SERVIVAL OF BIO-TECHNOLOGY WITH MORALITY

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Advancement of Bio- Technology in Global Era

With the tremendous advance in medical sciences in the recent centuries, man's longevity has increased as well as health care sciences have taken new shape. For example, medical and pharmacologic advancements have made it possible to transplant organs successfully and thereby to save the lives of many persons who otherwise would die from irreversible end stage organs disease. The existence and distribution of organ transplantation procedures in developing countries, while almost always beneficial to those receiving them, raise many moral concerns. Both the source and method of obtaining the organ to transplant are major moral issues to consider, as well as the notion of distributive justice. Similarly, what if, your parents could have specified which gender child to have? What if they could have chosen to give to give you a head for figures, or an artistic bent? Pre implantation genetic diagnosis technology, a testing process that costs thousands of all dollars and is offered to couple using inverts fertilization, allows today's parents to choose whether to have a boy or girl.

Embryos also can be tested for hundreds of fatal congenital anomalies, childhood diseases and even some diseases that don't occur until well into adulthood. Doctors can test to ensure that an embryo's umbilical cord blood or bone marrow will be a match for a sibling who needs a donor. And just as physicians can use PGD to help deaf parents avoid giving birth to a deaf child, so theoretically, could doctors use it to help them have a child who is like them. Physicians working in this field face a seemingly overwhelmingly array of demands from different stakeholders – parents, bioethicists, anti – abortion critics, disabled – right groups. As the field advances, individual doctors for now must determine where and how to draw the line between the craft of medicine and the specter of eugenics fears of so – called designer – babies. No U.S law specifically restricts the uses for which doctors and patients can

use embryo screening, though several European countries ban or severely restrict PGD.

All this and in many more branches of medical science, technological advancements have raised many questions of morality which involve human existence. Though not going into very detail of the branch of medical sciences, moral issues related to it are dealt with as follows:-

Some moral issues related to Bio- Technology

The practice of psychiatry is different from other medical specialties in two significant respects. First, one deals with certain groups of patients whose judgment may be impaired at times due to their mental illness or who are unable to refuse any medical help. In such situations, therapeutic intervention or even detention in a psychiatric facility against the patient's wishes may become necessary. This raises various moral and human rights issues that have been debated extensively without arriving at a consensus.

Second, in no other medical specialty do patients share with their doctor so many intimate details about their personal, emotional, social or even sexual life. As a result, a special kind of relationship, both positive and negative develops between the patient and psychiatrist. This particularly happens during prolonged treatment. This raises many moral issues depending on how the psychiatrist handles it.

National and International moral guidelines over Bio-Technology

The World Psychiatric Association (WPA) prepared the Declaration of Hawaii in 1977 after extensive discussion. This was updated in Vienna in 1983. The revision in 1996 was called the Madrid Declaration. There is also a Standing Committee for moral issues. The UN General Assembly in 1991 specially considered the question of 'Principles for the protection of persons with mental illness and for the improvement of mental health. In India, the National Human Rights Commission's publication, Quality assurance in mental health, provides guidelines for the care of mentally, ill in psychiatric patients should be treated with dignity and respect. As far as possible their consent must be taken for any treatment or hospital admission. If such patients are not in a position to give their consent, close family members should be consulted, but the interest of the patient must remain paramount. Physical restraints, if required, must be minimum and for a temporary period under close medical supervision. The use of

chains or other degrading devices to restrict the patient should have no place in modern psychiatry. The patient should be kept as involuntary admission in a psychiatric hospital for the minimum period necessary. There must be adequate provision for the right to appeal against forcible detention. Many of these recommendations are included in the Mental Health Act of 1987.

Research on Medical Science patients

In general, it is agreed that for any research on human beings, informed consent of the individual must be an essential part of the research protocol. The difficulty in seriously mentally ill patients is that due to their illness, many of them have their judgment substantially impaired. They may not be in a position to judge the risks involved in various medical research procedures. In India, where a large number of patients are poorly educated, giving consent by signing some research protocol seems to be an inadequate safeguard. The patients and their families inherently trust their doctors and hence a big moral responsibility falls on the treating doctor. A complete ban on all research on the mentally ill may be going to one extreme. Two safeguards are suggested. First, such research should be strictly limited to what is in the larger interest of the mentally ill. Second, there must be independent monitoring to ensure that moral guidelines are followed. The Indian Council of Medical Research must periodically review the moral implications of research on those who are seriously mentally ill.

