Religious Perspectives on Umbilical Cord Blood Banking

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Christopher FC Jordens, Michelle AC O'Connor, Ian H Kerridge, Cameron Stewart, Andrew Cameron, Damien Keown, Rabbi Jeremy Lawrence, Andrew McGarrity, Abdulaziz Sachedina and Bernadette Tobin*

Umbilical cord blood is a valuable source of haematopoietic stem cells. There is little information about whether religious affiliations have any bearing on attitudes to and decisions about its collection, donation and storage. The authors provided information about umbilical cord blood banking to expert commentators from six major world religions (Catholicism, Anglicanism, Islam, Judaism, Hinduism and Buddhism) and asked them to address a specific set of questions in a commentary. The commentaries suggest there is considerable support for umbilical cord blood banking in these religions. Four commentaries provide moral grounds for favouring public donation over private storage. None attach any particular religious significance to the umbilical cord or to the blood within it, nor place restrictions on the ethnicity or religion of donors and recipients. Views on ownership of umbilical cord blood vary. The authors offer a series of general points for those who seek a better understanding of religious perspectives on umbilical cord blood banking.

INTRODUCTION

Until recently, umbilical cord blood was discarded as medical waste. It is now considered a valuable medical resource. Consequently, many people who identify with a religious tradition now have to choose whether to discard their child's umbilical cord blood, whether to donate it to a public cord blood bank, or whether to pay to have it stored in a private cord blood bank.

To date there has been little, if any, discussion about whether, and if so how, religion might influence lay attitudes and decisions about the use of umbilical cord blood. There are good reasons to believe that it is likely to do so. Religion endures throughout the modern world as a form of motivation, as a source of meaning and as a means of coping that is not reducible to other social or psychological factors.[1] Many empirical studies have shown that a wide range of health-related beliefs,

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[1] Pargament K, Magyar-Russell G and Murray-Swank NA. "The Sacred and the Search for Significance: Religion as a Unique Process" (2005) 61 J Soc Issues 665.

behaviours and outcomes are influenced by religious affiliations and practices,[2] including in Australia.[3] Furthermore, there is existing evidence of links between religiosity and childbirth[4] and some traditional cultures have special rituals for disposing of the umbilical cord and/or placenta[5] which might problematise the collection and storage of umbilical cord blood. Finally, biomedical innovations that implicate reproduction and the beginning and end of life are frequently a source of contention, with major disagreements arising along the secular/religious divide. Lack of any apparent controversy over umbilical cord blood banking suggests that it is largely compatible with religion, but bioethical inquiry should not be confined to controversy, as the grounds for compatibility between medical innovation and religion are also worth investigating.

This article aims to explore religious perspectives on umbilical cord blood banking in order to inform the decisions that are made about its use. Some people of faith might like to know, eg, before they decide how to dispose of the umbilical cord and the blood it contains, what religious authorities have to say on the matter. Policy-makers might also be interested in this, especially if they are responsible for making policy decisions that affect citizens and consumers who are drawn from a variety of religious backgrounds. Health care practitioners and administrators might want to know where religious sensitivities do and do not lie in order to deliver culturally appropriate care. Finally, umbilical cord blood banking raises ongoing legal questions (eg about ownership of umbilical cord blood) and questions of public policy (eg about the relative merit of public and private cord blood banks), and it is worth exploring religious responses to these questions as part of the ongoing public discourse around umbilical cord blood banking.

The authors briefly set out some relevant background to umbilical cord blood banking, and then present commentaries on the practice that represent six of the world's major religions. On the basis of these commentaries several conclusions are drawn that, it is hoped, will inform policy and spur further discussion within and between religious communities and stakeholders in the secular domain.

Background to umbilical cord blood banking

During the 1980s, it was discovered that "stem cells" – or more precisely, haematopoietic progenitor cells – could be extracted from umbilical cord blood and used to treat a range of serious metabolic, malignant, immune and genetic conditions. Haematopoietic progenitor cells derived from cord blood are classified as "adult" stem cells and have since come to be used by transplant haematologists all over the world as an alternative to bone marrow.[6]

Haematopoietic progenitor cells are obtained from the umbilical cord by draining the blood out of it during or after the third stage of labour (ie delivery of the placenta). This process does not cause physical pain to the mother or child, nor does it pose any medical risk to either party, although some mothers and midwives might experience the collection process as a minor inconvenience and/or distraction. The cord blood is treated so as to extract the haematopoietic progenitor cells, and is then cryogenically stored until it is needed for a transplant.

There are two basic types of haematopoietic stem cell transplant. In an *autologous* transplant, a person's own haematopoietic progenitor cells are collected, stored and then transplanted back into her or his body following chemotherapy. In an *allogeneic* transplant, haematopoietic progenitor cells are collected from a donor and then transplanted into the patient. Allogeneic transplants are possible only where the donor and recipient have matching tissues types. Unfortunately, only 30% of patients who

[2] Koenig H, McCullough M and Larson D, *Handbook of Religion and Health* (Oxford University Press, New York, 2001).

[3] Williams D and Sternthal M, "Spirituality, Religion and Health: Evidence and Research Directions" (2007) 186 MJA S47.

[4] Callister L and Khalaf I. "Spirituality in Childbearing Women" (2010) 19 *Journal of Perinatal Education* 16; Callister L, Semenic S and Foster J, "Cultural and Spiritual Meaning of Childbirth: Orthodox Jewish and Mormon Women" (1999) 17 *Journal of Holistic Nursing* 280.

[5] Helsel D and Mochel M, "Afterbirth in the Afterlife: Cultural Meaning of Placental Disposal in a Hmong American Community" (2002) 13 J Transcult Nurs 282.

[6] Gluckman E, Ruggeri A, Volt F, Cunha R, Boudjedir K and Rocha V, "Milestones in Umbilical Cord Blood Transplantation" (2011) 154 Br J Haematol 441; Butler M and Menitove J, "Umbilical Cord Blood Banking: An Update" (2011) J Assist Reprod Genet [Epub ahead of print] DOI 10.1007/s 10815-011-9577-x.

need an allogeneic transplant can find a suitable donor within their family. The majority, therefore, rely on either adult volunteer donors who are registered with a bone marrow donor registry, or umbilical cord blood which has been donated for this purpose.

