Human enhancement

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Centrum voor ethiek en gezondheid

Gezondheidsraad

2003/08-04E

Human enhancement

Health Council of the Netherlands

Centre for Ethics and Health

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The Hague, May 16, 2003

Centre for Ethics and Health

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This report

This report has been drawn up by the Health Council's Standing Committee on Medical Ethics and Health Law (see Appendix 1 for composition).

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Preferred citation:
Health Council of the Netherlands. Human enhancement (Ethics and Health Monitoring Report 2003 no. 4). The Hague: Health Council of the Netherlands, 2003. Publication no. 2003/08-04E. ISBN: 90-5549-585-9.

This publication can be downloaded from www.healthcouncil.nl.

Contents

Summary

Under the influence of scientific and technological developments, the theme of 'engineering people' is receiving increasing attention. The health care system also, to an increasing degree, has to deal with the possibilities provided by the biomedical sciences for perfecting healthy people in accordance with their own preferences. In medical ethics, this theme is known as 'enhancement': the use of genetic, biomedical or pharmacological knowledge to make improvements in human characteristics. This enhancement can involve people's appearance, performance or personality. At present, the best-known forms of enhancement are found in cosmetic surgery and, more covertly, in the use of anabolic steroids in sports. However, there is an impression that conventional medicines (for example Prozac, Ritalin and Viagra) are also being used more and more often for non-medical purposes. Furthermore, during the next decade, new substances and methods for engineering healthy people will probably emerge in a rapid tempo. They vary from cosmetic gene therapy and a new generation of anxiety inhibitors and mood modulators, to psychotropic medication that boosts cognitive abilities (concentration, memory) and a drug that would allow women to optimise their sexual functioning. Billions are being invested in development.

In our society, all adult and competent individuals are themselves responsible for the use of enhancers, at least in so far as they cause no harm to others. In principle, the government should adopt a neutral position towards ideas about personal well being which are at the root of this use of enhancers. It does, however, have a major responsibility to ensure that adequate information is provided, to protect minors and legally incompetent individuals, to safeguard quality, to protect public goods in so far as the use of enhancers constitutes a threat to them, to monitor access to enhancement and to encourage a public discussion. This should cover the conditions for the inclusion of enhancement in the responsibilities assigned to doctors. In any case, it is clear that this question will not be answered on conceptual grounds (for example on the basis of a concept of disease). The question is normative in nature and moral considerations will be decisive when answering it.

Human Enhancement

1 Introduction

The issue of the 'improvable human' is, due to the influence of scientific and technological developments, becoming an ever more frequent subject for discussion[19]. The medical profession will also be increasingly faced with the opportunities offered by biomedical science to perfect healthy individuals in ways that reflect their individual desires. Medical ethics calls this 'enhancement': the application of genetic, medical or pharmacological knowledge to improve human characteristics. Improvements can relate to a person's appearance, performance or personality traits[1,2].

The currently most well-known examples of enhancement lie in the field of cosmetic surgery, and, more in the background, in the use of anabolic steroids in sport. However, it seems that standard medications (such as Prozac, Ritalin and Viagra) are increasingly being used in circumstances where there is no medical need for them[3,4]. It is likely that many new substances and methods will be discovered at an increasing speed over the next decade that will allow healthy individuals to mould their own minds and bodies, or to have this done by third parties. Options range from cosmetic gene therapy for baldness and new-generation tranquillizers and mood modulators to psychopharmaceuticals that boost cognitive capacities (concentration and memory) and a substance allowing women to optimise their sexual function. Billions are being invested in developing these products[5-11].

The advance of enhancement forces us to consider where the boundaries of medicine lie. The medical field is often demarcated in the light of a certain conception of what the purpose of medicine is. That is first of all the prevention and treatment of disease and the repair of injuries caused by processes other than disease. Secondly doctors have a role in natural events such as pregnancy and labour, where they can prevent possible damage to health, and in areas where their expertise can help achieve a (non-medical) goal, such as contraception, abortion and artificial insemination. Finally, doctors have taken on the task of alleviating the severe suffering of people whose appearance diverges from the social norm (plastic surgery).

