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Review of The Stem Cell Debate

In the light of so many claims and counterclaims, this article reviews the scientific knowledge underlying adult and embryonic stem cell technology.

INTRODUCTION

Stem cells, the essential building blocks of multicellular organisms, have two defining properties - they can produce more stem cells (and usually over a long period of time) and they can generate specialised daughter cells such as nerve, blood or liver cells. Stem cells come in different varieties, relating to when and where they are produced during development, and how versatile they are. Pluripotent stem cells have the ability to give rise to cell types from many different tissues. These versatile stem cells are the ideal candidate for regenerative medicine: an emerging field aiming to engineer replacement cells, tissues and eventually organs. Apart from the ever increasing lists of patients awaiting transplantation of major organs, regenerative medicine hopes to alleviate many debilitating diseases and severe injuries through cell-based therapies.

adult stem cells may well be a way of realising medical gain without ethical pain

The most primitive pluripotent stem cell is the embryonic stem (ES) cell, being derived from 4-6 day-old embryos.¹ Although several countries have already sanctioned the derivation of human ES cell lines from 'surplus' embryos created through in vitro fertilisation, many remain uncomfortable with the destruction of human embryos, even those embryos

The centre's new staff from left to right: Researchers Michael Herbert & Anne Moates; Administrative Assistant, Rebecca Lewis.

destined never to be implanted in a uterus. Those opposed to using human ES cells tout the possibility of pluripotent adult stem cells as a way of realising medical gain without ethical pain. Adult stem (AS) cells have been isolated from tissues of adults and children (and indeed, umbilical cord blood), and have classically been thought to be less 'plastic' than their embryonic counterparts in their developmental potential and ability to proliferate. For example, blood-forming (haematopoietic) stem cells (HSCs) make all types of blood cells in the body, but proliferate little in culture and, until recently, have been thought not to make cells of other tissues. However, an increasing number of recent studies have shown that some adult stem cells do exhibit plasticity, giving rise to cells outside their tissue of origin.

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ADULT STEM (AS) CELLS

Demonstration of AS cell plasticity² took place in 1998, the same year human ES cells were first isolated.^{3 4} AS cell research in animal models has been more extensive than ES cell efforts showing, for example, that HSCs contribute not only to blood cell lineages but to all neuronal cell types, muscle^{6 7} and liver^{8 9}; neuronal AS cells have also been shown to have a broad differentiation potential.¹⁰ The most promising study to date, published by Dr Verfaillie's group in *Nature*, reveals an adult stem cell displaying great versatility both in culture and in animal models.¹¹ Other adult stem cells have been partially isolated, but not yet defined, from a number of rapidly regenerating tissues such as skin, intestine, skeletal muscle and a variety of connective tissues.^{12 13 14} Further research characterising these and other adult stem cells needs to be done, but it appears we need to reassess our theories underpinning Developmental Biology.

Results demonstrating plasticity in AS cells also have important practical implications. For example, the difficulty in culturing certain kinds of stem cells (eg HSCs) to increase their number could be overcome by substituting stem cells from other tissues that are easier to grow, such as neural stem cells. Conversely, stem cells that are difficult to access, like neural stem cells, could be substituted by stem cells that are more easily accessible, such as HSCs. Such cells could then be coaxed to differentiate into the appropriate neural cell before transplanting back into the patient without risk of rejection.

For decades now clinicians have employed HSCs to overcome blood disorders such as lymphomas and, recently, severe combined immunodeficiency (SCID) in children. Acquired conditions such as severe forms of rheumatoid arthritis and systemic lupus are also being treated successfully using adult stem cells.¹⁵

In a clinical trial, partial regeneration of human cardiac muscle was achieved after a transplant of bone marrow stem cells into a cardiac artery. A 30% increase in heart function was observed ten weeks after transplantation.¹⁶ After transplanting a rare bone-marrow derived stem cell, called MAPCs, researchers have also been able to restore motor function in rats suffering stroke.¹⁷ In another development, muscle derived stem cells have been shown to improve muscle regeneration and dystrophin delivery in the mouse model of Muscular Dystrophy.¹⁸ Bone-marrow derived stem cells have also been effective in regenerating severed tendon in the rabbit.¹⁹ Although not yet trialed in humans, such remarkable results from experiments using a variety of adult stem cells are very promising.