Organ transplantation Technology

Organ transplantation is the moving of a organ from one body to another, or from a donor site on the patient's own body for the purpose of replacing the recipient's damaged or absent organ. The emerging field of Regenerative medicine is allowing scientists and engineers to create organs to be regrown from the patient's own cells (stem cells, or cells extracted from the failing organs). Organs and/or tissues that are transplanted within the same person's body are called auto grafts. Transplants that are performed between two subjects of the same species are called allografts. Allografts can either be from a living or a cadaveric source.

Organs that can be transplanted are the heart, kidneys liver, lungs, pancreas, intestine and thymus. Tissues include bones, tendons (both referred to as musculoskeletal grafts), cornea, skin, heart values and veins. Worldwide the kidneys

are the most commonly transplanted organs, while musculoskeletal transplants outnumber them by more than tenfold.

Organ donors may be living, or brain dead. Tissue may be recovered from donors who are cardiac dead upto 24 hours past the cessation of heartbeat. Unlike organs, most tissue (with the exception of corneas) can be preserved and stored for upto five years, meaning they can be "banked". Transplantation raises a number of bio-moral issues, including the definition of death when and how consent should be given for an organ to be transplanted and payment for organs for transplantation. Other moral issues include transplantation. Other moral issues include transplantation tourism and more broadly the socio – economic context in which organs harvesting or transplantation may occur. A particular problem is organ trafficking.

In the United States, tissue transplants are regulated by the U.S. Food and Drug Administration (FDA) which sets strict regulations on the safety of the transplants, primarily aimed at the prevention of the spread of communicable disease. Regulations include criteria for donor screening and testing as well as strict regulations on the processing and distribution of tissue grafts. Organ transplants are not regulated by the FDA.

Transplantation medicine is one of the most challenging and complex areas of modern medicine. Some of the key areas of medical management are the problems of transplant rejection, during which the body has an immune response to the transplanted organ, possibly leading to transplant failure and the need to immediately remove the organ from the recipient, when possible, transplant rejection can be reduced through stereotyping to determine the most appropriate donor – recipient match and through the use of immunosuppressant drugs.

In most countries there is a shortage of suitable organs for transplantation. Countries often have formal systems in place to manage the process of determining who is an organ donor and in what order organ recipients receive available organs.

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Successful human allotransplants have a relatively long history, the operative skills were present long before the necessities for post – operative survivals were discover. Rejection and the side effects of preventing rejection (especially infection and nephropathy) were, are, and may always be the key problem.

Several apocryphal accounts of transplants exist will prior to the scientific understanding and advancements that would be necessary for them to have actually occurred. The Chinese physician PienChi'ao reportedly exchanged hearts between a man of strong spirit but weak will with one of a man of weak spirit but strong will in an attempt to achieve balance in each man. Catholic accounts report the third – century saints Damian and Cosmos as replacing the gangrenous leg of the Roman Justinian with the leg of a recently diseased Ethiopian. Most accounts have the saints performing the transplant in the fourth century, decades after their deaths; some accounts have them only instructing living surgeons who performed procedure.

The more likely accounts of early transplants deal with skin transplantation. The first reasonable account is of the Indian surgeon Sushruta in the 2nd century BC, who used autografted skin transplantation in nose construction rhinoplasty, Success or failure of these procedures is not will documented Centuries later, the Italian surgeon Gasparo Tagliacozzi performed successful skin autografts. He also failed consistently with allografts, offering the first suggestion of rejection centuries before that mechanism could possibly be understood. He attributed it to the "force and power of individuality" in his 1596 work De Curtorum Chirurgia per Insitionem.

