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Report of IBC on the Principle of Respect for Human Vulnerability and Personal Integrity

This Report is the result of a long reflection within the International Bioethics Committee (IBC) which began at its fifteenth session (Paris, October 2008), was pursued at its sixteenth session (Mexico, October 2009), and was further developed within the framework of its work programme for 2010-2011.

It does not pretend to be exhaustive nor prescriptive and does not necessarily represent the views of the Member States of UNESCO.

I. INTRODUCTION

1. Article 1 of the UNESCO *Universal Declaration on Bioethics and Human Rights* (2005) (hereafter “the Declaration”) states that it seeks to address the “ethical issues related to medicine, life sciences and associated technologies as applied to human beings, taking into account their social, legal and environmental dimensions”. Article 8 reinforces this commitment by linking it to respect for personal integrity and the need to protect vulnerable individuals and groups:

In applying and advancing scientific knowledge, medical practice and associated technologies, human vulnerability should be taken into account. Individuals and groups of special vulnerability should be protected and the personal integrity of such individuals respected.

2. This notion is not new. The concept of vulnerability appears in important national documents, starting with the US *Belmont Report* of 1978, and in international documents, such as the third and most complete version of the *International Ethical Guidelines for Biomedical Research Involving Human Subjects* of the Council for International Organizations of Medical Sciences (CIOMS) (2002) and in the latest (2008) version of the *Declaration of Helsinki*, which makes specific reference to vulnerability in articles 9 and 17.

3. Article 8 of the Declaration entails both a ‘negative’ duty to refrain from doing something and a ‘positive’ duty to promote solidarity and to share the benefits of scientific progress. There is an integral relationship between respect for the integrity and dignity of persons on the one hand and the vulnerability of persons on the other. Indeed, UNESCO itself had previously acknowledged the importance of the principle according to which States “should respect and promote the practice of solidarity towards individuals, families and population groups who are particularly vulnerable” with regard to disease or disability of a genetic character (*Universal Declaration on the Human Genome and Human Rights*, 1997).

4. The UNESCO International Bioethics Committee (IBC) has focused its two more recent Reports on the principles of *consent* (Art. 6 of the Declaration) and of *social responsibility and health* (Art. 14). This Report on article 8 of the Declaration will investigate the scope and content of the principle of respect for human vulnerability and personal integrity, focusing on special vulnerabilities and taking into account conditions that, more or less directly, impinge upon the capacity to live as a free, autonomous individual and the right to live in a world where significant inequalities in the capacity to meet everyone’s basic needs are adequately addressed.

5. Article 1.2 of the Declaration makes it clear that it is addressed to States. However, States and governments are not the only addressees of Article 8. As in the case of the principle of social responsibility, it is rather necessary to boost awareness of the responsibility that all sectors of society share and to promote, at the international as well as the domestic level, those strategies and means of cooperation that are most likely to effectively address the determinants of “special” vulnerability to which Article 8 refers. Of course, both an in-depth reflection on the concept of vulnerability as a general feature of the human condition and denunciation of political, economic or cultural discrimination among human beings are important. Nonetheless, they constitute the background more than the focal point of the challenge faced in Article 8. The specific task of this Article is to address special vulnerabilities that occur, whether as a consequence of personal disability, environmental burdens or social injustice, in the contexts of health care, research and the application of emerging technologies in the biomedical sciences. Article 8 enjoins everyone to exercise vigilance in protecting the well-being of individuals and groups in these contexts. As the Declaration (taken as a whole) confirms, every human being has a claim to our care that must be respected.

II. THE DETERMINANTS OF “SPECIAL VULNERABILITY”

6. The human condition implies vulnerability. Every human being is exposed to the permanent risk of suffering “wounds” to their physical and mental integrity. Vulnerability is an inescapable dimension of the life of individuals and the shaping of human relationships. To take into account human vulnerability acknowledges that we all may lack at some point the ability or the means to protect ourselves, our health and our well-being. We are all confronted with the possibility of disease, disability and environmental risks. At the same time, we live with the possibility that harm, even death, can be caused by other human beings.

7. Of course, article 8 does not require us to *protect* vulnerability as such, but rather vulnerable individuals, families and groups in the contexts in which they live. While some groups of people can always be considered vulnerable because of their status (e.g. children), others may be vulnerable in one situation but not in another. Therefore, vulnerability cannot be considered as a one-off concept. The principle of respect underpinned in Article 8 entails a commitment to identify threats to well-being and appropriate means to foster the principles stated in Article 3 to be the primary ones “to be respected”: human dignity, human rights and fundamental freedoms. Thus, attempts to define vulnerability in general risk drawing the concept too widely or too narrowly, thereby triggering disputes rather than resolving them. In most cases, however, it is relatively easy to recognise vulnerability when it arises: something fundamental is indeed at stake.