ES CELLS AND THERAPEUTIC CLONING

The supposed advantages of ES cells are mainly twofold: that they can be propagated almost indefinitely under laboratory conditions and can, in principle, be induced to differentiate into almost any cell type. It now appears that certain adult stem cells, such as MAPCs, also possess these important properties.²⁰ And the application of ES cells faces several technical obstacles. The wide-scale clinical application of ES cells probably necessitates a 'therapeutic cloning' step to overcome problems of tissue rejection after engraftment. In other words, although several human ES-cell lines have been made, they will not be immunologically compatible with the vast majority of patients who require cell or tissue transplants. So researchers will need either to derive many more thousand ES-cell lines or to customize ES cells on a patient-by-patient basis by 'therapeutic cloning'. Therapeutic cloning involves nuclear transfer from a body, or somatic, cell into a recipient egg. Using a somatic cell nucleus from the eventual recipient of a graft has obvious attractions but is limited in practice. The team that

produced the first mammalian clone (Dolly) from an adult cell took 276 attempts;²¹ thus, the generation of embryos by cloning is a very inefficient process, and, according to researchers in the field, will remain so for the foreseeable future.²²

Moreover, until now it has not been proved that specialised cells derived from cultured ES cells can actually function within tissues after transplantation.^{23 24} For example, mouse ES cells produce insulin-secreting cells in culture, but such cells have not been shown to reverse high blood sugar levels in mice with symptoms of diabetes.²⁵ It is perhaps not surprising that cells generated in culture might not be equivalent to those arising naturally, given the extensive cellular interactions and 'education' that take place during development.

Regeneration of human cardiac muscle was achieved after a transplant of bone marrow stem cells

Furthermore, because scientists still understand so little of the mechanisms underlying nuclear reprogramming, cloning produces many abnormal embryos.²⁶ Researchers believe this is at least partly due to abnormal changes in DNA imprinting patterns. Apart from the genetic code contained within each DNA molecule, its three-dimensional structure determines whether certain genes are expressed or not. This configuration appears to play an important part in turning genes 'on' or 'off' during development and is known as 'genomic imprinting'. Imprinting normally occurs during the formation of gametes, a process that takes months in men and years in women. Nuclear cloning forces these important changes to occur within a period of minutes to hours at best.²⁷ Recent studies performed on mouse ES cells has indicated incorrect imprinting.²⁸ ES cell-derived specialised cells, the intended source of transplantable tissue for regenerative medicine, often fail to properly control the ex-

pression of imprinted genes. Given the variety and severity of imprinted-related developmental disorders in experimental mammals and humans, the possibility that imprinting is disrupted in stem-cell derived tissue raises potentially serious problems for ES cell transplantation.³⁰

The application of ES cell technology raises other major practical difficulties. A large supply of human eggs will be required as this procedure is very inefficient; and, unlike preimplantation embryos, eggs are in very short supply. Indeed, most infertile patients with, for example, a premature menopause needing donor eggs, remain untreated. Others typically wait perhaps three or four years before getting a single donor IVF cycle. Although coercion and huge payments to donors are still legal in the United States, even there it is difficult to find a ready supply of donors. Treatments involving therapeutic cloning therefore, will not be readily available, will be very time consuming, labor intensive and, as a result, expensive.³¹ Thus, apart from ethical considerations, therapeutic cloning is, and will remain, problematic.

Immortal cell lines are notorious for their tendency to produce teratomas in animals, a step toward malignant transformation. Some stem cells such as ES cells consistently generate teratomas; others such as adult MAPCs have not done so in preliminary tests.³² And many years' experience within the medical field of bone-marrow transplantation also shows that AS cells are not prone to teratoma formation. In addition, AS cells appear to retain their self-replicating capacity while contributing to tissue development or regeneration.^{33 34}

Thus, if ES cells were to be used in cell therapies, they would need to be closely monitored, both during differentiation and after transfer. Another problem, which has not been fully explored, is that human em-

bryos-in contrast to those of most other species-show a high incidence of aneuploidy, or an abnormal chromosome complement. Chromosomal mosaicism, or variation, readily occurs in embryos showing a perfectly normal appearance.³⁵ Using ES cells from such a source could cause neoplasms, resulting in malignant growths in recipient patients.

CONCLUSION

We still do not fully understand any stem cell from any source. Much of the basic biology of these cells remains a mystery. Until vital characteristics of stem cells are understood, the extensive use of either embryonic or adult stem cells in clinical settings remains distant. Regardless as to which option is pursued, the clinical use of either ES or AS cell technology is still many years in the future. Neil Scolding warned attendees at the Lords' meeting, that, "there are two fallacies, one that cures from embryonic stem cells are imminent and the other that adult stem cells are unlikely to be as effective." Therefore, there is a risk of raising false hopes within patient groups by giving the general public the impression that ES cell/therapeutic cloning treatments are about to happen once research is given the go-ahead.