The first successful corneal allograft transplant was performed in 1837 in a gazelle model. The first successful human corneal transplant, a keratoplastic operation, was performed by Eduardo Zinm in Olomouc, Czecl. Republic, in 1905proneering work in the surgical technique of transplantation was made in the early 1900s by the French surgeon Alexis Carrel, with Charles Guthrie, with the transplantation of arteries or veins. Their skillful anastomosis operations, the new suturing techniques, laid the ground work for later transplant surgery and won Carrel the 1912 Nobel Prize in Physiology or Medicine. From 1902 Carrel performed transplant experiments on dogs Surgically successful in moving kidneys, heart and spleens, he was one of the first to identify the problem of rejection, which remained insurmountable for decades.

Major steps in skin transplantation occurred during the First World War, notably in the work of Harold Gillies at Aldershot. Among his advances was the tubed pedicle graft, maintaining a flesh connection from the donor site until the graft established its won blood flow. Gillis's assistant, Archibald Mc Indoe, carried on the work into the Second World War as reconstructive surgery. In 1962 the first

successful replantation surgery was performed reattaching a reversed limb and restoring (limited) function and feeling.

Transplant of a single gonad (testis) from a living donor was carried out in early July 1926 in Zazecar, Serbia, by a Russian emigre surgeon Dr. Peter Vasilevic Kalashnikov, the donor was a convicted murderer, one Iliza Krajan, whose death sentence was commuted, to 20 years imprisonment and he was led to believe that it was done because he had donated his testis to an elderly medical doctor. Both the donor and the receiver survived, but charges were brought in account of law by the public prosecutor against Dr. Kalashnikov, not for performing the operation, but for lying to the donor.

The first attempted human decreased – donor – transplant was performed by the Ukrainian surgeon Yu Yu Voronoy in the 1930s; rejection resulted in failure Joseph Murray and J. Hartwell Harrison. M.D. performed the first successful transplant, a kidney transplant between identical twins, in 1954, successful because no immunosuppression was necessary in genetically identical twins.

In the late, 1940s Peter Medawar, working for the National Institure for Medical Research, improved the understanding of rejection. Identifying the immune reactions in 1951 Medawar suggested that immunosuppressive drugs could be used. Cortisone had been recently discovered and the more effective azathioprine was identified in 1959, but it was not until the discovery of cyclosporine in 1970 that transplant surgery found a sufficiently powerful immunosuppressive.

Dr. Murray's success with the Kidney led to attempts with other organs. There was a successful decreased donor lung transplant into a lung cancer sufferer in June 1963 by James Hardy in Jackson, Mississippi. The patient survived for eighteen days before dying of kidney failure. Thomas Starzl of Denver attempted a liver transplant in the same year, but was not successful until 1967. The heart was a major prize for transplant surgeons. But, as well as rejection issues the heart deteriorates within minutes of death so any operation would have to be performed at great speed. The development of the Hardy attempted a human transplant in 1964, but a premature failure of the recipient's heart caught Hardy with no human donor. He used a chimpanzee heart which failed very quickly. The first success was achieved in Dec 3, 1967 by Christian Barnard in Cape Town, South Africa. Louis Washkansky, the recipient, survived for eighteen days amid what many saw as a distasteful publicity circus. The media interest prompted a spate of heart transplants. Over a hundred were

performed in 1968 – 69, but almost all the patients died within sixty days. Bernard's second patient, Philip Blaiberg lived for 19 months.

As the rising success rate of transplants and modern immunosuppression make transplants more Advances in living – related donor transplants have made that increasingly common. Additionally, there is substantive research into transplantation or transgenic organs; although these forms of transplant are not yet being used in humans, clinical trials involving the use of specific cell types have been conducted with promising results, such as using porcine islets of Langerhans to treat type one diabetes. However, there are still many problems that would need to be solved before they would be feasible options in patients requiring transplants.

Many other new drugs are under development for transplantation. The emerging field of Regenerative medicine promises to solve the problem of organ transplant rejection by regrowing organs in the late, using the patients' own cells (stem cells, or healthy cells extracted from the donor site).