The relationship between enhancement and the medical field described above is a complex one. In the first place, there is a certain degree of overlap: some improvements to characteristics (such as strengthening the immune system) can help prevent sickness[1]. Second, it is not easy to

differentiate enhancement in general terms from, for example, the treatment of disease, as the latter concept is itself controversial. The treatment of disease is basically targeted at restoration of lost function[12,13]. However, it appears difficult to draw a satisfactorily clear line between restoration of function and improvement of function. This is because it presupposes an idea of what 'normal' function is, and that is something on which no consensus exists[2,6,14]. Though there are some relatively clear-cut instances where it is quite obvious whether or not the individual is suffering from a disease, we can also easily find examples of medical intervention where it is questionable whether the intervention is treating a disease or improving a function in a healthy person. The boundaries of medicine are therefore diffuse.

If enhancement does not currently fall within the field of medicine, then we need to address the question of whether it can be brought within that field, and if so under what conditions. This issue has to be debated in the light of a number of specific moral considerations. These relate to the circumstances under which enhancement can be regarded as part of a doctor's duties; a matter which has implications for public policy. This report will look at these considerations and their implications, but we will first sketch out social developments relating to enhancement.

2 Social developments

The advance of enhancement has come about as a result of both scientific and social developments. The attempt to improve human characteristics is as old as history, and is not limited to the application of biomedical knowledge[15-17]. All societies have used and continue to use resources such as education and sport to deliberately bring human capacities to a higher plane. Thus, the difference between these efforts and enhancement lies not in their objective but in the means deployed: genetic, medical and pharmacological knowledge. This understanding allows relatively radical (fundamental, invasive and rapid) changes to be brought about. We can see the growing need for these options by considering two situations in which enhancement is taking on a more prominent role: creating a certain lifestyle and dealing with the effects of ageing.

2.1 Lifestyle

A lifestyle can be described as the way in which someone shows the world what he or she finds important in his or her life, what kind of a life he or she wants to lead, and what kind of a person he or she wants to be[18]. A lifestyle is the expression of what someone regards as his or her identity. Until recently, sociocultural factors normally played a decisive role in the development of an individual's identity. But, identity has nowadays become more clearly the object of self-reflection and more open to a deliberate personal choice. Biomedical progress can now enable people to play a part in moulding their own lifestyle by affecting their biological nature[19]. Biomedical knowledge can be used to make the body and mind more suited to a particular lifestyle or to adapt better to a lifestyle.

Developing a lifestyle is a process that takes place against the background of a conflict between the desire to be 'normal' and the desire to be 'different'. Many people want to belong to a group and to comply with the norm within that group, but they want to belong to a group that has its own distinct character that sets it apart from other groups. Aesthetic and ethnic norms can play a significant part in this.

The role of aesthetic norms for the body and mind in a modern culture is complex. First, personal beauty is increasingly regarded as an independent dimension of existence. Second, the body (in particular) plays an increasingly significant role in demonstrating individuality and personal choices. And finally, beauty is ever more important in social relationships, for example in making contacts at work and with potential spouses[20,21]. As a result, it is becoming more acceptable to adorn the face and sexual characteristics, to undergo liposuction, to take anabolic steroids in order to boost muscle growth, and to have piercings, tattoos and even deliberate scarring (scarification). Mental self-expression can be supported by 'cosmetic psychopharmacology': the use of psychopharmaceuticals in order to make someone's personality more attractive. Examples include the use of marijuana, ecstasy and 'smart drugs' to influence mood, and the use of Prozac to help reduce relatively normal levels of shyness[2,22,23].

