Why do we still rush to clamp the cord?

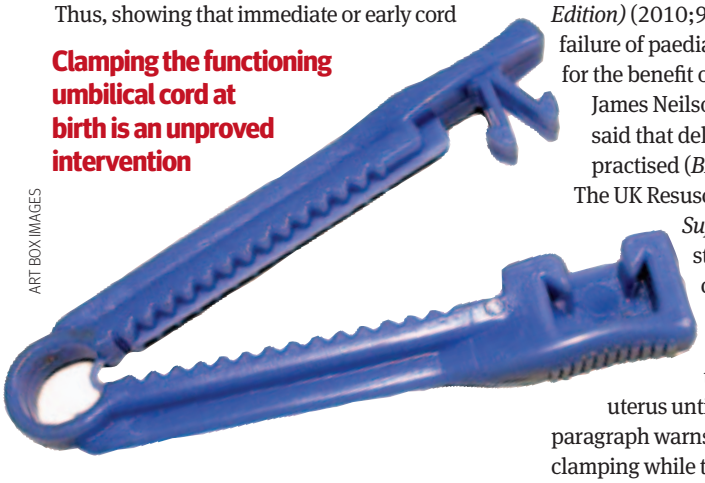
PERSONAL VIEW **David J R Hutchon**

In 2007 an editorial by Andrew Weeks advised that it was better, for the baby, not to rush to clamp and cut the cord at birth (*BMJ* 2007;335:312). He believed that it was time for us to follow the World Health Organization and the International Federation of Gynecology and Obstetrics and that other guidelines should remove the need for early cord clamping as part of active management of the third stage of labour. In the three years since this editorial there has been no significant change in practice and no change in the guidelines of the UK National Institute for Health and Clinical Excellence (NICE). Why are obstetricians so reluctant to change?

All mammals must transfer from placental to pulmonary respiration at birth; and, as with all our functions, Darwinian principles have ensured that this can usually occur without outside intervention. Transition involves ventilation of the lungs, which opens the pulmonary circulation, and this is followed by closure of the placental circulation. During these first few minutes the neonate remains at roughly the level of the placenta. In nature no clamp is involved, and constriction of the arteries (followed by the veins) is caused by vasospasm.

I have always argued that applying a clamp to the cord is clearly an intervention, having the greatest effect when it is done quickly after birth. Cord clamping has become the accepted norm, so much so that delayed clamping is generally considered a new or unproved intervention. Thus, showing that immediate or early cord clamping offers no advantage to the baby is not enough; it has to be proved beyond reasonable doubt that it is harmful. Other interventions such as routine episiotomy were quickly abandoned when it was shown that they gave no advantage.

Clamping the functioning umbilical cord at birth is an unproved intervention



ART BOX IMAGES

Could our basic teaching of physiology be a factor? Most textbooks with physiological descriptions of transition at birth state or imply that the cord circulation closes because of the application of the cord clamp. (*Gray's Anatomy* is an exception.) Physiology is a description of the normal functioning of the body. Whether or not the timing of cord clamping has any effect on the health of the baby or the mother is irrelevant to what constitutes a true physiological description. Such a distorted teaching of "physiology" may well account for the entrenched belief that delayed cord clamping is the intervention and may explain the apparent resistance of clinicians to follow the evidence.

The messages are mixed, and information is inconsistent. The Royal College of Obstetricians and Gynaecologists' scientific advisory committee advised that there was no evidence that the timing of cord clamping affected postpartum bleeding yet still includes early cord clamping in its *Green-top Guideline 52* (www.rcog.org.uk/files/rcog-corp/Green-top52PostpartumHaemorrhage.pdf). Michael Weindling, in a recent article in the *Archives of Disease in Childhood (Fetal and Neonatal Edition)* (2010;95:F59-63), puzzled over the failure of paediatricians to act on the evidence for the benefit of delayed cord clamping; and James Neilson, in a recent *BMJ* editorial, said that delayed clamping should be practised (*BMJ* 2010;340:c1720).

The UK Resuscitation Council's *Newborn Life Support: Provider Course Manual* states in chapter 4 that "the cord can usually be clamped about a minute after birth, the baby being kept at approximately the same level as the mother's uterus until this time." The same paragraph warns that very early clamping and clamping while the baby is held above the level of the placenta can cause hypovolaemia. This recommendation has been reinforced by changes in the latest guideline from the council (www.resus.org.uk/pages/nls.pdf). Two popular pregnancy information books, *The Day-by-Day Pregnancy Book* by Maggie Blott and *Your Pregnancy Week by Week* by Lesley Regan, describe delayed cord clamping as the norm and explain the advantage to the baby.