8. That is also why human vulnerability and personal integrity, the other essential concept evoked in Article 8, relate to each other. When a part of our body is inappropriately ‘touched’ (this is the meaning of the ancient Latin verb from which the noun ‘integrity’ stems), our life itself, or at least our health, may be threatened. When our freedom is hampered, either by adverse circumstances or by the actions of others, we experience a “wound” to our identity, to its value and dignity. Preservation of integrity implies protection against these kinds of intrusions, the capacity to “say no” to any sort of impingement upon our freedom or to any sort of exploitation of our body and our environment. We are nonetheless committed at least to seek to ameliorate the effects of harms and disadvantages imposed by circumstances. This is a prerequisite of human flourishing and self-fulfilment.

9. The Declaration, taken as a whole, enjoins governments, but also public and private institutions and individuals, to exercise greater vigilance in protecting the well-being of every human being in the face of advances in the fields of medicine, life sciences and associated technologies. By doing so, it underscores the importance of a wide array of principles familiar to the language of both moral and juridical sciences: autonomy, beneficence, justice, dignity, equality and the like. The principle of respect for vulnerability and personal integrity not only emphasises these aims, but also clarifies that the final goal of the progress of science in the bioethical domain cannot solely be profit. Vulnerability as a human condition calls on every human being, especially those who have the responsibility to advance knowledge and to decide how to use it, to fulfil the fundamental obligations we have one to another. It has been said that acknowledging the reality of vulnerability might provide a bridge between the moral ‘strangers’ of a pluralistic society, thereby enhancing the value of solidarity rather than mere individual interests.

10. At the same time, Article 8 clarifies that we cannot be satisfied with the simple exercise of restraint and forbearance in pursuing our own objectives when this might threaten the autonomy and dignity of others. We are compelled to act in a positive way to help other people cope with the natural or social determinants of vulnerability. Article 24 underscores the duty to “respect and promote solidarity between and among States” and points out some circumstances that may render individuals, families and groups vulnerable: disease; disability; other personal, societal or environmental conditions or limited resources. There is no doubt that the empowerment of people to protect them from special vulnerabilities in health care entails making more resources available, providing safe living conditions and access to quality health care as a precondition to every human being’s “enjoyment of the highest attainable standard of health” (Art. 14 of the Declaration). In this sense, commitment to respect for human vulnerability and personal integrity is a necessary constituent of unavoidable political responsibilities.

11. Humankind as such is vulnerable, but there are individuals, groups and situations to which a greater attention must be paid. This is the essential point to underline. Article 8 explicitly addresses the “special vulnerability” of individuals and groups, inasmuch as they are potential recipients of therapies, involved in scientific research or potential recipients of the products or technologies deriving from the advancement and applications of scientific knowledge. Of course, this is not the only context in which vulnerability occurs. Human dignity, human rights and fundamental freedoms are equally at stake in many other fields of human activity. They are, however, relevant to the scope of the Declaration only insofar as they overlap with the specific tasks of bioethics and medical ethics.

12. Two fundamental categories are highlighted that are relevant to these special responsibilities and obligations:

- a) special (temporary or permanent) disabilities, disease and limitations imposed by the stages of human life;
- b) social, political and environmental determinants: for example culture, economy, relations of power, natural disasters.

13. In a) for example, children are assumed to be vulnerable regardless of their social conditions. Elderly people may be more vulnerable because of their reduced physical and sometimes mental capacities. Persons with disabilities need help to access and sustain the exercise of their self-determination. Persons with mental disorders may not be able to defend themselves or claim their rights. These can all be considered as “natural” determinants of special *individual* vulnerabilities. Of course, a crucial distinction is to be made between these and special vulnerabilities which result from a deliberate restriction of autonomy.

14. The issue of social, political and environmental determinants is more complex and involves the fundamental matter of justice in the relations between individuals, groups and States. Many individuals, groups and populations nowadays become especially vulnerable because of factors created and implemented by other human beings, in many cases in blatant violation of fundamental human rights. Social vulnerability is a phenomenon determined by the structure of people’s and communities’ daily lives. Situations of social vulnerability usually interfere with the self-determination of individuals and lead to significantly increased exposure to risks caused by social exclusion. Social vulnerability plays a role not only in biomedical research but also in the healthcare setting and in the development, implementation and application of emerging technologies in biomedical sciences and is a fact of life for a considerable portion of world’s population. Vulnerability is caused or exacerbated by a lack of means and of the capacity to protect oneself, as in the following examples:

- poverty, inequalities in income, social conditions, education and access to information (e.g. unemployed persons, homeless persons, illiterate persons, individuals involved in research activities that follow a ‘double standard’ procedure in which the same research is not subjected to the same ethical scrutiny in different locations);
- gender discrimination (e.g. lack of equitable access to healthcare);
- situations of substantial limitation or deprivation of personal liberty (e.g. prisoners);
- hierarchical relations (e.g. students involved in research projects carried out by their teachers, employees in situations where safe working conditions are not guaranteed, members of the armed forces or the police);
- marginalization on various grounds (e.g. immigrants, nomads, ethnic and racial minorities);
- trade-offs between the right of every human being to quality health care and other rights, such as intellectual property rights, whose inappropriate protection can directly or indirectly impinge negatively upon the sharing of the benefits of scientific progress;

- exploitation of resources in developing countries (e.g. the consequences of deforestation which can compromise duties towards future generations);
- wars (e.g. asylum seekers and displaced persons);
- negative effects of human activity, for example climate change or different kinds of pollution;
- impact of natural disasters like earthquakes, hurricanes or tsunamis leading to death, injury and displacement.

