we truly committed the mistake claimed by Feltes and Simoes, we would have compared our data with the preceding column in the said table, which is entitled “Incidence” (meaning: hospitalisations per 1000 child-years of RSV season).

Reduction of our denominator by factor 2 was indeed necessary, when children <6 months of age only were investigated. This, however, we did for calculation of the figures in table 3 and we explicitly stated that we did so in the text on page 963.3 Thus, this allegation again is incorrect in our opinion.

It is true that we used the entire population of non-CHD patients as referent, because we did not have data of sufficient quality for analysis of other individual risk factors. This was clearly stated in the manuscript. However, to claim that such a comparison is “unfair” is difficult to understand, because (1) for comparison we used Boyce’s raw data4 to calculate non-CHD rates in their population, and (2) in Switzerland, palivizumab has been recommended for children with severe BPD only.

Thus, we believe that it does make sense to compare CHD patients to all others who do not receive palivizumab. The very small group of children with severe BPD makes no substantial difference here.

We agree with Feltes and Simoes that NNT should not play a major role when it comes to providing optimal care for children with CHD. The reason why the new 2004 Swiss recommendations for the administration of palivizumab include children <1 year of age with surgically uncorrected, haemodynamically significant CHD or cyanotic CHD or severe hypertension or cardiac failure,5 as soon as the distributor of palivizumab successfully applies for mandatory coverage by the health insurance companies. If, however, resources are limited, and they increase as in many European countries, cost-effectiveness analyses including NNT do play a role when authorities have to weigh the current epidemiology in the study area.

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The Royal College of Paediatrics and Child Health flagship meeting: is it value for money?
The most recent Newsletter from the Royal College of Paediatrics and Child Health (RCPCH) was accompanied by a call for abstracts for the 9th Spring Meeting. An article in a recent RCPCH trainee’s newsletter from the chairman of the trainees’ committee expressed disappointment at the level of attendance by trainees, and that those who did attend left almost immediately after giving their presentation. This is supported by official figures from the RCPCH which show the lowest number of SHO and SpR attendees at the 2004 meeting over the past six years (table 1). SpR attendees at the 2004 meeting accounted for less than one quarter of total attendees and SHO attendance for only 2%. Why is this happening?

1 postulate that it is simply too expensive. To attend for the three full day sessions at the RCPCH meeting will cost in excess of £500. The total sum involved is in excess of most trainees’ annual study leave budget. Indeed with the financial constraints existing in most NHS trusts, study leave budgets are often not fully reimbursed, leaving trainees to supplement fees from their own pocket.

In contrast to most other countries, no concessions are given for trainees. The Society for Paediatric Research in the United States offers significant reductions in subscription fees for their annual meeting. This concession for trainees is mirrored by flagship meetings in most European countries, including the Congrès de la Société Française de Pédiatrie, which are attended by a far greater percentage of trainees than the RCPCH meeting.

If the RCPCH is serious about campaigning for a greater number of junior attendees at the Spring Meeting then it must follow the example of most other major paediatric meetings worldwide and offer financial concessions to the future paediatricians they are hoping to train.

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Competing interests: none declared

Reference

Reply by the RCPCH
I am pleased to have the opportunity to respond on behalf of the Academic Board. The trainee representatives on the Academic Board have taken soundings from their peers and formal approaches have been made to regional advisers, to inform our extensive discussions of these same data.

The data above show a fall in attendance, but do not provide any evidence that the reducing attendance is because the meeting is too expensive. Indeed, during inquiries many other factors were identified—European Working Time Directive, the introduction of shift systems at middle grade, shorter training attachment at Specialist Registrar level are some—which not only have the effect of reducing and availability for visits to the Spring Meeting, but mitigated against research activities by trainees, so reducing their chance of presenting at the Spring Meeting. The growth of sub-speciality training may also be attracting trainees to specialty groups in the UK and Europe instead of the RCPCH Spring Meeting.

The Academic Board Executive has written to RCPCH college tutors and the chairman and members of the National Association of Clinical Tutors to ensure that trainees are encouraged to attend and given study leave and funding to do so. Contrary to popular belief, the Spring Meeting is not making money for the College, even when profits from the trade exhibition are included (these latter are far smaller than abroad, because of rules about sponsorship). Indeed, the meeting runs within a very narrow margin of making a loss. The figures are published in the annual accounts. Concessions for any group would mean an increase in costs for another.