Yet NICE's guideline on intrapartum care, a powerful influence on practice, still advises early cord clamping as part of the active management of the third stage of labour (www.nice.org.uk/nicemedia/live/11837/36275/36275.pdf). If the need for early cord clamping was removed as an element of active management of the third stage of labour from this guideline, and its removal was publicised, there could be an overnight change in practice so, at least, we would have equipoise in the research question about the timing of cord clamping.

More research is needed. We need to know how delayed cord clamping can be incorporated effectively into neonatal resuscitation. This is likely to require technological developments in resuscitation equipment to allow the paediatrician to access the baby while it remains close to the perineum. How can we safely incorporate resuscitation during caesarean section? We need to know whether there are any situations, such as bleeding from vasa praevia, where clamping the cord may be beneficial to the baby. We need to know how to extract the maximum amount of the blood remaining in the placenta after delayed clamping to be available for cord blood banking. Observational research is not possible until the timing of cord clamping is routinely recorded.

Clamping the functioning umbilical cord at birth is an unproved intervention. Lack of awareness of current evidence, pragmatism, and conflicting guidelines are all preventing change. To prevent further injury to babies we would be better to rush to change.

Competing interests: See bmj.com.

David J R Hutchon is retired consultant obstetrician, Darlington djrhutchon@hotmail.co.uk

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What's inside?
The splendor
of slices, p 1222

Towards an end to stillbirths

PERSONAL VIEW **Alexander E Heazell**

Words that parents do not expect to hear are "I am sorry: I cannot see your baby's heart beating." There was no mention of stillbirth in popular books about pregnancy, no suggestion in the shopping catalogues full of smiling babies. I am a doctor, so even though I was aware that pregnancy was not risk free, I did not expect my own unborn child to die. I now realise that our son is one of many such deaths, and the impact of stillbirth is greater than anyone seems to recognise.

On average there are around 10 stillbirths every day in the United Kingdom and more than 4000 a year, the equivalent of a year's births in many hospitals. The worldwide burden is estimated at 3 000 000 stillbirths a year, 99% of which are in the developing world.[1] In the UK the rate of stillbirths has not fallen significantly for more than a decade, remaining at 5.3 per 1000 live births.[2]

In the same period advances in neonatal care have seen neonatal deaths fall from 4.1 to 3.4 per 1000.[2 3] Deaths of infants during labour account for 7.8% of the total number of stillbirths in the UK,[2] but two thirds of associated litigation, and the number has been falling in recent years.[4]

However, numbers of antepartum stillbirths, which represent the bulk of perinatal mortality, remain unchanged. A recent multinational review proposed that this lack of progress resulted from a dearth of studies aiming to reduce the impact of stillbirth.[5] So why is stillbirth, which affects one in 200 parents, so under-researched and underprioritised?

It isn't just health professionals who see stillbirth as rare and insignificant. A survey of the general public showed that most people think that Down's syndrome is more common than stillbirth (the risk of the syndrome is in fact one in 700). Cot death, which is at the forefront of every expectant parent's mind, is 10 times less common than stillbirth.[6] The invisibility of stillbirth is compounded by the reluctance of professionals and parents to deal with stillbirth openly; often a stillbirth is locked away, an unspeakable and private loss. Many obstetricians and midwives enter their profession to be involved in the extraordinary experience of the beginning of life, not the harrowing combination of death at birth. Where stillbirth is diagnosed before birth, most women give birth vaginally, providing challenges to intrapartum care for midwives and obstetricians. For parents this is a devastating and confusing time that nothing and no one has equipped them to deal with. Many want to see and hold their child and have someone validate their feelings. Physical evidence of hair, photographs, and footprints can help provide mementos for parents, confirming the existence of their child.[7] The negative psychological and social consequences of stillbirth, including anxiety disorders, depression, and relationship breakdown, often result from a lack of acknowledgment of life and of loss.

Cot death, which is at the forefront of every expectant parent's mind, is 10 times less common than stillbirth

Two constant findings in published reports on stillbirth challenge clinicians' views of modern medicine. Firstly, most stillbirths remain unexplained, an anachronism in a time when evolving genetic and biological technologies are constantly improving the diagnosis of disease. The admission that we cannot explain stillbirth leads us to the uncomfortable conclusion that we don't know everything. It also follows that we have little to offer parents in subsequent pregnancies, save for increased surveillance, to minimise their risk of another stillbirth, which is twofold to 10-fold greater than in women with a liveborn child.