Many countries have established publicly funded umbilical cord blood banks to support allogeneic transplantation. These banks are connected in a global network, and while there are some differences in the way they are organised, in general they all rely upon parents consenting to the donation of their child's umbilical cord blood for use by another individual who needs a transplant, and who might be located anywhere in the world.

In addition to their use in haematopoietic transplantation, haematopoietic progenitor cells derived from umbilical cord blood (along with other types of haematopoietic progenitor cells) could in future be used to treat chronic illnesses such as Parkinson's disease and diabetes mellitus by means of "cell-based" therapies, or what is sometimes called *regenerative medicine*.[7] This would involve using stem cells to generate populations of a specific type of cell, which could then be transplanted into a patient to restore a specific function. While regenerative medicine has great promise, at the current time there are no clinical trials to show that such treatments are effective, and umbilical cord blood currently has no proven medical uses other than in bone marrow transplantation. In many wealthy countries, however, the potential for using haematopoietic progenitor cells derived from umbilical cord blood in this way in future has driven the establishment and growth of private/commercial umbilical cord blood banks, which offer to collect and store umbilical cord blood for a fee, so that it can be used at some later time to treat the child from whose cord it was collected, or another member of that child's family. Many parents in wealthy countries, such as Australia and the United States, now elect to store their child's umbilical cord blood in private banks rather than donate it to a public bank for use in global transplantation programs. About 400,000 cord blood units are currently stored for use in 100 public international umbilical cord blood banks, and about 780,000 units are currently stored in 134 private umbilical cord blood banks worldwide. Privately stored units are not accessible for use by the general public, and given current therapeutic applications of umbilical cord blood, the infant for whom the blood is banked is never likely to need it.[8]

AIM AND METHODS

The authors aimed to elicit commentaries on umbilical cord blood banking from experts that represent six major religious traditions in Australia. Two Christian denominations (Catholicism and Anglicanism) which together account for 44.5% of the Australian population and four major, non-Christian religions (Buddhism, Islam, Hinduism and Judaism) which together account for 4.9% of the Australian population were chosen.[9] Potential commentators were identified on the basis of their publications and by "snowball sampling" (ie by asking the authors' existing contacts to identify other potential contributors). The experts were contacted by email and invited to contribute a commentary of about 1,000 words. Those who accepted the invitation were provided with a brief description of umbilical cord blood banking and asked whether its collection, storage, donation and use raised any issues for people of the religion that they represented. Each expert was invited to comment specifically on the significance of the placenta, the umbilical cord, umbilical cord blood and the birthing process, as well as obligations to community, to family and to self. They were also asked whether the faith had anything to say about ownership and control of umbilical cord blood. The commentaries were edited in consultation with the experts and appear below.

[7] Gluckman et al, n 6; Butler and Menitove, n 6; Buchheiser A, Liedtke S, Looijenga L and Gesine Kögler G, "Cord Blood for Tissue Regeneration" (2009) 108 J Cell Biochem 762; Madlambayan G and Rogers I, "Umbilical Cord-derived Stem Cells for Tissue Therapy: Current and Future Uses" (2006) 1 Regen Med 777.

[8] Butler and Menitove, n 6.

[9] Figures are based on 2006 census data: see Australian Bureau of Statistics, *A Picture of the Nation: The Statistician's Report on the 2006 Census* (ABS Catalogue No 2070.0, Australian Bureau of Statistics, Canberra, 2009) p 42.

RESULTS

Catholic perspective by Bernadette Tobin

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In the Catholic tradition, donation of organs and tissue – including the placenta, umbilical cord or blood obtained from the umbilicus – is warmly encouraged. So, too, is the therapeutic use of stem cells, so long as their use does not involve the destruction of (embryonic) human life.[10] Catholics have reason to reject any talk of ownership of umbilical cord blood (or of the placenta) as this language treats the body or body parts as "property" and introduces a dualism between the person and her or his body which is radically at odds with the way the person-body relationship is understood in the Catholic tradition.[11] Catholics would prefer to say that human body parts should be thought of as subject to custodianship with its attendant obligations. That said, the responsibility for making decisions about the health care of a young child, including decisions about whether to store or donate the child's tissue, rests with the child's parents. Parents could make a decision to donate the child's placenta, umbilical cord or cord blood on the basis that it would be reasonable to assume that, when the child grows up, he or she would want this to have happened.

The cure of the sick was so central to the life of Jesus Christ that Matthew interpreted his mission as the fulfilment of the prophecy of Isaiah: "He took away our infirmities and bore our diseases."[12] Jesus told his disciples to continue this healing mission: "Cure the sick, raise the dead, cleanse the lepers, cast out devils. You received without charge, give without charge."[13] Though the scope of this mission was, as St Paul pointed out, truly universal ("there is neither Jew nor Greek, slave nor free, male nor female, for you are all one in Christ Jesus"),[14] Christ himself had what is now called a "preferential option" for the poor: "As you did to the least of my brethren, you did it to me."[15] In the gospels, the litmus test was how one acted towards the widow and the orphan. Today it may well be how one acts towards the member of an ethnic minority, the refugee, the unemployed: "The duty of making oneself a neighbour to others and actively serving them becomes even more urgent when it involves the disadvantaged, *in whatever area this may be*".[16] The implication of all this is clear: resources for health care should be distributed on the basis of sheer *need*.

Today, however, that idea is controversial. Three other conceptions of distributive justice compete with it:

- that resources should be distributed so as to *maximise utility*;
- that resources should be distributed so as to ensure *equality of opportunity*; and
- that resources should be accessible on the basis of *provider* or *consumer choice*.[17]

But though each of these claims embodies some other aspect of the common good (respectively: economic efficiency; fair equality of opportunity; and a regard for the proper autonomy of the

[10] "Catholic Church Funds Stem Cell Research", *Sydney Morning Herald* (16 March 2010), http://www.news.smh.com.au/breaking-news-national/catholic-church-funds-stem-cell-research-20100317-qcuc.html viewed 8 August 2011.

[11] Haldane J, "Bioethics and the Philosophy of the Human Body" in Gormally L (ed), *Issues for a Catholic Bioethic* (Linacre Centre for Healthcare Ethics, London, 1999) p 77.

[12] Matthew 8:17, *The Jerusalem Bible* (Darton, Longman & Todd, London, 1966).

[13] Matthew 10:8.

[14] Galatians 3:28.

[15] Matthew 25:40.

