

IMAGES

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If the rollercoaster of medical progress were to continue at the same rate as it did in the last century of the previous millennium, then we can expect nothing short of a further revolution in improved healthcare for children in the 21st century. Indeed, we may continue to witness the total eradication of some diseases, particularly infections, definitive cure for some currently incurable conditions such as some types of cancer, and effective control of presently untreatable disorders, notably those with a predominantly genetic basis.

The metamorphosis in communication from a quill-written message delivered by beast or sail several weeks or months later, to immediate, real-time access by e-mail has spanned just a few hundred years. Rapid dissemination of medical information and new research has allowed health professionals to remain updated literally at the touch of a button. It has also empowered the general public with medical information which was, previously, the domain of doctors alone. Nevertheless, the dissemination of non peer-reviewed and, at times, highly suspect information including claims of miracle cures, can mislead the unwary and the vulnerable. Measures to limit this problem, together with safeguards against breach of confidentiality in databases, is a future challenge for IT-planners.

The advent of computer technology has played a pivotal role in the great strides made in medicine, both by the bedside and in the investigative, therapeutic and research field. Indeed, fully equipped 'high-tech' intensive and specialist units together with MRI, spiral CT and isotope imaging are now 'routine' services in modern hospitals. Moreover, over the next decade, we can expect most radiology departments to become film-free, most departments and patient information to be fully digitised and telemedicine to be widely available. The latter, in tandem with a greater emphasis on interventional (non surgical), sophisticated microsurgical and robotic techniques may further decrease the need for traditional surgery. For example, in paediatric cardiology, many lesions which were previously the domain of the surgeon now do not need to progress beyond the catheter lab. For complex lesions where surgery is likely to remain the sole option, improvements in surgical, anaesthetic and perfusional techniques are likely to continue to reduce the morbidity and mortality associated with these conditions.

Advances in pharmaco-therapeutics, applied medicine, vaccination and public health may, theoretically, result in near-total control of many naturally occurring infections and diseases. Inevitably, monoclonal antibody and targeted therapy will assume ever

greater roles in an increasing plethora of differing conditions. Furthermore, probably the greatest impetus in medical research in the coming decades will focus on disease modulation and cure by means of genetic manipulation. The groundwork, culminating in the Human Genome Project, has been completed: putting this knowledge into practice is the next, logical step. Indeed, we may not be too far away from treating individual diseases, for example childhood acute lymphoblastic leukaemia, with customised, patient-specific genetically engineered drugs based on the immuno-cytogenetic properties of their aberrant cell line. Likewise, it is not impossible to envisage the routine cure of disorders due to single gene-defects, but the manipulation of the species at embryonal level remains fraught with problems. Similarly, the 21st century will witness great advances in transplantation, particularly with the advent of stem cell research, although xenotransplantation, for example, will raise several sensitive issues, not least those of an ethical nature.

Ethically acceptable guidelines must continue to assume an important role in the governance of medical practice and research. Ethical dilemmas are not just likely to increase in number but also in complexity as the frontiers of medicine are stretched to what is currently perceived as 'the limit'. Indeed, it behoves all undergraduate and postgraduate teaching institutions to establish clear codes for acceptable practice, whilst upholding the time-proven skills of clinical practice and acumen. Allowing students to rely on computer generated models will never make for an adequate replacement of the bedside. Future graduates will practice medicine with a far greater arsenal of therapeutic milieu at their disposal, widening spectra of treatable disease and, possibly, far greater resources. Nonetheless, they will practice within an environment of superspecialisation where it would be easy to be overwhelmed by multiple, rapid developments, where stratagems must be evidence-based, budgets must be balanced, and the threat of medicolegal repercussions becomes tangible and commonplace. If so, it behoves today's medical instructors to prepare students well, both for the changes of tomorrow as well as for the rest of the 21st century.

World-wide, however, the greatest challenge for child healthcare will be to ensure that all significant developments are not the sole prerogative of the richer countries alone but also made accessible to developing countries where the greatest need for healthcare is often matched by meagre resources. Although the escalating costs of new techniques, medicines, etc, will make this goal particularly difficult to achieve, it is of paramount importance if poorer countries are to realise effective and sustainable 'catch-up' compared with developed countries. Finally, this ideal situation can only be brought about if paralled by effective improvements in economy, political stability, poverty and social conditions which, for many of these countries, is a global challenge of millennial proportions indeed!

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