15. All of these examples help contextualize the issue of vulnerability and respect for personal integrity within the three specific domains pointed out in Article 8. They serve to highlight the issues in the healthcare setting, in the researcher-participant relationship in human participant research, and in the development and application of emerging technologies in the biomedical sciences. In each of these settings people are vulnerable in ways over and above that which the human condition necessarily involves.

16. As to vulnerability in the healthcare setting, it is well understood that even those patients whose physical and cognitive capacities meet or exceed those of the average human population are uniquely vulnerable when submitting to medical care, given the greater expertise and social authority of the treating physician (and other professionals). A patient's vulnerability may be further aggravated by his or her illness – pain, discomfort and the desire for healing can frustrate reasoning and sound judgment. This is *a fortiori* true of those patients whose physical or cognitive abilities are severely diminished such that their capacity for self-determination is limited or even non-existent. In all healthcare settings, the patient, to a greater or lesser degree, depends on the skills, expertise, judgment and good will of the treating professional. Individually and collectively, patients are thereby uniquely vulnerable. Article 8 calls our attention to this fact and enjoins decision makers to respond in a fitting way. One possible option would be for States to develop a patients' rights charter which would be instrumental in protecting those who are especially vulnerable in the healthcare setting.

17. The same is true of human participants in biomedical research. However, in this context, the additional safeguard of the physician's (or researcher's) primary focus being on restoring the patient to health is absent. The interests of researchers and subjects are not always aligned as they are in the relationship between healthcare professionals and patients, thus amplifying concerns regarding vulnerability in this domain. Moreover, in some instances, the researcher's (or society's) understandably strong desire to pursue useful generalisable knowledge gives rise to the temptation to under-protect or ignore the participants' well being. The Declaration's emphasis on special vulnerability rightly invites careful attention to this and related concerns in the human research context. It is clear, however, that the engagement of people as participants in clinical research is key in providing solutions to, and understanding of, medical problems afflicting humankind. Biomedical research, including clinical research, has evolved over the years to the extent that international and national standards and guidelines have been developed. The practices uncovered at the Nuremberg trials showed the range and extent of the abuse of human beings in research and resulted in a flurry of activity on this subject. The resulting Nuremberg Code⁽¹⁾ provided the template for a number of successive declarations on human participant research, culminating in the World Medical Association's Declaration of Helsinki, which states that:

Medical research is subject to ethical standards that promote respect for all human subjects and protect their health and rights. Some research populations are particularly vulnerable and need special protection. These include those who cannot give or refuse consent for themselves and those who may be vulnerable to coercion or undue influence.⁽²⁾

1. Available at <http://ohsr.od.nih.gov/guidelines/nuremberg.html> (accessed 03/08/2010).

2. Declaration of Helsinki, article 9. Most recently revised at the 59th WMA General Assembly, Seoul, October 2008.

18. Equally, some individuals or communities may be denied access to, or the benefits of, research. They too are especially vulnerable.

19. It is especially important in all forms of research that close attention is paid to the kinds of pressures that might encourage people to act in a manner that potentially competes with their own interests; in particular, the avoidance of coercion or of the appearance of coercion is vital. Coercion may arise from a number of sources, including the simple omission of relevant information about possible risk. As research is often conducted by investigators from the developed world in countries of the developing world, a number of concerns arise acutely. First, the personal, economic or socio-political situation of potential research participants may render them vulnerable to exploitation. Second, again because of the so-called 'therapeutic misconception', people may agree to participate in research in the mistaken belief that there may be some benefit for them; this is particularly likely where healthcare services are inadequate or unavailable. CIOMS' most recent guidelines note that, special justification is required for inviting vulnerable individuals to serve as research participants and, if they are selected, the means of protecting their rights and welfare must be strictly applied⁽³⁾.

20. Advances in biomedical science and biotechnology have opened the way for many new and powerful capacities for the protection of human welfare. At the same time, they have created novel and potent mechanisms of exploitation and degradation. Such advances potentially give rise to a *special vulnerability* for individuals and groups to which Article 8 rightly draws our attention.

21. Each of these contexts presents instances where individuals and groups may be vulnerable in a unique and amplified form. A number of examples follow which illuminate some situations within healthcare, human participant research and the development of biotechnology which give rise to "special vulnerability". It is, of course, not intended that these examples are exhaustive of situations where vulnerability can be identified; rather, they are illustrative.