Technology of organ transplantation in different countries

Despite efforts of international transplantation societies, it is not possible to access an accurate source on the number, rates and outcomes of all forms of transplantation globally; the best that we can achieve is estimations. This is not a sound basis for the future and thus one of the crucial strategies for the global Alliance in Transplantation is to foster the collection and analysis of global data.

Transplantation of organs in different continents/regions year/2000

	Kidney (pmp)	Liver (pmp)	Heart (pmp)
USA	52	19	8
Europe	27	10	4
Turkey	11	3.5	1
Asia	3	0.3	0.03
Latin America	13	1.6	0.5

All numbers are per million populations.

According to the Council of Europe, Spain though the Spanish transplant Organization led by Dr. Rafael Matesanz shows the highest worldwide rate of 35.1 donors per million population in 2005 and 33.8 in 2006.

In addition to the citizens waiting for organ transplants in the US and other developed nations, there are long waiting lists in the rest of the world. More than 2

million people need organ transplants in China, 50,000 waiting in Latin America (90% of which are waiting for kidneys), as well as thousands more in the less documented continent of Africa. Donor bases vary in developing nations.

Traditionally, Muslims believe body discretion in life or death to be forbidden and thus many reject organ transplant. However most Muslim authorities nowadays accept the practice if another life will be saved.

In Latin America the donor rate is 40 – 100 per million per year, similar to that of developed countries. However, in Uruguay, Cuba and Chilie, 90% of organ transplants came from Cadaveric donors represent 35% of donors in Saudi Arabia. There is continuous effort to increase the utilization of cadaveric donors in Asia, however, the popularity of living single kidney donors in India yields India a cadaveric donor prevalence of less than 1 pmp.

Organ transplantation in China has taken place since the 1960s, and china has one of the largest transplant programmes in the world, peaking at over 13,000 transplants a year by 2004. Organ donation, however is against Chinese tradition and culture and involuntary donation is illegal under Chinese law. China's transplant programme attracted the attention of international news media in the 1990s due to ethical concerns about the organs and tissue removed from the corpses of executed criminals being commercially traded for transplants. In addition, in 2006, there were claims of harvesting organs from live practitioners of the banned Falun Gong spiritual movement which led to a disputed report being compiled by former Canadian MP David Kilgour and human rights lawyer David Matas. Since 2007 Chinese authorities have introduced legislation to stop international trade in prisoners' organs, and to increase voluntary donation from the general public.

With regard to organ transplantation in Israel, there is a severe organ shortage due to religious objections by some rabbis who oppose all organ donations and others who advocate that a rabbi participate in all decision making regarding a particular donor. One third of all heart transplants performed on Israelis are done in the People's Republic of China. Others are done in Europe Dr. Jacole Lavee, head of the heart – transplant unit, sheba Medical Center, Tel Aviv, believes that "transplant tourism" is unethical and Israeli insurers should not pay for it. The organization HODS (Halachic Organ Donor Society) is working to increase knowledge and participation in organ donation among Jews throughout the world.

Transplantation rates also differ based on race, sex and income. A study done with patients beginning long term dialysis showed that the socio demographic barriers to renal transplantation present themselves even before patients are on the transplant list. For example, different groups express definite and complete pretransplant workup at different rates. Previous efforts to create fair transplantation policies had focused on patients currently on the transplantation waiting list. Moral concerns the existence and distribution of organ transplantation procedures in developing countries, while almost always beneficial to those receiving them, raise many moral concerns. Both an the source and method of obtaining the organ to transplant are major moral issues to consider, as well as the notion of distributive justice. The World Health Organization argues that transplantations promote health, but the notion of "transplantation tourism" has the potential unintended health consequences, and to provide unequal access to services, all of which ultimately may create harm. Regardless of the "gift of life", in the context of developing countries, this might be coercive. The practice of coercion could be considered exploitative of the poor population, and 4 of the universal Declaration of Human Rights. There is also a power opposing view, that trade in organs, if properly and effectively regulated to ensure that the seller is fully informed of all the consequences of donation, is a mutually beneficial transaction between two consenting adults, and that prohibiting it would itself be a violation of Article 3 and 29 of the Universal Declaration of Human Rights.