[16] John Paul II, *Catechism of the Catholic Church* (Libreria Editrice Vaticana, Citta del Vaticano, 1994) Ch 2, Art 3 at [1932] (emphasis added).

[17] Tobin B, "The Principle of Justice: A Bioethical Perspective" (2001) 36 *Philippiniana Sacra* 41.

individual health care professional and patient), Catholics would maintain that it is *unjust* to allocate health care on the basis of anything other than need.

Since those with genuine health care needs can be unwitting competitors with each other for scarce resources, the idea that health care should be distributed on the basis of need is only the beginning of a complex discussion which, sensitive to the resources of a particular society, is about which particular treatments should be available to all. Throughout that discussion, Catholics would maintain that priority should be given to the patient (or category of patient) in greater need, and that urgency arising from the imminence of death or from major damage without treatment is properly part of the judgment of whose need should take priority.

So perhaps the most significant issue for Catholics in current debates about the donation and banking of umbilical cord blood is to work out how this new resource can be made available to *those who need it most*, both now and in the future. Or, in the language of contemporary bioethics, how can equity of access and affordability be ensured? Here two questions need to be distinguished, and then the relationship between them appreciated. Should a woman or couple be encouraged to store their child's umbilical cord blood for the possible future use by themselves, their own children, members of their own family? Should Catholic hospitals promote and support such "private" storage of umbilical cord blood?

On the one hand, where a family has a history of a condition for which haematopoietic stem transplants is (or is likely to become) a treatment, it would be reasonable to encourage women to consider banking their child's umbilical cord blood. On the other hand, private arrangements for umbilical cord blood banking may undermine the availability, to those who need it most, of this resource for treating serious illness, for, as has been shown, finding a suitably matched donor in bone marrow donor registries is already much harder for members of ethnic minorities than it is for members of predominant ethnic groups.[18] Therefore, those responsible for governing Catholic health care institutions would have a reason, derived from solidarity with the poor, not only to promote and support equity of access to umbilical cord blood for transplantation ("public cord blood banks") but also not to give institutional support to arrangements which undermine such equity of access ("private cord blood banking"). For "[i]n accord with its mission, Catholic health care should distinguish itself by service to, and advocacy for, people whose social condition puts them at the margins of our society and makes them particularly vulnerable to discrimination".[19] Indeed, since umbilical cord blood banking offers a new opportunity for people freely and generously to contribute to the common good (which, in the Catholic tradition, is understood as the "sum total of social conditions which allow people, either as groups or as individuals, to reach their fulfilment more fully and more easily"),[20] Catholic hospitals ought not promote it as a commodity available only to those who can afford it.

Anglican perspective by Rev Andrew Cameron

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Nearly all the relevant applications of umbilical cord blood are generally regarded with wholehearted enthusiasm by evangelical Protestants and Anglicans. It would be rare to find an opponent in these communities. Of those who oppose uses of embryonic stem cells, virtually all affirm the good of adult stem cell therapies and research. It follows that they affirm therapeutic and most research uses of umbilical cord blood.

Evangelical Christianity is characterised by a strong commitment to the Bible as the final authority in matters of faith and life. Not all Anglicans are evangelical: Anglicanism also includes

[18] Samuel G, Kerridge I, Vowels M, Trickett A, Chapman J and Dobbins T, "Ethnicity, Equity and Public Benefit: A Critical Evaluation of Public Umbilical Cord Blood Banking in Australia" (2007) 40 *Bone Marrow Transplant* 729.

[19] *Ethical and Religious Directives for Catholic Health Care Services* (5th ed, United States Conference of Catholic Bishops, Washington, 2009) Directive 3, http://www.ncbcenter.org/document.doc?id=147 viewed 3 February 2012.

[20] Paul VI, *Pastoral Constitution of the Church in the Modern World (Gaudium et Spes)* (1965) at [26], http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_cons_19651207_gaudium-et-spes_en.html viewed 8 August 2011.

liberal and Catholic streams. Nor is evangelicalism confined to Anglicanism. This treatment is written by an evangelical Anglican, but would elicit consensus in several other Christian communities.

The Bible upholds the good of personhood and relationships and initiates an expansive view of personhood (see below). It follows that Christians favour therapies that support people and uphold their lives. The umbilical cord is a good gift of God's creation that has no particular mystical significance in itself. Therefore we approve uses of it to support people and uphold their lives, as long as these uses do not compromise personhood or relationships. While evangelical Protestants and Anglicans generally oppose the destruction of human embryos for research purposes, virtually all support the use of adult stem cells in research and therapy. It follows that they support the use of umbilical cord blood in research and therapy.

An ancient biblical theme deserves comment. According to early biblical texts, God declared that "the life of a creature is in the blood".[21] Several ancient practices were predicated on this basis. Today, a few believe that this ancient teaching prohibits the consumption of blood products, and by extension, the receipt of a blood transfusion. But evangelical Christians disagree, because later in the Bible the purposes of such ancient laws are completed or "fulfilled" by Jesus Christ. In this case, the symbolic significance of the "life" in blood is fulfilled by Christ's death (his "blood"). It makes safe the relationship with God, whether or not we are bad or good, and God forgives those who trust in Christ's "blood". It follows that these old legal texts are reverently regarded, but are no longer binding.[22] For many evangelical Christians, they are not relevant to modern bioethical discussion.

Other ethical concerns about umbilical cord blood banking are not specific to umbilical cords or to blood products. Areas of wider concern would include the public-private divide in umbilical cord blood banking; adverse consequences of research; and the technological backdrop.

The public-private divide in cord blood banking

Evangelical and Anglican Christian communities are not monochrome on social issues. However, Christianity's emphasis upon the good of relationships means that communitarian solutions tend to be favoured over individualist solutions. Therefore, a system of generally accessible public umbilical cord blood banks for the purposes of research and allogeneic transplantation is preferable to private commercial banks that support autologous uses. For example, the conservative Center for Bioethics and Human Dignity in the United States seems to prefer public cord blood banks over private cord blood banks.[23] In the Australian context, the establishment of a public system of cord blood banks coheres with existing practices of blood banking and organ donation. Public policy to promote umbilical cord blood donation at birth would likely receive warm support from evangelical and Anglican faith communities.