III. VULNERABILITY IN THE HEALTHCARE SETTING

III.1 Access to healthcare

III.1.1. Poor people in developing countries

22. According to the Joint United Nations Program on HIV/AIDS (UNAIDS) in its 2008 report⁽⁴⁾, by the end of 2007, 33.2 million people were living with HIV, of whom 2.1 million were children, and 2.1 million died from AIDS. Some 6,800 people are newly infected with HIV every day because of poor access to affordable, proven interventions to prevent HIV transmission. Only 2700 people receive antiretroviral therapy per day. Only 31% of people in need were receiving antiretroviral therapy in 2007, and only one third of infected pregnant women receive antiretroviral drugs to prevent transmission; even fewer receive medications for their own health.

The Nature of the vulnerability: A shortened life of poor quality and the risk of imminent death.

The cause or context of the vulnerability: The inability or failure of States to purchase adequate supplies of existing and effective drugs, coupled with the inadequate promulgation of preventive strategies.

3. For discussion, see Macrae, D.J., 'The Council for International Organizations and Medical Sciences (CIOMS) Guidelines on Ethics of Clinical Trials', Proc. Am. Thorac. Soc. Vol. 4, 176–179, 2007.

4. Available at <http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008> (accessed on 02/08/2010).

Remedies: States to intervene directly by providing adequate health education and access to available therapies. International solidarity to be encouraged to facilitate such provision.

III.1.2. Disadvantaged people in developed countries

23. A 24 year old female with a history of headaches consulted a physician for treatment. Following the initial diagnosis, it became clear that advanced diagnostic tests were required, but these tests were expensive and not covered by her insurance. Under these circumstances, the tests were not offered. A few months later, further examination revealed an advanced cerebral tumor, which had a poor prognosis.

The nature of the vulnerability: Lack of access to diagnostic tests which fatally delayed possible life-saving treatment.

The cause or context of the vulnerability: Advanced diagnostic tests could have permitted an early diagnosis, which might have given the patient a better prognosis. However, tests or therapies that patients are unable to pay for, either directly or by insurance, are not made available by the healthcare system. Patients are, therefore, not always informed about alternative techniques and therapies.

Remedies: The availability of appropriate healthcare resources to meet the needs of the patient population irrespective of ability to pay, and the requirement that full information is available to patients about alternative diagnostic or therapeutic opportunities.

II.1.3. Migrants

24. P. was a young pregnant woman who was an immigrant in a country which provides free access to quality health care for all its citizens. During her pregnancy, she did not seek ante-natal care and was never visited by a doctor. At the moment of delivery, her husband took her to the hospital, but the newborn immediately needed intensive care and ventilation. The child was premature and its birth weight was extremely low compared with children of the same gestational age. P. suffered serious kidney and liver problems that required lengthy treatment. A survey carried out in the hospital showed that this sort of complication and the rate of in-hospital mortality were significantly higher in the case of babies born to immigrant women. These rates appeared to be related to risk factors which could be easily prevented by routine testing during pregnancy.

The nature of the vulnerability: Migrants may not be aware whether or not they have a right to treatment. They may also be unaware of the range of tests and therapies available, and may be impaired in their ability to seek access to care.

The cause or context of the vulnerability: Migrants in general, whether within or between States, may find themselves marginalized, because of a lack of knowledge of local language and social and legal entitlements.

Remedies: Thorough social integration of migrant individuals and communities into the mainstream, better and more targeted education about healthcare risks and ease of access to healthcare professionals.

III.2 Provision of appropriate healthcare

III.2.1. Paediatric HIV infection

25. Antiretroviral therapy (ART) coverage of all age groups in sub-Saharan Africa was 44% in 2008, compared to 33% in 2007. However, only 5-7% of those receiving treatment were children. Out of 22 antiretroviral drugs approved and available for use in adults, 6 have no paediatric indication and 7 have no paediatric formulation.

The nature of the vulnerability: The high risk of infection leading to an early death, as well as the inappropriate use of drugs not tested upon children or not suitable for them. The health and well being of children are threatened by being potential recipients of therapies that are not formulated for them and where the data on toxicities is limited.

The cause or context of the vulnerability: The lack of paediatric formulation for the treatment of HIV/AIDS means that children are administered crushed drugs or those in powder form which need to be reconstituted with clean drinking water. In resource poor settings clean water may not be available, leading to additional problems such as infections, diarrhoea and vomiting. In addition, children are not mini-adults, and it is important that ethically sound research into the development of paediatric therapies is conducted. A lack of appropriate care and education during pregnancy and childbirth, as well as the absence of alternatives to breast feeding for many HIV positive women, conspire to spread HIV to future generations.

Remedies: The provision of targeted educational programmes for women, coupled with the availability of appropriate medication suitable for paediatric use.