Given the lack of agreement over ES cell research within the scientific community as well as society, we should back major initiatives in AS cell research which could harbour the same if not a greater and safer therapeutic potential, and avoid the problems of working with ES cells. Moreover, these practical and ethical problems associated with ES cell technology should not necessarily be viewed as a setback, as they can encourage investigation into AS cell alternatives as has already happened in the USA.³⁶

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Michael Herbert



Embryo Research, Cloning and Ethics

This article discusses why it is unethical to embark on the track of destructive embryonic research for medical purposes.

What is a human embryo?

Empirically verifiable human life begins with the formation of a developing human zygote, the first cell or embryo. It makes no difference whether the embryo is naturally conceived, an IVF or a cloned human embryo. The zygote and a single cell from the four-cell, and possibly the eight-cell embryo are totipotent because they have the actual potency to form the entire blastocyst, placenta and offspring in a continuous, coordinated biological process, given a favourable uterine environment. This implies a cell removed from a four-cell embryo could itself be deemed an embryo. *For ethical purposes, a human embryo may be defined as a single-cell, group of contiguous cells or a multicellular organism which has the inherent actual potential to continue species specific, i.e. typical, human development, given a suitable environment.*¹ A totipotent cell or group of contiguous cells is an embryo because of what it is and its actual potential, not because of what it may in time become. An embryo cannot exist before typical human development begins, but the product of an unsuccessful attempt at fertilisation is not

an embryo. Likewise embryonic stem cells are not embryos, but an embryo is destroyed to procure them.

Respect due to the embryo

Biblical, theological and philosophical reasons

Believers in the Bible find ample grounds for showing moral respect for human life from conception. Biblical evidence strongly supports the belief that human life and its formative process are in the hands of God, the Creator, who alone has dominion over human life. From early Christian times human life has been regarded as sacred and morally inviolable from the start, even when it was assumed the soul was not created for several weeks after conception.² An expression of this living tradition is the solemn statement made by the Second Vatican Council: "Life once conceived must be protected with the utmost care..."³ I believe this theological insight for protecting human life rightly expresses the value of all human life. It also has appeal for some who do not believe in God.

There are solid philosophical reasons for according absolute respect for the early human embryo based on its natural actual and proximate potential, inherent in its formative process from conception to become a human individual and person.⁴ The moral necessity to show respect for embryonic human life is a profoundly human insight and reflects the respect due to life normally resulting from a couple's mutual self-giving and our shared humanity. There are no reasonable grounds for the reductionism that views embryonic human life as no more than genetic products, devoid of significance and value. The first fruit of human generation, the zygote, has a claim to unconditioned moral respect. But the passive potency of a sperm or an egg to become a human embryo does not warrant moral respect.

The embryo as a human individual and person

Another argument for the moral respect due to human life from conception is to show that the zygote already is, or probably is, a human individual and person. This is a credible argument. The zygote is a totipotent cell whose newly constituted ge-

nome, interacting with the maternal environment, in a continuous process, directs cell multiplication, purposeful unidirectional development and differentiation of tissues required for the growth of the one and same living individual. The genetic individuality or identity of the adult is practically the same as that of the embryo, who possesses the actual potential to develop and grow into an adult, given a suitable uterine environment. The zygote and the resulting adult are the same living being. The zygote organises itself into a multicellular embryo, fetus, infant, child and adult without ceasing to be the one and same living human individual. Once the human embryo is formed, naturally or artificially, it is owed a duty of unconditioned moral respect.

Pope John Paul II in his 1995 Encyclical Letter *Evangelium Vitae* leaves no doubt that from conception the embryo is to be treated as a person:

‘What is at stake is so important that, from the standpoint of moral obligation, the mere probability that a person is involved would suffice to justify an absolutely clear prohibition of any intervention aimed at killing a human embryo. The Church has always taught and continues to teach that the result of human procreation, from the first moment of its existence, must be guaranteed that unconditional respect which is morally due to a human being in his or her totality and unity as body and spirit: *‘The human creature ("creatura humana") is to be respected and treated as a person from conception.*’⁵

Ethical evaluation of the use of human embryos in research

The gaining of scientific knowledge for medical treatment is not problematic, but a high sense of moral responsibility is needed for its acquisition and use. A crucial ethical problem arises from the creation of spare embryos which are discarded

or subjected to unethical destructive scientific and medical research or toxicity tests for drugs. Moral respect for human embryos should take precedence over utilitarian and pragmatic considerations. Human life should not be created to be destroyed. Whatever the knowledge or benefits gained, destructive human embryo research remains unethical: this is the response of those who hold that human life and its formative process is morally inviolable.