In many cases stillbirth also represents a perceived failure of maternity care, which is designed to deliver a healthy baby to its parents. Recently healthcare has been driven towards achieving clinical excellence. In contrast, the care of women with stillbirth is associated with multiple shortcomings—those leading to the stillbirth and in how parents are cared for afterwards. A recent study found suboptimal care in 45% of stillbirths.[8]

By focusing on excellence there is a temptation, whether subconscious or not, for clinicians to regard as beyond salvage those areas where clinical care has long failed to make an impact.

Finally, and perhaps of greatest consequence to policy makers, stillbirth is not solely a medical or midwifery matter. Many of the factors associated with stillbirth are outside the realms of medical care. Poverty, educational attainment, smoking, alcohol and drug misuse, and lack of appropriate birthing facilities all affect the risk of stillbirth. This health inequality is not restricted to the developing world. Perinatal mortality is 50% greater in the most deprived areas of the UK.[9]

How then do we tackle a tragedy such as stillbirth when the problem is so complex? I think the time has come to end the silence surrounding stillbirth. Stillbirth needs to be prioritised by government, support groups, and those in maternity care. For improvements to be made policy makers must recognise the impact of stillbirth and the need for research to develop strategies to prevent it and its consequences for parents. There is currently a funding gap to provide such research. In 2008-9 in the UK £2.2m (0.33% of the budget of the UK National Institutes of Health Research) was spent on "research related to stillbirth."[10 11]

This shortage of funding becomes even more apparent when you look at research activity; in the UK only 39% of medical schools and 4% of midwifery colleges are conducting research related to stillbirth. This research gap is more evident in the literature; "stillbirth" yields 4012 hits on PubMed, whereas "pregnancy" yields 666 789.

Thirty years ago no one talked about cancer. Today the diagnosis and treatment of cancers are improving all the time. If parents are brave enough to speak, and doctors, midwives, and policy makers courageous enough to listen to them, then the barriers to reducing the number of these deaths can be overcome. In time stillbirth, like cancer, will no longer be taboo but a condition that's openly debated, researched, treated, and prevented.

Alexander E Heazell is clinical lecturer in obstetrics, University of Manchester
alexander.heazell@manchester.ac.uk

References are in the version on bmj.com.

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REVIEW OF THE WEEK

A slice of life

Whether in medicine, science, or architecture, slicing can reveal secret order, spill lurid innards, and open new views. **Wendy Moore** enjoyed an exhibition that looks beneath the surface

The Slice: Cutting to See
Architectural Association, London WC1B 3ES
Until 15 December; free
www.aaschool.ac.uk
Rating: ★★★☆

SCIENCE MUSEUM

Wax model showing the structure of the eye, 19th century (left), and plaster model (right)

We have grown accustomed to seeing beyond the surface of things. Whether we are looking at a cross section of a Chilean mine on the news, an anatomical illustration in a medical textbook, or an ultrasound scan of a baby, technology has made internal views commonplace. Walls and skin no longer hold much mystery.

But a new exhibition at the Architectural Association in London exploring the development of interior images in medicine and architecture has recreated something of the wonder in seeing what lies beneath.

The Slice: Cutting to See brings together models, machines, and works of art from the 18th century to the present across the disciplines of medicine, science, geology, architecture, and art. From wax anatomical models of the body to a bacon slicing machine, from a brain scan to a cross section of the earth's crust, they all show how the ability to see beneath external surfaces can reveal hidden depths, secret structures, and unknown threats. What seems at first an oddball collection of items on closer inspection suggests some interesting parallels.

Just as the model of a prototype sonar buoy shows a submarine lurking beneath a glass-like sea, so magnetic resonance imaging of a brain—in this case belonging to the Chinese artist Ai Weiwei—reveals a cerebral haemorrhage. A 19th century cross section of the earth's crust, showing veins of basalt snaking to the surface, echoes the blood vessels in life-like wax and plaster anatomical models of the eye and face that were crafted in the same period. And even the everyday bacon slicer, actually taken from a hospital, is only a more mundane version of the early microtomes used to produce thin slices of human tissue.