An ancient tradition of respect for human tissues lies behind this predisposition against the privatisation of umbilical cord blood. Commenting on the significance of corpses, the fourth century theologian Augustine of Hippo collated the biblical authors to conclude that no mystical significance attaches to a dead person's "flesh", since God takes charge of whatever happens next for the person. Yet, on the other hand, this "flesh" rightly engages the ongoing affection of the living:

> For if a father's garment or ring … is precious to his children in proportion as their parents are loved, their actual bodies, which we wear far more intimately and closely than any garment, should certainly not be despised. For they are not an ornament, or employed as an external aid; rather, they belong to the very nature of man.[24]

This kind of distinction has enabled Western research into cadavers, while at the same time requiring such research to be conducted with respect for the deceased and by reference to the families

[21] Leviticus 17:11; cf Genesis 9:4; Leviticus 17:10-14; Deuteronomy 12:23.

[22] "You are not under law": Galatians 5:18.

[23] Riggan K, *Cord Blood Stem Cells: An Overview*, http://www.cbhd.org/content/cord-blood-stem-cells-overview viewed 8 August 2011.

[24] St Augustine of Hippo, *On the Care of the Dead* (De Civ Dei i, 13), http://www.newadvent.org/fathers/1316.htm viewed 8 August 2011.

of the deceased. By analogy, other uses of human tissue (including those donated by the living) are susceptible to the same freedom of use, bounded by respect for the human donor.

Correlative arguments resist the outright commercialisation of human tissue, often denounced as "commodification". To reduce human tissue merely to "property", and to arbitrate it as some individual's "right", objectifies it to become a standing reserve of matter and severs it from the proper affection due to it as human, and due to the particular person from whom it originated (who should be respected and thanked). Commodification becomes a habit of collective thought that finally reduces people to commodities (as in slavery, or other forms of exploitation).

Again, evangelicals are not monochrome and inconsistencies can be observed (eg, a willingness to sell hair for wigs; or differences over whether or not to pay for adult blood donation). But it probably remains safe to say that evangelicals prefer respectful practices of donation, where the final say over the tissue resides with the person from whom it comes, or with their next of kin. Since umbilical cord blood is not necessarily essential to the good of the child, a parent may responsibly donate it to others; but since it may become important for the child, her interests cannot be avoided. Public regulation might therefore look for ways in which umbilical cord blood may be donated for use by others with parental consent but also provide an opportunity for the child to have some say over its use when she is of age.

Those who subsequently work upon tissue may also deserve respect, and so payment; the complexities inherent to such chains will be reminiscent of the complexities in intellectual property law. Communitarian practices of umbilical cord blood banking, which uphold both the good of the originating donor and of the wider community, will require laws that uphold and promote respectful partnerships between people. This will require a political process of judgment, reflected in proper public inquiry and carefully drafted legislation (perhaps along the lines of the *Umbilical Cord Blood Donation Bill 2008* (UK), which did not proceed).

Adverse consequences of research

Christians have an expansive view of personhood[25] as graciously given by God. We receive and acknowledge personhood wherever it might exist, rather than listing and enforcing conditions by which persons must "prove" their way into moral community.

Opposition to embryonic stem cell research arises from its perceived attack on personhood. Consequentialist arguments for it (that it will enhance knowledge, cure disease and so on) ignore and evade concerns that the embryo is intrinsically personal, or that the intentional destruction of it symbolically sets the conditions under which the destruction of non-sentient persons becomes thinkable.

Research on adult stem cells avoids these concerns. On no realistic account are adult stem cells likely to be persons, so evangelical Christians encourage research on these cells. However, several research scenarios may impinge upon personhood.[26] Christians would expect human research oversight to scrutinise such proposals, and open up public debate on those which have adverse consequences for personhood.

The induction of pluripotent stem cells from umbilical cord blood lies on the border of this discussion. On the one hand, it is not the pluripotency of a stem cell per se that has aroused Christian concern, but rather the disassembly of a viable embryo to produce it. The pluripotency of a stem cell

[25] Christians often construe personhood differently to the utilitarian norm. In the Christian view of persons, a person is received and recognised, rather than judged to meet some prior canon of merits or abilities (such as productivity, rationality, sentience, or the capacity to express preferences). This approach to personhood explicitly resists the project of "defining" persons, since any canon of definition risks improper exclusion of actual persons. It may erroneously construe an entity as personal when it is not; but it seeks to avoid the exclusion of anyone from proper regard as a person, if their personhood is not immediately apparent. For a philosophical treatment of this summary, see Spaemann R, *Persons: The Difference Between "Someone" and "Something"* (Oxford University Press, Oxford and New York, 2006).

[26] Lehrman S, "Undifferentiated Ethics: Why Stem Cells from Adult Skin are as Morally Fraught as Embryonic Stem Cells", *Scientific American* (13 September 2010), http://www.scientificamerican.com/article.cfm?id=undifferentiatied-ethics viewed 8 August 2011.

is a necessary but not initially a sufficient condition for the inception of a person. But induced pluripotent stem cells might create gametes for reproduction – possibly from young, old or deceased people. Such gametes would require new embryos to be formed and tested to destruction. Or, an embryo may be constructed intentionally from a pluripotent stem cell. Christian responses to these kinds of practice are better canvassed in discussions about cloning, gamete donation and surrogacy, where the main concern is over whether a person is being destroyed, or is being inducted into deleterious social relationships. All such applications would constitute precisely the kind of more "personal" sequelae that require scrutiny. These applications of umbilical cord blood should not really be "smuggled" in among the more straightforward therapeutic applications of it.

Technological backdrop

No technology is morally neutral. Technologies instantiate, reify and generate ideologies.[27] There exists a minority Christian tradition against transplantation (which is not shared by this writer or in evangelical Anglican communities). It contends that transplantation practices alter our sense of the body's integrity. It contends that transplantation represents a kind of assault on the initial integrity of the body, an integrity that should always be upheld. The strength of this critique is in its attention to the subtle, unpredictable ways in which a technology both reflects and "seeps into" our awareness. The phenomenon of the "saviour sibling" would be less thinkable without the technologies that support it. (The Hashimi and the Whitaker families in the United Kingdom both sought embryos whose umbilical cord blood would help a sick sibling.[28] Arguably, an extensive public umbilical cord blood bank would lessen or overcome such desperation.)