It is ethically imperative that human dignity and integrity be rigorously safeguarded for present and future generations by banning destructive research on human embryos. It would be offensive and contrary to our sense of worth as persons to engineer animal/human hybrids by inserting substantial parts of the human genome into an animal egg.

Some may be object on the grounds that if spare frozen IVF embryos are destined to be thawed and allowed to die in a laboratory, it would be morally permissible to use them for research. In either case the embryos will die. But the two cases are not the same ethically. In one case frozen embryos are allowed to die by withdrawing them from the freezer which may be compared to a life-support machine for them in a frozen state. There is no duty to continue this extraordinary means of life support forever. In the other case frozen embryos are thawed and while still alive, are subjected to research which destroys them. Clearly this is unethical and opposed to the respect due to human embryos. Legislation permitting research on human embryos involves approving their destruction.

There are reasonable grounds to believe that a human embryo cloned by somatic cell nuclear transfer to an enucleated egg would be totipotent, with the natural actual potential, once implanted, to develop into a fetus, infant and child. It would be contrary to human dignity and ethically unacceptable to asexually cre-

ate human embryos by any cloning technique. Safety risks aside, reproductive cloning is clearly unethical since this atypical and unnatural mode of reproduction would undermine the child's sense of personal and family identity and dignity. The cloned child would be engineered deliberately to be practically an identical copy of another person and, unlike the case of normal adoption, would also be deprived of a natural father, a genetic mother and their blood relatives. The child's genetic parents would be the parents of the donor of the nucleus -- not to mention the unreal expectations that would be made of the growing cloned child.

Researchers could overlook the risk of serious harm from the therapeutic use of cloned ES cells since these may be affected by faulty reprogramming. In the light of the moral status of any human embryo I believe that the destructive use of cloned human embryos, even for therapeutic purposes, would be as unethical as destructive research on normal IVF human embryos and ought to be banned, even if its beneficial consequences have to be forgone.

Life once conceived must be protected with the utmost care

In the previous article Michael Herbert has indicated the serious risks involved in using ES cells in regenerative medicine. It is, then, imperative to continue research on the safer and ethical alternative, i.e. the promising therapeutic and preventive medical potential of adult stem cells.⁶ There is no need to take the unethical path of making laws to authorise the destruction or cloning of human embryos to obtain ES cells for therapeutic purposes. Public funds should be increased for research on umbilical cord, placenta and adult stem cells to develop the required medical therapies.

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Health Ethics and Primary School Age Children

This article focuses on primary school age children as their participation in the health care system is not often debated, in terms of health ethics, in comparison to infant or youth health.

Introduction

The health and wellbeing of children, especially infants, is an area of general concern to many people and is globally reflected through the *United Nation's Convention on the Rights of the Child*¹. This convention has been ratified by 191 nations, including Australia. The 'best interests of the child' is a primary consideration of The Convention. It also seeks to protect children; promote their well being; and ensure they have an appropriate place in society. For the purpose of clarification, within this paper, reference to primary school age, ranges generally from 5-12 years.

The impetus to develop a child health policy arose after Australia became a signatory to the *United Nations Convention on the Rights of the Child. The Health of Young Australian's Policy*², was developed in 1995. Young Australians, for this policy, are deemed to be all those from birth up to, and including, 24 years of age. This policy recognises that, as a population sub-group, children and young people have particular health problems and needs, and aims 'to promote, maintain and im-

prove the health of all Australian Children and Young People'. It identifies key action areas and desirable outcomes within these action areas, but only conditional on a framework of working within existing resources - rather than committing the community to spending additional money.

children and young people have particular health problems and needs

So how well are Australia's primary school children? Most Australian children are reported to enjoy good health. The main reasons for children (under 14 years) needing health care is for respiratory diseases and injury, with acute and chronic respiratory diseases and mental disorders causing the highest burden of disease.³ Primary school children are influenced by family, school and community: they participate in sport and recreation activities; they develop and establish social relationships with peers; they are influenced by what happens immediately about them and also by the media. Primary school children are not always heard, or indeed listened to. These children are our future. Their concerns should

be our concerns.

The health of Aboriginal and Torres Strait Islander children is of concern. In general, they are worse off on most measures of health reported on, in comparison to the rest of Australia's children.⁴ The ethical issues in regard Aboriginal Health is covered in *Aboriginal Health. The Ethical Challenges*.⁵ The following discussion is inclusive of all Australian primary school age children.