The exhibition has been created by D Graham Burnett and Christopher Turner, editors of the New York art magazine *Cabinet*. They were inspired by the similarities between the slices of human tissue produced by microtomy machines and the work of the late US artist and former architect Gordon Matta-Clark, who cut away sections from houses and other buildings. Burnett, who is professor of the history of science at Princeton University, once worked in a laboratory preparing pancreases from mice for sectioning in a refrigerator sized cryotome. His experience prompted him to research the development of microtomes—Greek for "small" and "cut"—from their first use as instruments for sawing thin slices of wood to their 18th century development into devices to cut transparently thin specimens of human tissue.

Improvements in the engineering of sophisticated chronometers and naval instruments in the 19th century helped create commercial micrometers with ever more precise cutting power and control. Combined with the development of chemical stains and new embedding techniques, such as fixing specimens into blocks of wax or jelly, these enabled doctors to make important advances in pathology, histology, and embryology. The production of rotary microtomes, capable of cutting long ribbons of tissue less than a cell thick, led one scientist, Vannevar Bush, in the 1950s to try to build an "automatic microtome," which would affix minutely thin slivers of tissue onto 35 mm film, with the aim of viewing movies of the human body through a projector. Bush's ambition never materialised, though his dream would eventually be realised by the magnetic resonance, computed tomography, and ultrasound scanners of today.

A collection of five microtomes from the late 19th and early 20th centuries forms the centrepiece of the exhibition. Manufactured in the United Kingdom and Germany, the leaders in the technology, they include an ether freezing machine from 1890; a sliding microtome with four knives, made in 1885-95; and a flat-cutting, rocking microtome from 1930.

Although the exhibition is small, medical instruments and models make up about half of the exhibits. Loaned from the Wellcome Collection at the Science Museum, they include a pair of early 19th century male and female wax memento mori models. Viewed from one side the figures are dressed in elegant Regency clothes, like characters from *Pride and Prejudice*; turned around they reveal naked skeletons more reminiscent of *Frankenstein*. A silver medal appropriately depicting the head of Joseph-Ignace Guillotin, inventor of the scourge of the French revolution, is shown alongside a tonsil guillotine from the 1920s. Both evoke the ambivalence of the cutting edge: Guillotin invented his machine as a humanitarian advance in capital punishment; tonsillectomies have since waned in medical fashion.

With a soundtrack provided by a Surrealist film, *Un Chien Andalou* by Salvador Dalí and Luis Buñuel, which features a knife slicing into a woman's eye, and an art installation that comprises an ant colony creating tunnels in sand, the exhibition is quirky and thought provoking rather than roundly informative.

The curators of *The Slice* are not, of course, the first to explore the connections between architecture and medicine. Leonardo da Vinci likened bodily structures to architectural forms in his anatomical sketches; the 17th century architect and scientist Robert Hooke coined the word "cell" to describe the pores in trees because they reminded him of monks' cells; and Hooke's Italian contemporary the physician Marcello Malpighi borrowed architectural terms—beams, levers, ducts, cisterns—to express what he saw through a microscope. But in bringing together these pioneering efforts to reveal the interior, this exhibition reminds us how the human desire to see ever further has advanced discovery in science.

Wendy Moore freelance writer and author, London
wendymoore@ntlworld.com

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BETWEEN THE LINES **Theodore Dalrymple**

(Not such) good fortune

Towards the end of his *Memoirs of His Life and Writings*, published two years after his death, Edward Gibbon (1737-94) expatiates, sincerely, on his good fortune in a way that is surely most uncommon, especially now that once again there is a fashion for romantic agony as a sign of superior sensibility: "When I contemplate the common lot of mortality, I must acknowledge that I have drawn a high prize in the lottery of life."

Even the fact that he had reached what would now be considered middle age was fortunate: "The general probability is about three to one that a new-born infant will not live to complete his fiftieth year."

Is it necessary, then, for there to be general ill fortune for anyone to appreciate what he or she has? Gibbon, in fact, was not a healthy man. He was the only one of the seven children of his parents to survive infancy, but he was quite often himself expected soon to die. He called himself "a frail being," and a silhouette of him published in the first edition of his *Memoirs* shows him to have been short and fat, with a disproportionately large head. There is a story, apocryphal but nevertheless believable, of him going down on his knee to pay his addresses to a woman and being, through fatness and shortness of breath, unable to rise again. He would not have been able to obey Lady Bracknell's injunction to rise from that semirecumbent position.