The conflict between what is normal and what is different comes even more clearly into focus when we look at 'ethnic cosmetic surgery': cosmetic surgery aimed at removing someone's ethnic characteristics. It is worth pointing out that removing certain ethnic characteristics is not a recent phenomenon: European Jews sought 'ethnic anonymity'[24] in the nineteenth century, as did Irish immigrants to the United States in the first half of the twentieth century. But now this option has become available to a wider group of people. In an attempt to appear more Western, increasing numbers of Asian women want to have their eyelids reshaped, while Americans and Europeans of African descent want to have narrower noses and thinner lips. People with a dark skin colour also use skin lighteners to make their skin paler. This 'physical assimilation' will probably remain a constant feature in a world characterised by globalisation, especially in multicultural societies subject to racial tension.

2.2 Ageing

Alongside the area of lifestyle, enhancement is also playing an increasingly prominent role in dealing with the effects of ageing. Age may indeed bring wisdom, but it always causes problems as well. The ageing of the body and mind is a far-reaching process of degeneration with significant consequences for an individual's appearance, abilities and personality. Skin becomes wrinkled and often develops varicose veins, hair turns grey or falls out, parts of the body become less taut, joints start to wear, eyes dim, hearing fails, muscles weaken, memory becomes less reliable and as we age we sooner or later lose the ability to think clearly. Ways of preventing, delaying or repairing this degeneration in properties are increasingly being found.

Using biomedical knowledge to combat the loss of function associated with ageing, as in the case of people with dementia or a worn-out hip, is theoretically an activity that clearly falls within the medical field. The fact that the loss of function is caused by ageing is, in theory, irrelevant. This is less clearly the case when we consider limited loss of function that is regarded as a relatively normal consequence of ageing, such as erection disorders or a normal decline in memory. The distinction becomes even harder to draw in the case of symptoms caused by ageing that do not lead to loss of function, such as some postmenopausal symptoms experienced by women and baldness in men. In these cases, the use of biomedical knowledge comes close to enhancement in support of a lifestyle. The person being treated is not suffering from a disease. But these cases differ from enhancement as well, in that treatment is being given to (try to) restore what could be regarded as the person's natural state, namely the state they were in when they were younger. However, the relevance of this is not immediately obvious, as the first biological condition has been replaced by the current situation (which is itself just as natural).

The answer to the question as to whether people in the latter situations should be able to make use of biomedical opportunities to counter the effects of ageing is not always 'yes'. As ageing is a natural process that nobody can escape, it has indeed been suggested that the effects of ageing that do not entail a substantial loss of function have to be accepted[25]. However, the increasingly widespread availability of genetic, medical and pharmacological options might reduce public support for this 'grin and bear it' attitude[26,27].

These two contexts in which enhancement is playing an increasingly prominent role (creating a lifestyle and dealing with the effects of ageing) are poor examples. (Future) enhancement options are certainly not limited to these situations.

2.3 Business

The growing demand for biomedical techniques to improve human characteristics is partly influenced by the availability of such techniques. Business may have a considerable role to play here. It sometimes helps create a violent dynamic between supply and demand, as we can see, for example, in the use of Prozac and Ritalin[4,28]. Attention to trends makes it quite likely that the same thing will happen in the case of enhancement used to support a lifestyle. It is important in this context to remember that psychopharmaceuticals, smart drugs and similar products lend themselves to widespread use, as they can be taken without the intervention of a doctor who would otherwise act as a 'gatekeeper'. The Internet has furthermore given an enormous boost to distribution opportunities. Indeed, the role of business in cosmetic surgery has become increasingly visible[29], and the same situation may develop in future with regard to genetic interventions[30].

3 Moral considerations

There are a number of specific moral reasons why we need to address the question of when enhancement can be regarded as part of a doctor's duties. No clear yes or no answer can be

given in general terms to this question as a result of considering these issues, but these considerations do lay the foundations for a more detailed discussion. They can be divided into considerations relating to individual cases of enhancement and the effects of enhancement as a social practice.