Subtle interactions between technology and moral awareness are not confined to umbilical cord blood banking. Nevertheless, some Christians would be alert to subtle effects arising from umbilical cord blood banking, as any new technology used to uphold persons and support relationships may, at some point, inadvertently corrode our reception of personhood and the conduct of our relationships.

Jewish perspective by Rabbi Jeremy Lawrence

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Judaism teaches that it is an affirmative precept (*mitzvah*)[29] to heal and that the preservation of life is a paramount value.[30] Although there is discussion of illness and suffering as stimuli for prayer and repentance, Judaism does not take a position that illness, infirmity or incapacity should be embraced or endured as a manifestation of God's will. Furthermore, Judaism has encouraged screening and preventative treatment to pre-empt illness and the passing on of congenital defects.

The doctor has a responsibility to treat and advances in medicine are welcome. Jewish medical ethics therefore place few limits on treatment. Because it holds all human life and every moment of life as sacred, Judaism does not allow for treatment which has a high probability of causing the death of the patient; or for donation which would require killing a donor. Judaism does seek to ensure that all remedies are obtained within parameters defined by Jewish law. This affects sperm for donation, embryos for fertility treatment, tissue for research, and so on. Additionally, Jewish laws impose certain restrictions on what may be undertaken on the Sabbath and festivals, where the preservation of life takes priority, but other treatments are prohibited.

Within Jewish law, while there is controversy over research into embryonic stem cells and while conservative voices are hostile to fertilising cells in order to create embryos for further research, there

[27] For a searching and powerful Christian exploration of this theme, see Brock B, *Christian Ethics in a Technological Age* (William B. Eerdmans, Grand Rapids, Michigan, 2010).

[28] Deane-Drummond C, "Fabricated Humans? Human Genetics, Ethics and the Christian Wisdom Tradition" (2005) 44 *Dialog* 365.

[29] Exodus 21:19.

[30] Babylonian Talmud, Sanhedrin, 74a.

is widespread acceptance of umbilical cord blood stem cells being used for both treatment and research. Given well-publicised successes in both autologous and allogeneic transplantation, the banking of umbilical cord blood stem cells would seem to be well warranted as both a personal insurance and a public service. In the words of Rabbi Howard David Apfel and Rabbi Shimon Isaacson: absent specific violation of prohibitions encountered during the collection process itself, the banking of stem cells from neonatal umbilical cord blood is not only permissible but advisable,[31] whether for autologous or allogeneic purposes. Outside of technical problems which might be entailed by drawing the umbilical cord blood on the Sabbath, there ought therefore to be every opportunity to harvest and bank the umbilical cord blood after delivery and after the umbilical cord has been cut. Nothing should be done to interfere with or delay the normal processes associated with the birth, however.

The laws of the Sabbath are set aside for actions to save a life which is at risk. Current banking of umbilical cord blood which might later be matched and used has been deemed too remote to allow violation of the Sabbath.[32] The problem of harvesting the blood on the Sabbath would only bind a Jewish doctor and there is no question that non-Jewish personnel would be able to undertake this task.

One of the prohibitions on the Sabbath, which is discussed by the Talmud[33] and mediaeval sources, is drawing circulatory blood. Once the umbilical cord has been cut, the blood within it is definitely not regarded as part of the circulatory blood flow of the infant. There is, nonetheless, a question in Jewish law as to whether it might in fact remain a part of the mother's circulatory flow prior to the delivery of the placenta. While there is a distinction between the circulatory system of the mother and the placental vessels, the discussion on blood flow establishes the placenta after birth as a separation from the mother rather than as a part of the infant. To this end, there would be a basis in establishing the placenta and umbilicus with the blood as the property of the mother in Jewish law.

Judaism attaches no especial significance to the placenta. While religious literature does reference its burial, there is no mandatory ritual and the placenta is normally disposed of by the hospital. Prior to burial, the placenta and the umbilical cord would be considered the property of the mother and she would be entitled to preserve whatever cells she elected in a private capacity. Thereafter, but with permission, there should be no objection to the hospital drawing and banking cells for research and therapeutic use. If the hospital is seeking to take commercial advantage of cells or tissue, the mother should be made aware of this.

If, however, the mother died during childbirth, the placenta should be buried with her, as it could be considered to be part of her circulatory system at the point of death. Nevertheless, just as posthumous organ donation is acceptable within Jewish law (*halacha*), this requirement would not prevent the collection of umbilical cord blood if that collection was to preserve life.

In many jurisdictions, there are incentives for blood and organ donation such as cheaper transfusions for donors or discounted health insurance. Given the specific compatibilities of stem cells, there is a strong case for a proportion of the blood drawn to be separated or retained for the donor (and possibly close family) for autologous transplantation even if the storage is within a public bank. Judaism places no restriction on the religion or ethnicity of either donors or recipients of blood or donated organs.[34]

While Jewish law might not be able to compel the donation of umbilical cord blood to a public bank, the potential benefit to the wider community is great. Maimonides, himself a physician and codifier of Jewish Law, established that the *mitzvah* of healing applies through direct physical

[31] Apfel H and Isaacson S, "Halachic and Medical Perspectives on Banking Umbilical Cord Stem Cells" (2005) 50 *Journal of Halacha and Contemporary Society* 5.

[32] Nishmat, Avraham. Commentary on Yoreh Deah.349.

[33] Babylonian Talmud, Shabbat, 107b.

[34] The author occasionally has to reassure congregants that while pigs are not kosher for consumption, there is no bar to pig valves being used as replacements in heart surgery.

intervention, through financial resource and through skill and wisdom.[35] How often, though, are we blessed with the opportunity to participate in the healing of others through direct physical intervention? Recent progress and the projected advances in the banking and transplantation of umbilical cord blood have opened a new and significant avenue for us to offer physical intervention and to become real healers.

From a Jewish perspective, therefore, the harvesting, storage and donation of umbilical cord blood is to be strongly encouraged.

Islamic perspective by Abdulaziz Sachedina

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In general, blood is treated with great respect in Muslim tradition because of both its symbolic and religious significance. Donation of blood (including umbilical cord blood) is regarded as permissible in Islam because "cupping" (the traditional medical practice of drawing blood – or "bloodletting" – by application of vacuum containers to the skin) was practised by the Prophet for health reasons. Thus, as long as the blood withdrawn by cupping is not contaminated and satisfies medical conditions ensuring its sterility, transfusion of this blood into others who would benefit from it is permissible. Hence, its use for transfusion, provided all other medical conditions about its sterility are fulfilled, is permissible.