III.2.2. Unfair allocation of resources

26. A 73 year old diabetic patient was admitted to hospital with obstructive vascular disease and necrosis of his right foot. The amputation of his right leg was indicated. The surgery was scheduled on a number of occasions but was postponed due to a shortage of resources and because of his age. He remained hospitalized for 5 months, and his leg was never amputated. Finally, he succumbed to sepsis and died, despite the fact that the amputation could have saved his life.

The nature of the vulnerability: The patient was more vulnerable to death because of the policy to discriminate against older patients when allocating scarce resources.

The cause or context of the vulnerability: The increase in healthcare costs reduces the opportunities for many patients to receive appropriate treatment. While more and more technologies are available, they are used on fewer patients because of associated costs. The uneven availability of medical treatment occurs even in developed countries, but has even more dramatic dimensions in developing countries.

Remedies: States should have in place a robustly resourced healthcare system that fairly and without discrimination provides adequate care to all citizens.

III.3 Inequality of power in healthcare

III.3.1. Disrespect for the patient's will

27. A 78 year old man with terminal lung cancer was admitted at the emergency room because of respiratory failure. The medical exam and x-rays showed evidence of respiratory infection. The patient was transferred to the Intensive Care Unit (ICU). He asked for a no intubation order. When the doctor talked to the patient's family, to explain to them that the patient would probably need intubation, the patient's daughters challenged their father's wishes because of their religious beliefs. A few hours later, the patient had severe respiratory failure, but he refused to be intubated. Minutes later he fell into a coma, was intubated and connected to mechanical ventilation. The next day he underwent dialysis. During the next 20 days, he continued to be intubated, underwent dialysis, received antibiotics, mechanical ventilation and hemodynamic support, until he finally died.

The nature of the vulnerability: The clear wishes of the patient were disregarded and his autonomy was thus disrespected. There is no suggestion in the case that his autonomy was impaired at the time he made his wishes clear.

The cause or context of the vulnerability: The principle of informed consent is at risk whenever someone claims to know what is the right thing to do, and insists that his or her decision should prevail over the self-determination of the patient, whether that person is the physician or a family member. In this case, the precarious condition of the patient alone cannot justify overriding his wishes but the dire consequences of not intubating and the pressure from the family serve to undermine respect for patient autonomy.

Remedies: Reinforcement of the need to protect an individual patient's integrity, including specifically the importance of respecting the right to refuse treatment. Appropriate clarification of the legal relevance of the views of relatives of incompetent patients should be provided to healthcare professionals as part of their professional education.

III.3.2. Professional self-interest

28. A doctor devises a treatment which he/she believes is likely to be beneficial, and advertises and offers it to many patients, without disclosing that he/she stands to benefit financially and that the procedure has not been satisfactorily tested.

The nature of the vulnerability: The vulnerability is to financial exploitation and potential physical harms.

The cause or context of the vulnerability: The inequalities in the doctor-patient relationship, the relationship between the expert helper and the needy patient, made the patients vulnerable to exploitation and harm as a result of the powerful combination of the attractiveness of the promised outcomes and the perceived authority of the caring doctor.

Remedies: The creation and enforcement of safety controls for medicines and medical devices and insistence on independent ethical review of innovative treatments, including the use of medical devices.

IV. VULNERABILITY IN HUMAN PARTICIPANT RESEARCH

IV.1. 'Double Standard' research

29. The proposal was made that a new vaccine be tested on citizens of a developing country where the targeted disease had reached epidemic proportions. The proposal failed to pass the scrutiny of ethical review committees in the country of origin on the grounds of safety. The justification for moving the application to the needy country was said to be that the extra risks for participants could be justified by the pressing needs of their country's population. In addition, the research institutions in the targeted communities were offered significant financial incentives to participate.

The nature of the vulnerability: The vulnerability was to the loss of individual dignity, the risk of exploitation and threats to wellbeing. In addition, it is unlikely that the residents of this poor country would be able to afford access to the vaccine should it prove efficacious.

The cause or context of the vulnerability: The needs of the target population could be argued to be almost overwhelming. However, they also created a powerful temptation to overlook the needs of a small number of individuals who might potentially become infected as participants in the study, given that these vaccines have the potential to cause infection with the target disease and that safety was the issue which caused the body reviewing the ethics of the research protocol not to approve the clinical trial. This increase in vulnerability to the harm caused by the disease in the name of the public good was a threat to their dignity and autonomy as individuals. Moreover, there was reason to doubt that the research could be ethically justified. Additionally, the handsome rewards offered to the research institutions which were in desperate need of funds encouraged researchers to sacrifice the interests of individual participants to the interests of society, in direct opposition to a fundamental rule of medical research.

Remedies: Insistence that research protocols be approved both by independent ethics committees in the country of origin of the research and in the country where the research is to be executed. In the absence of ethical review networks in the country of the research, companies should actively support the creation of such facilities before making proposals to carry out research in the area in question. Moreover, there should be a guarantee that the benefits derived from such research will be shared with the research population.