3.1 Improvement?

Enhancement is the use of genetic, medical or pharmacological knowledge to improve human characteristics. The first point to discuss is whether a certain substance or method achieves what it promises to do. Enhancement is in this respect theoretically no different from medication, except insofar as many enhancement techniques are still at an experimental stage and there is some doubt as to their effects.

Another question is whether the change that can be brought about with the help of effective enhancement is really an improvement that increases the individual's well-being[25]. In many cases it is, and that makes enhancement a worthwhile intervention. But, at the same time, this question usually offers more points of discussion than in the case of (effective) treatment of disease, as treating a disease is aimed at restoring a lost function, which can usually be supported by an intersubjective assessment.

Enhancement may relate to a function, but this is not necessarily the case. For example, an enhancement carried out to support a lifestyle can often only be described in purely subjective terms as increasing the individual's well-being. An enhancement aimed at restoring the individual to the biological situation they enjoyed in their younger days might seem, of itself, to be an objective improvement. But that is, of course, not so. This is because what is called 'degeneration' in biological terms does not always impair well-being, and therefore correcting or compensating for that biological process does not necessarily increase well-being.

The question of whether enhancement can actually increase an individual's well-being must therefore always be judged against the background of that person's aims, plans and values[16]. Consideration must be given here to the fact that these factors are not fixed for all time, but evolve throughout a person's life. This is an argument in favour of a conservative approach to irreversible forms of enhancement.

3.2 Health risks

A (possible) increase in well-being brought about by enhancement has to be set against health risks, which can be considerable. An understanding of these risks is vital to any assessment of whether the means are proportional to the ends. We should also bear in mind that the possible undesirable effects of experimental enhancement techniques are often unclear. This is particularly true of long-term detrimental undesirable effects. We already know of health risks associated with various forms of enhancement. For example, surgical procedures have a particular risk of

leading to iatrogenic damage. People who have piercings or tattoos run various risks, including infection[31]. We know that some biochemical enhancers may increase the risk of mental illness (cannabis) or brain damage (amphetamines, ecstasy), or can lead to addition (nicotine, heroin, benzodiazepine)[2]. Anabolic steroids increase the risk of liver disease, impaired fertility and unwanted mental changes (aggression and paranoia).

3.3 Individual responsibility and autonomy

People are, in principle, regarded as being able to decide what they need themselves, and to come to a view as to whether a particular form of enhancement would boost their well-being. Therefore, in the first instance, any decision as to enhancement should be taken by the person concerned. The only exception to this would be for people who do not have the capacity to take a rational decision, like minors and people who are mentally incapacitated (see below).

Though this is basically the same premise as that used in the case of decisions as to medical treatment, the specific nature of enhancement can lead to differences in practice. First, the lack of a medical indication means that a doctor cannot be obliged to fulfil an individual's request for an enhancement procedure. Both the concerned individual and the doctor bear individual responsibility, and the doctor can refuse to carry out the procedure if he or she fears that it could be harmful. Second, the lack of objective or intersubjective improvement to a characteristic may place a heavier burden of information on the doctor involved, as is presently the case for a number of procedures (such as cosmetic surgery).

The fact that the concerned individual bears responsibility for reaching a sound decision as to enhancement does not preclude any discussion on how this responsibility should be exercised. This discussion would then move on to the question of how far the request for enhancement is based on an autonomous choice. There is every justification for raising this question in various situations, for example if it is possible that the request has been made in response to strong social influence, for example in the case of a procedure that has become wildly popular[6]. Of course, social influence does not make autonomy impossible. People can, to some extent, resist the influence exerted by their surroundings. But disproportional social pressure, whether or not it is internalised, is generally undesirable[18].

To decide whether this is the case, we need to assess the feelings and motivations that lie behind the request[32,33]. Does the request fit the person in question, taking account of his or her background and history ('narrative fit'[21])? Is the person aware of the influence that other people exert on his or her decisions? Could the fulfilment of the request help crystallise the person's identity, or would it principally lead to the instrumentalisation of his or her body and/or mind? Evaluating expectations before a procedure is something that requires particular care, and may need the intervention of a psychologist[34]. It is important to bear in mind that the desire for an altered appearance may be a symptom of psychiatric problems[35,36].