It is probable that Gibbon had rheumatic fever, because until the age of 16 (after which he never had it again) he had bouts of fever and painful arthritis that the waters at Bath did nothing to alleviate. This interfered with his schooling but may have contributed to his education, for it gave him time to acquire an immense if unorganised erudition.

He was always physically indolent, and perhaps valvular heart disease limited his activity. He was likewise always stoical and regarded his own health as a "disgusting topic."

Edward Gibbon had had a hydrocele for 30 years before finally consulting a surgeon about it . . . "It ['my large prominency' in 'my inexpressibles'] has increased, is increasing, and ought to be diminished"

His mode of death is famous. He had had a hydrocele for 30 years before finally consulting a surgeon about it. In a letter to his friend Lord Sheffield, who published the *Memoirs*, he made a joke of it: "It ['my large prominency' in 'my inexpressibles'] has increased, is increasing, and ought to be diminished." This, of course, was a reference to the famous motion in the House of Commons in 1780, introduced by John Dunning MP, that "the influence of the crown has increased, is increasing, and ought to be diminished."

His hydrocele was tapped twice in November 1793, when a total of 10 litres of fluid was removed. The operation was repeated in January 1794, when a further eight litres were removed. It is said that peritonitis set in, and he died three days later.

The admirable quality of his stoicism may be gauged by a note of Lord Sheffield's to his *Memoirs*: "He observed to me that it was a very bad sign *with him* when he could not eat his breakfast, which he had done at all times very heartily; and this seems to have been the strongest expression of apprehension that he was ever observed to utter."

Theodore Dalrymple is a writer and retired doctor

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Edward Gibbon was not healthy

MEDICAL CLASSICS

A Very Peculiar Practice

A television series written by Andrew Davies

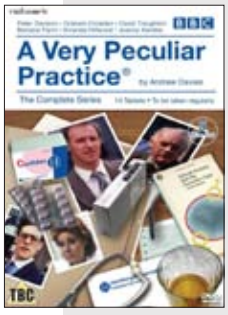
First aired on BBC1, 1986

A Very Peculiar Practice supplied a weekly series of televisual treats almost a quarter of a century ago, when I was training to be a general practitioner myself. Set in a practice on a university campus the series followed the progress of an idealistic young doctor (Stephen Daker).

Stephen joins the surgery of an alcoholic, psychoanalytical, cynical senior partner (Jock McCannon); a mechanistic, entrepreneurial squash player who would rather have been a surgeon (Bob Buzzard); and a smouldering bisexual (Rose Marie), who blames men for the ills of women.

The new doctor, already traumatised by marital breakdown, drives on to the campus in his Volvo amid an intimidating plethora of road signs, including one that acts as a metaphor for the situation: "Caution—altered priorities ahead." He joins a silently sobbing man in the surgery waiting room, where the receptionist and Jock mistake him for a patient. Jock lumbers Stephen with on-call duty, so he can get drunk at the vice chancellor's party, and Stephen diagnoses appendicitis in a new student whose abdominal pain Jock had interpreted earlier in the day as homesickness.

The drama takes place in the 1980s: funding cuts threaten redundancies and closures, and the university seeks foreign students and investment. The partners disagree over how to keep the practice open. Jock intones despairing memoirs into a dictation machine as he looks over the lake and open space of the campus. Bob enrols the practice in a shady research project, which he hopes will fund sharp new suits, a family holiday in Tenerife, and his wife's respect. It doesn't, of course. The drug being studied calms people down but gives them red ears. Rose Marie is delighted by the failure of "boys' games." Bob is the only one who uses a computer and is ridiculed by Jock: enjoy the bulky form and historical sound of a tractor feed printer.



What of the patients? Students come to the surgery, of course. Stephen, having been asked to speak to the freshers, invites them to call in just to talk—much to Bob's disbelief. And a terrifyingly realistic overbearing professor demands amphetamines; Stephen declines, tries to talk, suffers threats, but ultimately gains his respect. There is even a cameo of the screenwriter.

Love and lust feature, of course. Stephen falls for a PhD student, who diagnoses a touch phobia and provides sex therapy. Bob's computer identifies the source of a campus outbreak of non-specific urethritis. Rose Marie saves the practice by having sex with the government inspector.

So much has changed, so much remains the same. The seeds of the present world of general practice were being sown when this series aired. Catch it on DVD, VHS if you're sentimental, or on YouTube.