The Health of Young Australian's Policy, mentioned above, identifies that primary school children need ongoing caring parental relationships, good nutrition, safe and interesting environments, and good quality schooling. Pages 25-26 of the policy describes 19 broad principles, three of which are pertinent to frame the discussion about issues in health ethics that may impact on primary school children. These are: 'Acceptance by government and the community at large of the responsibility to protect and promote the health and well-being of all children and young people'; 'Privacy, confidentiality and informed consent'; and 'The role of families in providing social foundations for health and development.'

Child health surveillance

Society views children as an asset and investment in the future. Ensuring that the health interests of the child are met is an important task for the government and the community to support. The issue of child health surveillance and monitoring and its place in child health promotion has been examined and discussed in the literature, from the viewpoint of various health professional bodies.⁶

The value of mass screening programs has been controversial. Primary school children have been subjected to various screening programs for many years. While some of these services have been curtailed to a certain extent, the service is deemed to be of benefit, but inadequate, on the one hand and costly in terms of beneficial gains on the other - at the expense of other preventive and health promotive activities.⁷ There is also some demand for alternate screening models that address other health concerns such as asthma, depression, and obesity.

Prophylactic medical procedures

In Victoria, the Family Law Court's *The Victorian Guidelines and Protocols* inform other courts, practitioners, and interested parties, of the protocols that exist about the preferred approach to applications for special medical procedures being performed upon children with intellectual disabilities. One of the aims is to promote positive outcomes for the children involved.⁸ Where the proposed prophylactic intervention is intended for children, who are unlikely to be able to provide a meaningful informed consent, it is suggested that rigorous scrutiny of the proposed intervention be undertaken.

The sterilisation of intellectually disabled female minors has been a contentious issue in Australia as evidenced by discussion and debate which centres around consent issues

generally: who has the right to consent to these procedures - parents, law courts, or tribunal? Newnham suggests that; 'to perform a sterilisation without consent where the child has some understanding may be a gross violation of her rights and worth of civil and criminal liability'.⁹

Medical research

The National Health and Medical Research Council (NHMRC), in its National Statement on *Ethical Conduct in Research Involving Humans* states that 'research is essential to advance knowledge about children's and young peoples' well-being', and that, 'this [research] be conducted in an appropriate place and involve child participation'.¹⁰ They state that consent to a child's or young person's participation in research must be obtained from: -

- The child or young person whenever he or she has sufficient competence to make this decision;
- Either, the parent/guardian in all but exceptional circumstances;
- Or any organisation or person required by law.
- They also recommend that a child's or young person's refusal to participate in a research project must be respected.¹¹

Children consenting to medical treatment

The *Doctors' Reform Society of Australia* (Policy Statement 9), states that 'all children and young people have the right to seek and receive medical advice and treatment; young people should be involved in all decisions relevant to their health.'¹² They go on to state that these are rights, and should include a legal right to refuse treatment. In addition, all young people should have a guaranteed right to privacy and confidentiality between them and their medical advisers. This confidentiality should be broken only in exceptional circumstances.

In practice, children may not generally make medical decisions for themselves until they possess sufficient maturity and understanding. The law, being protective, denies them the legal status to freely enter into obligations. Mature minors can take more responsibility for medical treatment decisions, and can give legal consent for particular types of treatment and can refuse any medical treatment if that decision is informed.¹³

So when is the issue of consent, in regard children, a contentious issue? As a society, do we set out to deliberately do something that may cause harm to our children? What are the moral obligations from the point of view of health service providers? Popular biomedical theory generally espouses four principles of ethics to guide general standards of conduct: These are respect for autonomy, non-maleficence, beneficence, and justice¹⁴.

Bunney suggests that 'to give effect to the principle of autonomy, it is important that, as with adults, competent minors are given the opportunity freely to consent to or refuse any medical treatment, even if such refusal can be seen as unreasonable by their parents, the treating health care professional or the courts.'¹⁵ The debate revolves around competency to give informed consent and competency to refuse medical treatment as two separate entities. So how is competence determined?

In determining *competence*, the Family Court of Australia suggests, 'that the child or young person must be able to: fully understand the circumstances; generally understand the medical procedure or treatment proposed; assess the medical treatments and alternative options; and freely wish to undergo the operation or treatment.'¹⁶ In addition they suggest that *competence* be determined by experts in the disability, child development and child psychology fields, who then report their findings to parents, appropriate professionals and

the Family Court (who makes the final decision). The Family Court of Australia has guidelines to assess competency. If an individual child does not meet these competencies, for the purposes of the Court, they are thereafter deemed an 'incompetent child'.¹⁷