3.4 Minors and mentally incapacitated individuals

As no medical indication is present when an enhancement procedure is carried out, and as this means that the question of whether a particular form of enhancement can improve the individual's well-being is therefore open to more discussion, particular care is required in enhancement procedures carried out on minors and mentally incapacitated individuals. That is because these individuals are, after all, generally less able to judge and defend their own interests.

The interests of minors and mentally incapacitated individuals may be at issue in cases where parents, for example, want to alter the characteristics of their child. This may affect unborn children, as in the case of reprogenetics (the use of genetic technology in the reproduction process with a view to ensuring or preventing the transmission of certain genes). But existing children may also be affected (for instance, performing cosmetic surgery on a child with Down's syndrome or administering growth hormones to a child of normal height).

Cases of enhancement such as these raise an issue of authority: how far does reproductive freedom extend, and to what extent are parents entitled to impose their views as to the desirability of a particular property on their child? A child's right to an open future is one of the factors that needs to be taken into account when answering this question[37-39]. This right will sometimes support enhancement, but will sometimes be in conflict with it. As enhancement may entail special risks, the question of what risks a child can be exposed to by its parents is another important issue[16].

The fact that a minor is less able to assess his or her own interests means that it may be necessary to pay particular attention to protecting those interests if he or she seeks an enhancement procedure. In the first instance, parents are responsible for protecting a child, against himself or herself where necessary. But if they are unsuccessful in doing so, and may be willing to give the required consent for a medical intervention, this may, for example, be sufficient reason to cause the doctor involved to refuse to carry out a request (against his or her own interests) made by a minor.

3.5 Social implications

Moral reflection is not limited to an assessment of individual cases. Consideration also needs to be given to the implications of enhancement as a social practice for the community as a whole. On the one hand, real improvements in characteristics are of benefit not only to the individuals concerned but may also – and in some cases primarily – be advantageous to third parties or society in general. On the other hand, enhancement as a social practice may also have damaging social consequences. In the first place, enhancement can help bring about undesirable cultural change, and in the second place it can aggravate social inequality.

Elements of undesirable cultural change could include normalisation, medicalisation and alteration of our perception of humanity. Enhancement can have a standardising effect if it is founded on the need to comply with a specific dominant social norm: enhancement then reinforces the validity of that norm. Norms of this kind may in themselves be morally neutral, but normalisation can increase the social pressure on others to keep up with them. This would be detrimental to social pluriformity. Sex-related and age-related ideals of beauty are typical examples of this. Norms of this kind can also be morally reprehensible, for instance if they are associated with a racial ideology. In this situation, normalisation also enhances racist stereotypes and prejudices, as can be the case with ethnic cosmetic surgery[6,16,29,40,41].

Enhancement can also increase medicalisation in ways that are not desirable by offering solutions to problems that are usually (relatively) trivial or that can be better addressed in non-medical ways[14]. Easing racial tension by making non-western individuals look as western as possible is an unambiguous example of this. Medicalising a cultural issue in this way fails to address the root of the problem, but takes what appears at first sight to be the easiest solution. This may be legitimate in an individual case, but it is harmful as a social practice. Other forms of medicalisation brought about by enhancement are less clear-cut. For example, it is hard to say whether using biomedical knowledge to alter someone's body or mind to create a stronger connection with a particular subculture is a good substitute for developing social skills.

Finally, enhancement can also affect the image we have of ourselves and others. This is particularly true where it leads to instrumentalisation of the body, reinforcing the idea that someone's appearance is more important than what lies inside them. But it can also apply to cosmetic psychopharmacology, which is based on a mechanistic idea of humanity. This attitude diminishes the importance of real emotions and undermines existing ideas as to moral responsibility[42]. Furthermore, many forms of enhancement reduce our understanding of vulnerability and imperfection as a moral good ('the goodness of fragility'[15]). It can also put pressure on the idea that the way someone tries to achieve a goal can have a value quite apart from whether or not the goal is achieved (the principle that underlies rejection of performance-enhancing drugs, among other things).