IV.2. Equivocal donations

30. A gift of much needed antibiotics was made to a country torn by civil war, as part of an international aid package in the form of a drug which has not been fully tested or licensed. The gift was dependent on an agreement by the doctors administering the drug to monitor the use and outcomes of the drug and report results back to the donor.

The nature of the vulnerability: The nature of the vulnerability is to exploitation and possible harm to health.

The cause or context of the vulnerability: The desperate shortage of antibiotics and the extreme needs of the population made the improper offer attractive to the potential recipients. The potential harm results from the lack of transparency of the donation and pressure on potential recipients – even if they were informed of the condition of the gift – to take risks that they would likely, in normal circumstances, be unwilling to take. The subterfuge in fact avoided the disclosure of risks and the necessity of obtaining consent to participate in research rather than medical treatment.

Remedies: The creation and enforcement of strict international controls over the export of medicines from donor countries, with special vigilance in emergency situations.

IV.3. Inappropriate research

31. Drug company A, a large multinational company, initiated a human participant ‘trial’ whose purported aim was to evaluate the relative efficacy of its own product in relation to similar drugs produced by companies B and C. The trial – which was conducted by eminent doctors in highly regarded academic institutions and who received significant financial benefit – purportedly established that the drug was indeed more efficacious than those of the other companies. However, analysis of the published results subsequently showed that the trial design was flawed in such a way that it was not unbiased.

The nature of the vulnerability: Participants were exposed to unnecessary risks and were not provided with honest and accurate information about the purpose of the ‘trial’. Their autonomy and wellbeing were at risk. The fact that eminent doctors and institutions were involved resulted in patients ‘volunteering’ for something in which they might otherwise have declined to participate.

The context and cause of the vulnerability: The ‘trial’ was inherently flawed and arguably entirely unnecessary, and it was, in fact, little more than a marketing exercise.

Remedies: Enhanced regulatory control of clinical trials of medicinal products and improved scientific and ethical review of such proposals.

IV.4. Social vulnerability

32. A woman of African origin, 45 years old and resident in a poor neighborhood in a big city of a developing country, had recently been abandoned by her husband. She was the mother of six children, living in poverty. Her 4 year old son was unwell, with a possible diagnosis of acute glomerulonephritis. Overcrowding at the hospital meant that her son had yet to be seen by a doctor after one full day of waiting; she was eventually informed that her son would be entitled to receive the necessary interventions if she would participate in a clinical trial being developed at the hospital. She would be required to take two tablets of a

new anti-inflammatory drug, daily, for 15 days. She agreed to participate in return for the treatment her son needed.

The nature of the vulnerability: The woman's autonomy was at risk as her ability to provide a valid consent was in doubt, given her concerns for her son's health. She was also vulnerable to any risks involved in the trial.

The cause or context of the vulnerability: Situations of social vulnerability often interfere with the power of self-determination of individuals and lead to significantly increased exposure to a variety of risks. Some of the contextual factors that generate social vulnerability in biomedical research are: poverty and low educational level among the population; difficulty in accessing healthcare; being female; marginalised racial and ethnic background; low capacity for research in a country.

Remedies: The alleviation of poverty and strict limitations on the use of potentially coercive incentives to participate in research.

IV.5. Vulnerability as a result of lack of research

33. A group of diseases, known as Neglected Tropical Diseases (NTDs), are parasitic and bacterial tropical diseases that primarily affect the most impoverished and vulnerable populations in the world. Pharmaceutical companies show little interest in their treatment and eradication as research and development costs are likely to exceed or reduce profit.

The nature of the vulnerability: The vulnerability is to potential physical harm and discrimination as to the right of every human being to the highest attainable standard of health.

The cause or context of the vulnerability: People suffering from NTDs are usually poor and lack access to quality health care and essential medicines. Pharmaceutical industries have failed to invest in the necessary research and development to produce treatment for these conditions.

Remedies: Recognition of the right of all peoples to benefit from scientific advances and its applications is fundamental. Global corporations should be encouraged by the international community and national governments to engage in 'public good' research. If research were conducted and resulted in appropriate treatment for these conditions, the treatment must be affordable for the populations of the countries where these conditions are endemic.

Moreover, particular attention should be paid to the special vulnerability of the groups who would be the subjects of this research. This would require a robust infrastructure to protect people from exploitation or harm. Governments should take responsibility for their citizens by developing policies that give priority to vulnerable communities with the aim of improving their quality of life.

V. VULNERABILITY IN THE DEVELOPMENT AND APPLICATION OF EMERGING TECHNOLOGIES IN THE BIOMEDICAL SCIENCES

V.1. Stigmatisation

34. A research study using DNA genetic technologies was conducted on a specific ethnic community, whose members were informed that the research was part of a study of cigarette use. A mutation was discovered which had been suggested in the literature possibly to indicate a tendency to criminality and violence. The researcher intuitively linked the finding to the higher representation of members of this group in the country's prisons. This was not the purpose of the research to which the community concerned had consented, but the press took up the 'finding' with enthusiasm. The result was an unsubstantiated claim against this group which was socially damaging and offensive.