But while *donation* of soft and fluid parts by a living person in general does not give rise to any serious ethical problems, serious concerns arise where monetary compensation is sought as Islam does not treat blood or tissue as a commodity and bans its sale.[36] The most commonly cited principle for the prohibition on selling blood is the general rule derived from the Qur'an that states that when God forbids an item he also forbids its exchange as a commodity for money. The verse that is cited as a documentation is as follows: "These things only has he forbidden you [for food]: carrion, blood, the flesh of swine, what has been hallowed to other than God."[37] Of these four items, the first three things are harmful to human health, whereas the fourth item (meat that is not ritually slaughtered) is harmful to one's faith because it is regarded as an act of disobedience against the divine commandment. In contrast, the majority of religious scholars have ruled blood donation as a "collective duty" for the entire Muslim community in order to ensure that blood supplies are maintained in blood banks for use in emergency situations like accidents and wars.

Muslim sources are generally silent regarding the status of umbilical cord blood, in large measure because, until recently, the placenta and umbilical cord blood were not recognised as having any benefit and were discarded as waste. Statements regarding the ownership of blood and placental tissue are also absent as Islam regards God as the owner of an individual's body since it is God that has created human beings (although Muslim jurists may recognise the mother as the "owner" of the womb and, by analogy, the placenta, umbilical cord and cord blood until the time of delivery).

The use of haematopoietic stem cells in umbilical cord blood has not raised ethical or legal issues in Muslim culture and there is no barrier to its collection, storage, donation and transplantation from an Islamic perspective. There is also no restriction on the donation of umbilical cord blood to a public bank or the storage of umbilical cord blood in a private bank for personal use. While both are possible, however, it is arguable that (cord) blood donation to a public bank may be privileged (at least by some Muslim jurists) because it provides a public good (*maslaha*) and promotes the health and wellbeing of all human beings.

[35] Mishna, Nedarim. Ch 4.

[36] A number of Sunni scholars maintain that it is forbidden to sell any part of the human body, including blood, whereas a prominent Shi'ite jurist has argued that it is permissible to sell the blood and organs of a living person (except their eyes). See Sachedina A, *Islamic Biomedical Ethics: Principles and Application* (Oxford University Press, New York, 2009) p 260, endnotes 43-46 for Sunni Arabic sources.

[37] Qur'an 2:173.

Hindu perspective by Andrew McGarrity

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There are two broad approaches to ascertaining Hindu attitudes to umbilical cord blood banking and the utilisation of stem cell technology: one exegetical, the other descriptive. Exegetical approaches tend to glean traditional Hindu scriptures with the aim of reconstructing how they *might* have addressed umbilical cord blood banking had they been faced with the situation. Certainly, there is some merit to this approach. Texts on social theory such as the *Laws of Manu* ("Mānavadharmaāstra") do prescribe birth rituals, such as the *jatakarma*. However, beyond saying that the ritual must take place before the umbilical cord is severed, *Manu* makes no further mention of the umbilical cord, let alone place its collection, disposal or storage in any larger doctrinal picture. We should be wary of formulating a doctrinally consistent position based on such isolated instances in order to arrive at "*the* Hindu view". There is a danger of selectively imposing doctrinal consistency across traditional scriptures and practices. It is notoriously problematic to define "what Hindus believe", or what Hinduism is, because unlike Abrahamic traditions, Hinduism is not based on any unifying creed.

Descriptive approaches, on the other hand, examine how modern Hindus themselves have directly engaged with stem cell technology and theorised their own exegetical approach. While less speculative than direct exegesis, other considerations must be borne in mind. First, who speaks for Hinduism? Secondly, those who invoke Hindu sources are themselves influenced by scientific modernity. Although invoking a unified traditional Hinduism, they speak as modern Hindus shaped by modern agenda.

This is illustrated by the Indian response to George W Bush's 2001 decision to limit federal funding for stem cell research. Ethical reservations in the United States were welcomed as providing an economic opportunity to develop the Indian biotech industry, which has since expanded into commercial umbilical cord blood banking on a large scale.[38] Amid the enthusiasm, an episode from the Hindu epic, the "Mahābhārata", was invoked in which the antagonists, the hundred Kaurava brothers, are supposed to have been born from a piece of flesh produced by their mother. A sage is said to have divided the flesh into a hundred parts, which are then incubated and seasoned with herbs and ghee. BG Matapurkar, a pioneer in adult stem cell research from Delhi's Maulana Azad Medical College, has interpreted this episode as proof of ancient Indian acquaintance with stem cell technology, and in 2001 an article appeared in the Indian current affairs magazine, *The Week*, with the title "Stem Cells: A Lost Science of India?".[39] In such a context, a "Hindu response" to stem cell technology is overlaid with nationalist, anti-Western, aspirational and economic agendas and a dubious scientism is invoked in the process. In such instances, it is not that the *ethical* implications of biotechnology are considered from a Hindu perspective or that a systematic doctrinal response is formulated. Rather, *biotechnology itself* is directly absorbed into a religio-mythological framework. In fact, noticeably absent in the 2001 discussion is any formulation of a Hindu perspective on the ethics of stem cell technology. Notably, restriction on the creation of embryos solely for research purposes was headed by government out of secular concerns rather than concerns expressed by Hindu bodies. Furthermore, in the rapid expansion of umbilical cord blood banks in India, Hindu bodies have been silent in pushing for regulations to curb the practice of offering financial inducements to the poor to donate umbilical cords for allogeneic transplants. As for storage of umbilical cord blood in public banks for use by anyone who needs it, while this has been promoted in India, it has not been promoted with reference to principles that are specific to Hinduism.

The clearest statements of a Hindu *doctrinal* position on the ethics of embryonic stem cell research have come from the Indian diaspora, notably, the Hindu Endowments Board of Singapore in

[38] Mishra P, "How India Reconciles Hindu Values and Biotech", *New York Times* (21 August 2005), http://www.nytimes.com/2005/08/21/weekinreview/21mishra.html viewed 8 August 2011.

[39] Bharadwaj A, "Sacred Conceptions: Clinical Theodicies, Uncertain Science, and Technologies of Procreation in India" (2006) 30 Cult Med Psychiatry 451.