Perhaps we 'do harm' and 'injure' - in respect to prophylactic medical procedures involving children, which was discussed previously. The debate about this issue refers to a decision by the *House of Lords* in the United Kingdom, 1984, called *Gillick's Case* - 'that a child who is intelligent and mature enough to fully understand the nature and consequences of a treatment or procedure can give a valid consent'. In Australia, *Marion's Case* is cited, wherein the High Court endorsed the *Gillick* decision - that essentially a parent's power or role in consenting to medical treatment on behalf of a child, diminishes as the child's capacities and maturity grow.¹⁸

End of life issues

Seriously ill or injured children have been identified as sometimes receiving unsuccessful aggressive intervention aimed at curing or extending life, and may then die, having suffered needlessly because of lack of palliative and hospice care. The symptoms that children suffer and relief of them have not been reported to have been studied formally, and drug doses and routes used may not be appropriate for children.

We value life so much and are distressed when the life ebbing away is so young. The causes of death in children are different from the causes of death in adults. Palliative care guidelines that are appropriate for adults are often inappropriate for children. Children's experiences and stage of development must be factored into how to provide appropriate care - the goal of palliative care being to optimise the quality of the child's experience of life rather than hasten their death. This principle is

applicable at all ages. There has been recent literature calling on those involved in paediatric palliative care to involve parents and children in planning for symptom control, optimise end of life care and value childhood as valuable in itself.¹⁹

Children: Our future

It is recognised that family based prevention can reduce the risk factors associated with youth and adult crime, mental illness, child abuse and violence. In 1998, the Victorian Department of Human Services, in its *The Health of Young Victorians* report, stated that 'Victoria is not improving with regard to the socioeconomic determinants of health, with an increase in the proportion of families with children and youth living below the poverty line'.²⁰

Children's experiences and stage of development must be factored into how to provide appropriate care

Health needs vary. Preventing problems arising in early childhood that impact into adulthood was a key action area identified by *The Health of Young Australian's* health policy. Is it ethical to allow our children to be burdened with the outcomes of childhood obesity, passive smoking, and exposure to alcohol? There are numerous issues of concern:- the affects of the environment have also been implicated to affect the health of children, as has electromagnetic radiation, mobile phones, and ultraviolet radiation. Other issues are child abuse, pre-teen pregnancy and parenthood, wrongful life issues, privacy and confidentiality, genetic engineering, and protection of genetic material. Access to the world wide web, television and the media is also influential. At the global level is the impact of terrorism, war, famine, and failing economies putting a burden on our children's childhood? How does society protect the future of our children?

Creating 'child-friendly' communities is a strategy to reclaim children from risk. Wise describes this strategy as a means to reduce vulnerability. Children and adolescents engage in high levels of experimentation with licit and illicit substances. She reports there is currently movement towards greater collaboration between local service providers, based on the idea that public agencies alone cannot meet the needs of families.²¹ At a local level, in schools and at home, society must also look to help itself. The social model of health implies that people should do what they can to define what health means for themselves as part of a social experience; that there be equity and access, and freedom to choose, all within a framework that values this approach.²²

Advances in science and technology generate concerns regarding organ transplantation and donation, and how cloning will affect society in general. Haematopoietic stem cells from umbilical cord blood or bone marrow may cure or alleviate certain children's diseases (Leukemia, Hodgkins Disease, Sickle Cell Disease, Thalassaemia, and Congenital Haematopoietic Disorders) - but histocompatible cells may not be available for transplant. Ethical dilemmas arise when parents of children ill with these diseases, choose to have another baby in the hope that this baby's cells will be compatible with those of the ill child. These prospective parents seek preimplantation genetic diagnosis to allow only specifically matched embryos to be available. Ethical debate centres on concern that the interests of the donor baby/child may be compromised for the sake of the existing child.²³

Conclusion

The Public Health Association of Australia, in their policy statement, *Improving the health of school-age children and young people*, has looked at the range of issues that impact on children's health and well be-

ing. They infer that the national policies that make reference to children have not been fully implemented or monitored. They state:- 'The health of children and young people is important to the health of future generations. Societies have a social and ethical responsibility to ensure that they are provided with opportunities which optimise their health and well-being.'²⁴

This paper offers only a brief encounter with some of the health ethical issues that may impact on primary school children. These issues are not unique to this age group, but it is acknowledged that these children are our future - of an age to respond to a challenge. Have their views in some, or all, of the above issues been examined? It is imperative that we give regard to these children, and find out exactly what is of concern to them, because they are our future.

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Anne Moates



Mental Health: How should it be treated?

This article will consider how the community, health professionals and government view mental health and illness and will consider how these very important issues should be treated in the future.