The nature of the vulnerability: The vulnerability was to the stigmatisation, victimisation and social discrimination of all members of the group.

The context and cause of the vulnerability: The research 'findings' were foreign to the objectives of the research in which the participants had agreed to participate. No permissions had been sought to amend the research protocol. In addition, the conclusions drawn showed a misunderstanding of the nature of genetic susceptibilities, and drew conclusions that were not substantiated by the research itself.

Remedies: Regulations should be established that require proper consultation with social groups of participants rather than simply with individual participants in the preparation of protocols for studies where knowledge about the group as a whole is sought. The objectives of such studies should be clearly agreed in the consent procedure. Any amendments to the protocol should be reconsidered by the group or its representatives and specific consent sought.

V.2. Unfair pressure

35. Because of a shortage of volunteers prepared to provide oocytes to a clinic's authorized assisted reproduction programme, a scheme was devised to recruit 'volunteers' by offering free access to IVF cycles on condition that the woman agreed that her surplus oocytes would be donated for the treatment of other infertile women. This free service is offered in return for undergoing one procedure of ovarian hyperstimulation, and the harvesting of resultant oocytes for use in the treatment of infertile women who are clients of the clinic.

Nature of the vulnerability: The vulnerability is the threat to the autonomy and wellbeing of the 'volunteers'.

The cause and context of the vulnerability: The offer of a reward in kind to these needy patients put them under considerable pressure to do what most women who have no such needs would not contemplate doing (*vide* the shortage of donors). They were singled out as a group who were likely to have a weakened resistance to the proposal because of their infertility. In addition, in some cases the incentive to participate was exacerbated by the women's inability to pay for IVF treatment which would otherwise be unavailable to them.

Remedies: Regulations to provide for ethical review of all clinical interventions offered with no promise or expectation of clinical benefit to the patient, including stricter licensing, oversight, monitoring and evaluation of clinics offering these services.

V.3. Premature applications of technology

36. A new sunscreen advertised its superior effectiveness in protecting against UV rays by describing the product as microfine. The description referred to the nanoparticles of Zinc Oxide in the cream. Nanoparticles have been demonstrated to have heightened and powerful properties compared with the normal inorganic particles of materials. However they have also been shown to be capable of penetrating cells, crossing the blood brain barrier and producing serious lipid and protein damage. Yet the cream was marketed on the basis that it provided greater protection of health than other creams.

Nature of the vulnerability: The lack of information in the beguiling advertisement of the product and the lack of adequate risk assessment of the effect of rubbing millions of particles on to the skin fail to facilitate an autonomous decision to apply the cream and threatens the health of the user while promising to do just the opposite.

The cause and context of the vulnerability: The commercial pressure to recoup research and development costs of a technology and to gain an advantage over rival products corrupts the endeavour to provide better healthcare. Undue haste in marketing products by short circuiting proper risk assessment results in hazards to the health of consumers.

Remedies: Cosmetics should be as strictly assessed for safety as pharmaceutical products. Licensing bodies should be aware that the safe use of materials in their normal inorganic state does not provide an adequate guide to their use in nanoparticulate form.

V.4. Genetic information and patient privacy

37. A woman gave birth to a child with serious genetic abnormalities. The clinical team recognised that she carried a mutation responsible for the condition of the neonate. It was a mutation that was likely to be carried by any sister of hers. On enquiry the team discovered that she had a sister in her early twenties. They sought the patient's permission to contact her and offer a genetic test. The patient refused on the basis that she hated her sister and hoped that she had a similar experience and, further, that she did not want the sister to know about the reason for the child's misfortune.

The nature of the vulnerability: The technology gave rise to two special vulnerabilities in this case. The first was the vulnerability of the patient to an invasion of her privacy if her genetic health information was revealed to another. The second was the vulnerability of her sister to experience what was now an avoidable health hazard.

The cause and context of the vulnerability: Genetic information is not simply information about the presenting patient but might well be information about biological relatives too. Insofar as this is so, there will be inevitable tensions involved in decisions to share or deny such information to those relatives for whom it might be important for health reasons. This might be described as a tension between the right to know, on the one hand, and the right to privacy on the other.

Remedies: Policies should be developed to aid clinicians in such decision making. This is a difficult task, but one possible criterion for divulging confidential information of this kind without the consent of the patient would be the seriousness of the possible health consequences of leaving the relatives involved in ignorance of the matter. Quite different considerations would apply to the many other threats to privacy engendered by the possession of genetic information. These would include access to the genetic data of patients by researchers, insurance companies, employers and governments. Such disclosures would engender major vulnerabilities to restrictions of civil liberties.