2001[40] and the Hindu Council of the United Kingdom in 2008.[41] Although neither statement explicitly addresses umbilical cord blood banking, it is possible to extrapolate from arguments about embryonic stem cells, and apply them to stem cells derived from umbilical cord blood. While both statements acknowledge traditional Hindu prohibitions on abortion ("bhrūnahatya"), and the traditional Hindu notion that the individual soul ("jīva") begins at conception, they adopt a utilitarian approach, arguing in favour of the destruction of pre-implantation embryos if they can enable curative treatment for those already suffering. Both the Singapore and United Kingdom statements also appear to merge doctrines of rebirth with modern evolutionary theory. Drawing upon traditional monistic conceptions such as expressed in the concept of *brahman* as the single underlying absolute, they base their overriding utilitarianism on a conception of an overall unity that nonetheless expresses itself in a hierarchical gradation or spectrum of all life (human and non-human). Embryonic stem cells are seen to constitute a low, relatively undeveloped or less "evolved" level of "energy" (in the terms used by the Hindu Endowments Board of Singapore) or "consciousness/ sentience/ sensitivity to pain" (Hindu Council of the United Kingdom). Scriptural sources invoked, such as the Ayurvedic text, the "Carakasamhitā", take the soul as being present in the umbilical cord itself, so there seems to be no reason why a similar approach would not be taken regarding umbilical cord blood as well. In other words, while acknowledging the inherent connection of umbilical cord blood to the individual soul, it is nonetheless relegated to a low level – lower even than the early embryo. It can therefore be legitimately utilised out of compassion for the higher level of those more consciously sensitive to pain. Endowment with a soul at conception, although accepted, is not treated by either the Singapore or United Kingdom Hindu statements as an argument against destroying pre-implantation embryos. This may be because both statements presuppose the notion of rebirth. If denied a place in this specific locus of birth, the soul will find some other locus in which to be born within the cycle of rebirth ("samsāra"); hence the immediate destruction of the embryonic soul is not final.[42] The same principle would apply to umbilical cord blood: the less developed aspect of the soul within it may just as legitimately be "reborn", or "reused", elsewhere.

It is difficult to predict Hindu attitudes to umbilical cord blood banking from doctrinal exegesis alone. A descriptive analysis of how traditional notions are invoked by modern Hindus themselves reveals exegetical approaches strongly shaped by practical concerns. When envisaging a "Hindu position", one should not underestimate the pragmatic nature of Hinduism, its ability to absorb advances in biotechnology into its worldview in often unexpected ways and to adapt its pre-existing doctrines accordingly.

Buddhist perspective by Damien Keown

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The collection, storage, donation and use of umbilical cord blood raise issues of concern at a public policy level for Buddhists, as they do for society at large. However, these practices present few specific problems with respect to Buddhist religious teachings. In Buddhism, birth is viewed as a natural process and has no association with concepts of purity and pollution, as in some other religious traditions. No rituals of purification are prescribed and there is no ceremony of baptism or welcoming of infants as new members of the faith community. No particular significance is attached to the placenta or umbilical cord, or to the residue of blood these contain. In principle, therefore, all of these tissues may be stored and used for medical treatment if they are found to be beneficial. Blood transfusion presents no religious problems for Buddhists and they may be expected to take the same attitude towards umbilical cord blood. That such blood has been found to be a rich source of

[40] Walters L, "Human Embryonic Stem Cell Research: An Intercultural Perspective" (2004) 14 Kennedy Inst Ethics J 3.

[41] Bhanot A, "The Ethics of Stem Cell Research: A Hindu View", *BioNews* (17 October 2008) (issue 480), http://www.bionews.org.uk/page_38022.asp viewed 8 August 2011.

[42] Coward H, Lipner J and Young K, *Hindu Ethics: Purity, Abortion and Euthanasia* (State University of New York, Albany, 1989).

haematopoietic stem cells would seem only to increase its value and lend support to the case for its preservation and use for medical purposes. While Buddhists may have reservations about the use of embryonic stem cells for research, given their widely held view that individual human life begins at fertilisation, no such problems arise in the case of adult stem cells. Intervening in the birth process in order to collect umbilical cord blood also presents no special problems, provided informed consent is given and the procedure presents no additional risks to the delivery or health of mother and child.

Once the umbilical cord blood has been collected, however, issues of public policy concerning its storage and distribution arise for Buddhists as members of society at large. For the most part, it is likely that their views would coincide broadly with positions that have been developed elsewhere by secular medical and other public bodies.

The great majority of publicly funded or non-profit blood-banking facilities are currently in Europe and North America, while only 20% or so are based in Asia. Since few facilities exist in the countries where Buddhism has traditionally been practised, their impact on the indigenous population has been small. Perhaps for this reason there has been little reaction or discussion of how these facilities should be run. Furthermore, although there are exceptions, Buddhism is generally more reserved than other faiths about expressing views on social issues, and tends to regards health care questions as falling more properly within the domain of the secular authorities and responsible medical bodies. It is, therefore, unsurprising that there are few position papers or policy statements from Buddhist groups on matters such as umbilical cord blood donation or banking.

Although few in number, private umbilical cord blood banks exist in some Buddhist countries, such as Thailand, where they appear to have attracted little comment or criticism from Buddhists. While it is arguable that banking umbilical cord blood for one's own later use would not be seen as immoral, we might expect that Buddhists may favour donation of umbilical cord blood for public benefit as there is currently little scientific justification for private umbilical cord blood banking and the value of umbilical cord blood cells for autologous use remains largely hypothetical. We might also hypothesise that Buddhism would prefer to see umbilical cord blood banks operating as public institutions. This is because the donation of umbilical cord blood for use by others would be seen as morally commendable, being an example of the virtue of *dana*, or generosity, which is highly valued in Buddhism. Buddhists also seek to avoid making distinctions on the basis of kinship or religion and would not seek to prioritise their immediate family or faith community in terms of access to treatment and so would arguably attach greater moral value to umbilical cord blood donations than to umbilical cord blood banking for personal use.

While it would be going too far to prohibit private umbilical cord blood banks, private facilities would be discouraged by Buddhism. There are several reasons for this: first, they lack a firm scientific rationale; secondly, they are based more on self interest than generosity (*dana*); thirdly, they may give rise to concerns about the commercialisation of the human body; and, fourthly and finally, they could lead to the undermining of human dignity more generally. In contrast, as Buddhists regard the alleviation of suffering through the provision of adequate health care as the obligation of any government, where funding allows it the establishment of public umbilical cord blood banks would be seen as a desirable measure to improve public health, analogous to a blood transfusion service or organ donation network.