Stuart Handysides, general practitioner, Buntingford, Hertfordshire stuart_handysides@hotmail.com

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Why age matters in healthcare

FROM THE FRONTLINE
Des Spence

In the darkness we went out to take down the plastic. I pushed off the concrete block that was anchoring the sheeting on the low roof. As the sheeting was caught by the wind I shouted a warning into the drowning wind. I found my brother lying, bloodied, but he breathed. I dragged him inside. Mum cleaned his head wound and put him to bed. Next morning he went to school as usual. Our health experiences prejudice our view of healthcare, something medical education can never undo. Does age also prejudice our perceptions of health?

As children we are weapons in support of our parents' health beliefs. Visits, interventions, and even operations are driven by the whim of our parents' anxieties about health. This formative period is when the seed of our future behaviour is transmitted vertically and why health promotion often has such a weak effect against the infectious disease of health beliefs. Then when we are teenagers the electricity of wellness and a sense of invincibility pulses through our veins. We ignore our parents and all health promotion messages on smoking, drinking, and drug taking—because it doesn't apply to us.

In our 20s, despite the odd grey hair, we take health for granted. Healthcare is irrelevant. In our 30s many of us become parents. Our only health concerns are for our children. Intuitively we treat them as our parents did us. This is the cycle of healthcare. It is only in our 40s that our own sense of mortality awakens. The loss of a parent or a friend is real for the first time. Seeing the children grow up gives us pangs: we don't want to die. Now in positions of power and influence we clamour to ban smoking, limit alcohol, and increase exercise. We are everything we vowed we would never become.

We remember our parents' 50th birthday parties and shudder, but 50 rushes to greet us. Our teenage children behave irresponsibly, and we berate them. More people die. We fear death, seek the reassurance of doctors, and grasp the crutch of medication. But others choose the fatalism of "enjoy it while it lasts," smoking, drinking, and eating to excess. We chastise them for their choices.

At 60 we accept that our children's lives are as mediocre as our own. Now less health obsessed, we are more sceptical of drugs and doctors. By 70 the reaper is among us.

At 80 we have seen enough of death to know that life is not in the gift of medicine. We just want dignity, a life without dependence, and a good death, and we don't want to be saved. We resist drugs, investigations, and referral to hospital. Looking at young doctors we ask, "What do they know of life?" But families over-rule our care decisions, motivated by their sense of loss. Why do we pretend that age doesn't matter in healthcare?

Des Spence is a general practitioner, Glasgow destwo@yahoo.co.uk
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Cover to cover

DRUG TALES AND OTHER STORIES
Ike Iheanacho

As contests go it's hardly *The X Factor*. There's no rip-off phone voting, the audience isn't screaming (not usually, anyway), and if the participants are on heartwarming or sick making "journeys" then they're good enough to keep it to themselves.

In fact, without such defining features the *BMJ*'s effort may not seem much like a talent show at all. But consider this: every year hundreds of books arrive, typically unsolicited, in the journal's editorial office, seeking an appearance on the reviews pages. For the lucky chosen few, the resulting greater recognition presumably makes even the most caustic review a prize worth having.

The constant flow of new books on all topics and of every style can mask the fact that too many—particularly those on disease management—present little that's original, let alone groundbreaking, however well written and scholarly their execution. Such offerings are never going to be game changers, not least because they tend to be too respectful of, and dependent on, established ways of doing things.

A million miles from this cosy world of mirrored thoughts and echoing practice are very different books just aching to be written and widely read. What about, for example, more texts that champion sensible non-intervention in modern medicine?

This valuable but threatened skill could do with support, especially given the factors now assembled against it. These include the widespread misapplication of another great art: evidence based medicine. It's too easy to assume that the combination of hard data and good intentions automatically represent a force for moral good that makes intervention not merely worthwhile but noble. Against such misguided crusading, nagging doubts about the effect that treatment would have on particular patients, and any reluctance from these individuals to accept it, might seem churlish—or even negligent.

Other influences too conspire against well considered decisions not to investigate or treat patients when they really don't want or need such "help." Chief among these is the type of overweening but unworldly guidelines perceived as restricting clinical freedom and prescribing schemes that offer rewards for meeting rigid, questionable targets.

What's out there is far outweighed by "me toos"—books that repeat a rigidly disease focused approach that pays lip service to the messy reality of patient care. As in *The X Factor* it's these endless cover versions that hold centre stage in medical publishing.

Ike Iheanacho is editor, *Drug and Therapeutics Bulletin*
iiheanacho@bmjgroup.com
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