Mental Health

There has been a great deal of literature discussing whether or not there is a difference between disease and illness and much of it involves questioning where mental disorders might fit into the picture.¹ While the debate about such concepts is valuable because it encourages us to understand

exactly how we use the terms, and as a result, how different categories of health or illness might be handled, unfortunately the increase in mental illness and associated issues has far out paced the philosophical discussion. In a need to adopt a broader, all encompassing account of health (and as a result illness) the World Health Organisation (WHO) offers this, 'Health is a state of complete

physical, mental and social well-being, and not merely the absence of disease or infirmity.'²

The WHO definition of health highlights the important impact that both mental and social features have on one's well being. No longer can mental illness including psychiatric conditions and psychological difficulties, be placed outside the realm

of 'health' and health care. In the past mental illness has not always been so readily considered on a par with the more 'scientific' or physiological diseases such as diabetes or heart disease. The image of mental illness and treatment is improving but it must continue to be promoted as just another part of medicine and health care.

Growing Crisis

As is often the case, the more we know about something the more readily we can identify it. So as major advances have been made in the diagnosis, assessment and management of mental disorders over the last two decades it is not surprising that there has also been an apparent increase in the prevalence of mental disorders in the community. Whether there has been an actual increase in the prevalence of mental disorders or we are just better equipped to identify and classify them the reality is that the prevalence of mental disorders in the community is high. It has been estimated that in a year as many as 25-30% of the population suffer a diagnosable mental disorder, rising to approximately 50% who will be afflicted during their lifetime.³

Not only has there been an increase in the number of mental disorders but we have also come to realise the cost to individuals, families, and communities that poor mental health creates. In 1996 Murray and Lopez introduced the idea of the disability-adjusted life-year (which measures healthy years lost to premature death or disability). It came as a surprise to many that 7 out of the top 10 causes of disability in industrialised countries were mental disorders. Major depression and alcohol abuse, the top 2 on the list, accounted for more years lost to disability than the next 5 combined.⁴

Now that we accept that mental illness should be treated under the same umbrella of health care as other illnesses and that the prevalence and 'cost' of mental illness is

increasing we need to consider a way forward. It is important to examine how mental health issues have been dealt with by the media, the community and health professionals and then to consider possible ways of handling mental illness in the future.

Media

Frequently when people with mental health problems are involved with the law or participate in activities that the community does not approve of the events are front page news. The details of their illness may be misreported, and even when the details are accurately represented the fact that the person has a mental illness receives far greater prominence than other relevant facts might. This type of sensationalism has led the community to have a discordant view of people with mental illness and relationship with violence. While many in the community believe that a person with a mental illness is more likely to be involved with violence or in trouble with the law, it often surprises people to know that more than 95% of homicides are committed by people with NO mental illness.⁵

the media and Hollywood need to be held responsible for how they portray people with mental illness

Also creating further difficulties for those with mental illness is the all too frequent misrepresentations of mental illness in television and the movies. For example, the Jim Carey comedy, 'Me, Myself and Irene' was condemned by several mental health bodies in Australia, including the Mental Health Council of Australia. Those involved with people with mental illness claimed the film caused irreparable damage by further entrenching many inaccurate stereotypes of someone with serious mental illness, in this case schizophrenia. Both the media and 'Hollywood' need to be held responsible for how they portray people with mental ill-

ness. They should be encouraged to take a more pro-active role in accurately portraying people with mental illnesses, the issues related to mental health and the success of current therapies available for many of these illnesses. The growing number of people in the community who suffer from mental illnesses should be treated with respect and feel confident that outdated stereotypes which have fed the stigma associated with mental illness will no longer be falsely portrayed. Both the media and the entertainment industries have a serious responsibility to the community to at least attempt to be accurate.

The community

The community needs to be educated so that they understand that mental illnesses are just as 'real' as other diseases

There has been a long tradition of dealing with mental illness behind closed doors. Language such as 'maniac', 'schizo', 'psycho' or 'nut' has been used to describe people with mental illnesses. Such labels demonstrate a complete lack of understanding of the people with such illnesses as well as the illnesses themselves. Labels also allow 'healthy' members of the community to distance themselves from such illnesses. People, who suffer other, more physically orientated diseases, are rarely labelled in the same derogatory way as people who have mental health problems. The stigma attached to mental illness has caused great difficulties, not only for sufferers of mental illness, but also for their families and carers. The stigma of mental illness can be one of the greatest deterrents for people contemplating seeking treatment. The community needs to be educated so that they understand that mental illnesses are just as 'real' as other diseases. Mental health should not be considered any differently from other aspects of individuals' health.