As regards ownership of umbilical cord blood, there is no clear doctrinal position on the legal ownership of bodily tissue and Buddhists would expect the courts to resolve disagreements over such matters. It is not immediately clear in what scenarios the question of ownership of umbilical cord blood before birth would arise, but if it is to be considered as property at all, the owner would seem to be the baby. This would also apply during the birth process until such time as the cord was detached, at which point the parents would become the legal guardians holding the cord in custody for the child until it became an adult.

DISCUSSION

Religion endures in the modern world as a source of meaning,[43] and one of the ways it can influence attitudes to the collection, storage and use of umbilical cord blood is by imbuing *the body* with meaning. Umbilical cord blood banking implicates several biological materials including the placenta, the umbilicus, blood contained within the umbilicus, and stem cells contained within that blood. It is important to consider these materials separately, as some are imbued with religious significance and some are not.

Regarding the placenta and the umbilical cord, all of the commentaries either state explicitly that these entities have no particular religious significance, or they do not attach any particular religious significance to them. While Hindu scripture refers to the soul being present in the umbilicus, the Hindu commentary concludes that this should pose no impediment on doctrinal grounds to the use of umbilical cord blood for therapeutic purposes. None of the commentaries mention religious rituals associated with birth that would obviate or be spoiled by the collection of umbilical cord blood. The only clear religious restriction on the collection of umbilical cord blood is in Judaism, where it is subject to general restrictions associated with the Sabbath.

The Anglican and Islamic commentaries imbue blood in general with profound religious significance, and from this we can infer that umbilical cord blood is imbued with the same significance. In both cases, however, it is clear that this significance allows, rather than disallows, the use of umbilical cord blood for therapeutic purposes.

It is obvious why traditional teachings have nothing to say about stem cells. Nevertheless, it is important to note that the Catholic, Anglican, Jewish and Buddhist commentaries each mention them in order to remind us that, should stem cells derived from umbilical cord blood become implicated somehow in the destruction and/or reproduction of human life, we should expect that will become morally contentious from the perspective of these traditions. Umbilical cord blood banking does not currently raise such concerns, but this threshold of acceptability needs to be considered if, and as, new uses are found for it in the future.

Religion can shape attitudes to umbilical cord blood banking not only by imbuing the body with meaning but also by shaping moral obligations to self and others. This might be manifested, eg, by way of restrictions or prohibitions placed on the religion or ethnicity of donors and recipients (eg due to concerns about the mixing of blood). Conversely, religions might encourage or prioritise donation to recipients within one's own family or religious community over others. The commentaries above either explicitly state that no such restrictions exist, or that such distinctions are avoided, or they simply do not make such distinctions. In other words, each of the religions represented here appears to be perfectly consistent with a system of universal blood donation, and the donation of umbilical cord blood is not exceptional in this respect.

While the commentaries generally lend support to the practice of umbilical cord blood banking, some moral concepts and arguments have clear consequences in terms of preferring one system of banking over another. Donation to the public system is preferred to private storage on the grounds of communitarianism (in Anglicanism), public good (in Islam) and the virtue of generosity (in Buddhism). In the Catholic commentary, the principle of distributive justice on the basis of need is used not only to favour donation to the public system but also to actively disfavour private storage. The Jewish commentary alone supports both systems equally. The Hindu commentary is exceptional in that support for umbilical cord blood banking in India is said to be based on grounds that lie outside of religion, but which are readily accommodated by Hinduism.

Questions about the ownership of umbilical cord blood are clearly related to questions of control over its use. The Catholic, Anglican and Islamic commentaries illustrate how questions of ownership of umbilical cord blood provoke deep-seated religious concerns about commodification of the body. The general Islamic prohibition on the sale of blood and other tissues is likely to have implications for commercial applications of umbilical cord blood. Of the three commentators who proffer an opinion

[43] Pargament et al, n 1.

on the question of ownership, two identified the mother as the rightful owner and one identified the child, with the parents holding the cord in custody until the child comes of age. Given that the commentaries arrive at different conclusions on this question – and given also that ownership of umbilical cord blood remains an open question in law and that it will be impossible to avoid where it becomes a matter of legal dispute – it would be useful to open up discussion on the different ways in which the question of property relations *can* be addressed in law. This might help to generate consensus around how the question *should* be addressed. A social consensus on this question will be more robust if it can accommodate religious perspectives.

Practical implications

Based on the commentaries collected for this study, the authors offer the following points as a summary for policy-makers and clinicians who seek a better understanding of religious perspectives on umbilical cord blood banking:

- Umbilical cord blood banking is generally supported by the Catholic, Anglican, Jewish, Islamic, Hindu and Buddhist faiths.
- These religions do not attach any particular significance to the umbilical cord or placenta, and the collection of umbilical cord blood does not interfere with any religious rituals associated with childbirth. Jewish medical practitioners are not permitted to collect umbilical cord blood on the Sabbath, however, unless it is a life-saving procedure.
- None of these religions impose restrictions on the ethnicity of donors or recipients, nor do they prioritise donation within the donor's family or religious community. They all support a system of universal blood donation, and the donation of umbilical cord blood is not exceptional in this respect.
- The Catholic, Anglican, Islamic and Buddhist religions provide moral grounds that encourage donation to public umbilical cord blood banks rather than storage of cord blood for private use. Catholic institutions are unlikely to support private umbilical cord blood banking. Public and private banks are both equally supported by Judaism, and umbilical cord blood banking enjoys wide support in India for reasons that lie outside of Hinduism, but which are readily accommodated by it.

Views about umbilical cord blood banking are unlikely to be uniform across all the religions discussed in this article, and different views might prevail in other religious traditions. Ongoing discussion of religious perspectives on umbilical cord blood banking, and accurate information on this topic, will help people of faith to choose whether to donate, store or discard their child's umbilical cord blood. Among people of the faiths discussed here, it is also likely to increase donation of umbilical cord blood and thereby increase the availability of treatment for many life-threatening conditions. If religious views are covered in training programs about umbilical cord blood banking, health care workers will be able to address patients' and consumers' concerns and provide culturally appropriate services.