V.5. Unexpected risks

38. X-linked severe combined immune deficiency (X-SCID) is a rare genetic disease where gene therapy (which entails modifying or replacing disease causing genes using genetic engineering techniques) was used in clinical trials. Unfortunately, in some of the children treated, leukemia developed after 3-6 years. This result was attributed to the retroviral vector used to carry the gene to the cells. Cancer developed in patient groups from different centers that were using the experimental treatment. Protocols had to be redefined after the trials have been suspended.

The nature of the vulnerability: Other effective treatments are not yet available and, while those who enter this kind of trial may otherwise die untreated, the full risks of participation cannot be envisioned.

The cause and context of the vulnerability: In life sciences gene therapy is a new form of therapy with high hopes for genetic diseases. However, patients often enter clinical trials without foreseeable knowledge of the increased risk due to the experimental protocol.

Remedies: A full explanation to those contemplating entering such trials concerning what is, and is not, known about the potential risks of their participation.

V.6. Unconsented collection of genetic data

39. A medical organisation proposed that a programme of community genetic screening be introduced by means of which a complete genetic map of neonates could be produced at birth which would constitute part of their permanent medical record. Such a programme would provide valuable information for the development of future health policies and health research. It would also make it possible for the owners of the map to benefit rapidly from scientific developments in pharmacogenomics and disease prevention as they came to light.

The nature of the vulnerability: The persons from whom data were collected were unable to consent to the collection and storage of this data when there was no imminent need for that information, thereby undermining their potential future autonomy. While parents are generally permitted to offer consent on behalf of their incapable children, this is usually constrained by the need to consider the best interests of the children in question.

The cause and context of the vulnerability: Knowledge of one's genetic profile can provide diagnostic information about late onset conditions and a growing number of susceptibilities to diseases such as breast cancer. While it might be thought that to be warned of the possibility of developing a serious condition in the future would be an advantage, there are some consequences that need addressing. For example, the potential threat to privacy that arises from the mere holding of this information, raises the possibility of discrimination based on genetic profile. In addition, while individuals may wish to know such information, routine neonatal genetic screening makes the right not to know one's genetic status unavailable.

Remedies: Careful consideration of the benefits and drawbacks of collection of such information and the consequences of encouraging parental consent in the absence of the full knowledge of the potential harms. These harms may result either from the fact that the information is recorded, or from the possibility of causing distress to children once they are mature enough to gain access to this information.

VI. CONCLUSIONS

40. In this report, IBC has provided both a theoretical account of the principle of respect for personal integrity and the need to protect those who are especially vulnerable, as well as a series of practical examples. These examples are not exhaustive of the issues that could be raised; they are rather intended as a useful template for further discussion and development.

41. Vulnerability as a risk of a human being to be harmed in his or her physical and mental integrity is an element of human condition. Special vulnerability in the scope of Article 8 of the Universal Declaration on Bioethics and Human Rights means that there are individuals and groups that are especially prone to violation of personal integrity or disrespect for autonomy due to exploitation, deception, coercion and disregard through the application and advancing of scientific knowledge, medical practice and associated technologies. People can be especially vulnerable for many reasons: because of their age like children, their kind of disease like rare or neglected diseases, because of lacking access to health care due to the health care system of their country, their own education or the education of physicians and researchers.

42. A further important example of special vulnerabilities can be provided using the example of the position of women. In some cultures, female children are uniquely vulnerable to the risk of being unwanted, uncared for, abused and rejected. Female children may also find their interest in bodily integrity gravely threatened, including especially their right to be free from sexual assault and exploitation. Adult women may find themselves transferred from the patronage of their father to the patronage of their husband, thereby denying them the personal authority to make important life and healthcare decisions on their own behalf. As women live longer in many parts of the world, elderly women might find themselves abandoned by their families, subject to inadequate healthcare, and disregarded by society. Migrant women and women affected by war are especially vulnerable to abuse and are often disenfranchised from engaging in conflict resolution and reconciliation.

43. It must be accepted that situations of vulnerability seldom exist in isolation. Lack of access to education, lack of social authority, limited access to healthcare and freedom from coercion can combine negatively to affect the integrity of people throughout the world. In addition, there are often complex, social, cultural and political barriers that negatively impact on respect for personal integrity, and create seemingly intractable, situations of special vulnerability for both individuals and groups. In particular, lower levels of education always predict higher levels of vulnerability.

44. In its Article 1, the Universal Declaration on Bioethics and Human Rights makes it clear that it is addressed to States, but also to individuals, groups, communities, institutions and corporations, public or private. We all share responsibilities in this area. While we cannot eradicate vulnerability entirely, given that it is a feature of the human condition, we can and should provide every human being with the best available means to ensure that they do not find themselves in a position of special vulnerability, regardless of age, gender, educational level, financial situation, health status and life experiences. Securing the protection of groups and individuals with special vulnerability, by addressing the context and causes that give rise to it, is the foremost test of our capacity and willingness to foster the idea of equal rights and the dignity of every human being.