Finally, the venue of the Spring Meeting is regularly reviewed, but there are few alternative venues, when the requirements for simultaneous sessions, technical support, accommodation, and provender are taken into account. Currently, York University offers good value and a fine setting where paediatricians, senior and junior, from the UK and abroad can meet, make and renew

Table 1 Attendance figures for RCPCH Spring Meeting 1997–2004

<table>
<thead>
<tr>
<th>Year</th>
<th>Consultant</th>
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<th>Staff grade</th>
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</table>
Meningitis is a common cause of convulsive status epilepticus.

With the benefit of hindsight from this study, which refuted the perception that convulsive status epilepticus is atypical of acute bacterial meningitis (ABM), cerebrospinal fluid (CSF) sampling might have been more readily undertaken, and perhaps more blood cultures done, given the fact that the latter modality sometimes tests positive even when the former tests negative.

The crux of the matter is how the index of suspicion for meningitis is "packaged", and the bottom line is that, given the fact that both ABM and tuberculous meningitis (TBM) are eminently amenable to treatment, and without treatment death is an almost invariable outcome for both, common ground must be found in the "packaging" in order to optimise diagnostic potential. A package which may acknowledge the true prevalence of disease manifestations risks relegating those stigmata to oblivion, the latter being the fate of the blanching maculopapular rash which, notwithstanding its prevalence of 13% in meningococcaemia,1 nevertheless totally escaped mention in the section on ABM in a leading textbook.2 With a prevalence of 6.5–9.7% in ABM, the CSF which is characterised by normal cellularity and biochemistry1 is another parameter that deserves greater recognition than is usually the case, especially because this is a feature which may characterise TBM as well.3 One view is that, in the latter context, the novel HIV/AIDS is the operative factor for this manifestation of TBM.4

What is also evident from the HIV/AIDS epidemic, is that tuberculous patients who harbour this virus are more likely to have extrapulmonary tuberculosis than their counterparts who do not have HIV/AIDS.5 The paradigm shift dictated by the HIV/AIDS era is that the index of suspicion for military tuberculosis hence, TBM, should be correspondingly higher, and that parallels between ABM and TBM should be more readily recognised. For example, like the four patients reported with ABM in the absence of meningococcal meningitis,6,7 the 8 month old HIV/AIDS patient with TBM reported by Janner et al8 in 1994;73–4.
A PAR is a different trajectory of development that the fetus takes as a result of its intrauterine (or perhaps early postnatal) environment, with the aim of maximising chances of survival to reproductive maturity, in a particular expected postnatal environment. For example, in the pregnant snowshoe hare, stress (due to predation, cold, or starvation, for example) may lead to increased maternal cortisol levels. Cortisol may cross the placenta, and the fetus may detect, via signalling from the mother and placenta, that the external environment is a harsh one. The cortisol levels may enhance maturation of fetal organs, such as the lungs, and prepare the fetus for the rigours of postnatal life. However, it appears that exposure to such high cortisol levels in utero may alter the sensitivity of the hypothalamo-pituitary-adrenal axis, making it hyper-responsive after birth. So the offspring of hares that have been stressed during pregnancy, may be hyper-alert—a predictive adaptive response to the expected postnatal environment. One wonders what the effects of an analogous human PAR might be.

Gluckman and Hanson propose that while we have reached a stage in the 150 000 year history of Homo sapiens where Darwinian evolution is no longer active or has slowed dramatically, the predictive adaptive responses we have evolved now threaten our post-reproductive health, in terms of obesity, type 2 diabetes, atherosclerosis, and hypertension. These responses could be initiated soon after conception, mediated by DNA methylation. What is unclear is the extent to which PARs may play a role in human disease outside the context of birth weight (or rather suboptimal fetal growth) and the metabolic “syndrome X”. Gluckman and Hanson make a case for other diseases such as osteoporosis, cognitive decline, psychosis, and polycystic ovarian syndrome, with varying degrees of persuasiveness.

The message from the book appears to be twofold: that the evidence for PARs playing a role in human disease is a persuasive one, which should not be overlooked in favour of “sexy” genome research; and secondly, that if these hypotheses are correct then this has significant implications for society, and how we try to reduce the burden of disease in later life. Unfortunately, there appear to be few recommendations we can make for optimising the intrauterine, and postnatal, environment to minimise the potentially harmful effects of inappropriate PARs.

The fetal matrix concludes with a call for an increased emphasis on the importance of female health before and during pregnancy, with improved female literacy and education (and therefore, hopefully, avoidance of teenage pregnancy), and nutrition. It therefore sends a message to research funding councils of the potential importance of this area of research, and to politicians about priorities. The book should however be of interest (and thought provoking) to anyone with an interest in perinatal care, human nutrition, and fetal physiology.

A C Breeze