Even within developed countries there is concern that enthusiasm for increasingly the supply of organs may trample or respect for the right to life. The question is made even more complicated by the fact that the "irreversibility" criterion for legal death cannot the adequately defined and can easily change with changing technology.

The continually increasing need for organs led to the reintroduction of the principle of donation after cardiac or circulatory death (DCD) in the early 1990s with the Pittsburgh protocol to complement already available organ procurement from brain – dead persons. A new federal mandate requires hospitals as of January 2007 to design policies and procedures for organ procurement in DCD to increase the rate of organ donation and recovery from decedents to 75% or greater.

However DCD is controversial because of medical, moral, and legal uncertainties about the premise that donors are indeed dead before their organs are procured. We contend that the recovery of viable organs useful for transplantation is

DCD is not compatible with the dead donor rule. In order for the current principle of DCD to proceed with recovery of transplantable organs from decedents, a paradigm change in the ethics of organ donation is necessary. The paradigm change to ensure the legitimacy of DCD practice must include 1) societal agreement on abandonment of the dead donor rule, 2) legislative revisions reflecting abandonment of the dead donor rule, and 3) the requirement of mandated choice to facilitate individual participation in organ donation and to ensure that DCD is in compliance with the societal values of respect for autonomy and self-determination.

Cloning Technology with Morality

Discussion of morality at the UN level, often brings to mind the notion of deep, profound, commonly held principles to guide human actions in accordance with some higher purpose. It may emanate from belief of a religious nature, or from concern for human, animal, environmental welfare. Definition of the boundaries and scope of any moral principle and the measures necessary to adhere to it faithful is however not an exact science, especially when recognizing that there are several thousand different ethnic groups in the world and their cultural ethos vary. While general moral principles such as the principle of doing no harm in medical practice are widely respected the question of what amounts to harm is less easily defined. The debate on reproductive and research cloning has demonstrated the fluidity and diversity of moral beliefs in this area. It is interesting for instance to note that while there is an almost complete consensus amongst countries with regard to the need to ban reproductive cloning, a number of academics and some religious groups do not necessarily believe that such cloning is unethical.

Perhaps, unsurprisingly, the moral debate on cloning tended to blur the lines of separation between the church and state, to an extent that had not been so obvious at the international levels for some time. The highly charged issue challenges the bases of many religious beliefs and places, science and religious at logger hands. Questions were raised such as whether it is appropriate to allow for the creation and destruction of embryos for the sole purpose of harvesting stem – cells which may safe the life of a sick person, is at the very heart of this debate. Whether responsibility to respect the human dignity of a person dying with debilitating illness outweighs responsibility to prevent scientists from culling cells from destroyed is a dilemma which cannot be easily resolved through impassioned international debate. In the search for a common

moral standard by which to be guided the global community is frequently hampered by intransigence, dogma and personal and institutional ambition. This polarized atmosphere is not conducive to development of a consensual position based upon the need for respect of diverse and sometimes conflicting views. While national governance mechanisms can be constructed to reach compromise decisions, it has not proved possible at the global level.

Discussion of the broad range of moral perspectives that address the issue of cloning is beyond the scope this study. However, it is considered important to provide readers with a brief overview of some of the key moral concepts that have direct bearing upon the development of international law and policy in the area to this ethical consideration will be looked at under the following five areas: a) Human Dignity b) Cloning and Nature c) Human Health d) Social Justice e) Freedom of Research and Choices

Conclusion

The long term solution for overcoming the shortage of transplantable organs is to focus on, and to broadly implement, universally accessible preventive health – care programs for the short term, increasing the number of potential donors white also maintaining the public education a consent process characterized by full disclosure of relevant information, about organ donation and procurement procedures critical to the decision making about organ donation, and a switch of the moral paradigm from beneficence to nonmaleficence and respect for individual autonomy to allow for DCD to comply with legal and moral standards. The implementation of mandated choice for obtaining consent would appear reasonable and morally justifiable to assist with the objective of increasing the number of people who consent to organ donation after death. Ultimately, the outcome of public debate must be the decisive factor in determining the conditions under which DCD should be considered legitimate. This way Bio- Technology can be servived with Morality.

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