Health Professionals

Psychiatry has been a long recognised medical speciality with a complicated history. There have always been those who have felt it does not sit well with the 'more scientific' medical disciplines. Operating alongside psychiatry has been the field of psychology. Accepted by some as even less scientific than psychiatry, and definitely not a part of medicine per se, it has none the less made an invaluable contribution to improvements in mental health. Whilst the stigma associated with seeking treatment, either from a psychiatrist or psychologist, has diminished slightly it remains only the minority of people with mental health problems who access speciality services. Most mental health problems are dealt with in the primary care setting. 'Mental health-related problems account for almost 10% of all problems managed by general practitioners.'⁶

It is estimated that 10.1 million consultations per year with general practitioners are for mental health-related conditions, especially for depression.⁷ General practitioners manage between 75% and 90% of patients with psychiatric illnesses in the community who do seek help.⁸ As a consequence of the progressive move to de-institutionalise people suffering mental illness most are now living within community settings. General practitioners have had to become a pivotal feature of a multi-disciplinary team committed to community mental health services. The value of accurate prognosis and early detection of anxiety, depressive and psychotic disorders cannot be underestimated. The means that general practitioners have a unique opportunity to identify those at risk of mental illness and those who are currently suffering a mental illness, but who are untreated. As a result of the significant role that general practitioners are playing in mental health their education, training and funding in this complex area has had to be

addressed. Recent moves to increase funding in this area are welcome, however, more should be done to ensure the appropriate level of care is always available.

Funding

In recognition of the expanding role general practitioners are playing in mental health services the Australian Government has introduced an incentive scheme. The Federal Government, in conjunction with the Australian Divisions of General Practice, has developed a \$120 million package aimed at recognising the role of general practitioners in providing mental health care. General practitioners who have completed the necessary training will be entitled to an incentive payment of \$150 per patient upon completion of a three-step process with patients. The process includes initial assessment, drawing up a written mental health care plan and conducting a review of the patient's progress.⁹ In conjunction with the incentive payment general practitioners will be encouraged to involve family members and carers of people with mental illnesses to participate in treatment and assist them to provide further support. General practitioners trained in evidence-based psychological thera-

we also need to continue to try and remove the stigma attached to seeking treatment for mental illness

pies will also benefit from the introduction of two time-related Medicare item numbers that will be introduced later this year to allow doctors more time to counsel patients. Doctors will also have access to specialist psychiatric advice in emergency situations.

This increased funding will not solve all the issues that relate to mental health care nor is it alone likely to halt the increase in mental illness. However, it is a step in the right direction. We all need to become more vigilant about the warning

signs of mental illness, general practitioners in particular. We also need to continue to try and remove the stigma attached to seeking treatment for mental illness. Increasing patient access to general practitioners trained in mental health will at least side step the issue of stigmatisation. It may still take some time before seeing a psychiatrist is viewed the same way as seeing a cardiologist, but that should be our aim.

Spirituality

I do not wish to diminish the valuable contribution medicine and its related disciplines have made to improving the communities' mental health. However, some writers have suggested that one important factor in the decline in mental health might be the lack of meaning and spiritual fulfilment that is part of our increasingly secular and materialistic society.¹⁰ The rise in mental illness seems paradoxical at a time when we are experiencing unprecedented levels of physical health and relative affluence.

religiosity and spirituality act as protective factors against mental illness, especially depression

Medical literature uses terms such as 'religiosity' and spirituality. Religiosity refers to the participation or endorsement of practices, beliefs and attitudes associated with an organised community of faith. Spirituality is a more general term used to refer to views and behaviours that express a sense of the transcendental or of something greater than one's self. Obviously there is an overlap of these terms and both religiosity and spirituality act as protective factors against mental illness, especially depression. Exactly what features of spirituality make it such a valuable resource against mental illness is not precisely understood. It is thought that people with a sense of religious commitment feel a special sense of

social connectedness, perhaps the same is true of spirituality. On the other hand it may be that simply taking time out to ponder these issues and to ask difficult questions about the meaning of life is itself a valuable tool against mental illness.

Conclusion

With mental illness rapidly increasing measures need to be taken to prevent a blowout in this area of health care. The media, community and health professionals need to open up and freely discuss all the issues related to mental health in a responsible and accurate manner. Encouraging general practitioners' involvement in mental health or one useful way of assisting people with mental illness who do not currently receive the appropriate treatment. With depression one of the fastest

growing areas of mental illness it is imperative that we look for and encourage all the protective factors available. How we as a community go about increasing spirituality or religious participation is not immediately obvious, but it will be helpful for members of future generations and their search for meaning if we begin to investigate possibilities today.

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