Enhancement can also diminish feelings of empathy and solidarity, particularly towards individuals who do not want to, or cannot, make use of enhancement opportunities[29,43]. This is not purely a hypothetical idea, as an enhancement practice can increase existing social inequality. Many forms of enhancement (such as a more attractive appearance, self-confidence gained with the help of psychopharmaceuticals, or a genetically improved memory) should give the individuals concerned competitive advantages with added social and economic value. As economic inequality means that not everyone will have the same access to enhancement, the very existence of these forms will further increase inequality. This effect will become even more pronounced in future if it becomes possible to pass on an improved characteristic to offspring by germline engineering[38,39].

Enhancement does not need to have an effect on existing inequality if it is paid for by a third party (see below). Furthermore, if everyone makes use of enhancement, then the competitive advantages will disappear (in contrast to the costs and risks)[6,16,44,45].

4 Implications for public policy

The above-mentioned moral considerations have implications for public policy in relation to enhancement, particularly where that policy is able to influence the conditions under which enhancement takes place.

4.1 Neutrality

In our society, every mentally capable adult bears the responsibility for using available forms of enhancement, provided that they do not thereby harm others. The state should, theoretically, take a neutral attitude to conceptions of personal well-being that underlie the use of enhancers[16]. These conceptions should not generally cause the state to forbid doctors from being involved in enhancement procedures[14].

However, this does not mean that the state bears no duty at all in matters relating to enhancement. It has in fact various duties, including ensuring that adequate information is provided, protecting minors and mentally incapable individuals, quality assurance, protecting the public good, monitoring access to enhancement and stimulating a social debate.

4.2 Ensuring that adequate information is provided

The absence of an objective or intersubjective improvement to a characteristic, taken together with possible social pressure and awareness of trends, can make it particularly important for information to be provided as to the risks of enhancement to the concerned individual. This information should ideally make the individual able to fully assess the available options. This is particularly important in the case of irreversible forms of enhancement.

4.3 Protecting minors and mentally incapable individuals

Minors and mentally incapable individuals are generally less able to protect their own interests. Protection of these interests is particularly significant in the case of enhancement, especially where the alteration in question is an improvement purely in the subjective opinion of the person's parents or representatives. Consideration needs to be given to the form that this protection should take and to the implications for the doctor in terms of his or her relationship with the (future) parents.

4.4 Quality assurance

Enhancement is often associated with health risks that can be considerable. Risks are greater for forms of enhancement that are of lower quality. As the individual user is often unable to assess or influence quality, the government should take steps with a view to quality assurance, including investigation of long-term harmful undesirable effects. Particular guarantees may be required where the need from which the demand for enhancement arises can be better met in non-medical ways (for instance, psychological support instead of cosmetic surgery) (Whi97). Expertise and regulatory systems within the medical profession may perhaps make it necessary to restrict certain forms of enhancement to the medical domain.

4.5 Protecting the public good

The public good is something that belongs to the whole of society and every member of that society has a potential share, and therefore an interest, in it[46]. It can be tangible or intangible. Enhancement can threaten certain types of intangible public good. Examples include honest sporting practices that are undermined by the use of performance-enhancing drugs, social pluriformity that is threatened if sex- or age-related aesthetic ideals become very dominant, a balanced gender ratio that is skewed by one-sided prenatal sex selection, and, a culture in which each individual has a relatively large degree of freedom to decide on whether to undergo enhancement. This freedom turns into a pressure to do so as foregoing the competitive advantages that certain forms of enhancement bring with them would condemn the individual to membership of an inferior minority[38].

These aspects of the public good can cope with a number of 'free riders', but only a limited number. It is one of the tasks of the State to investigate threats to the public good, and if necessary to consider what policy measures can be adopted to protect it.

4.6 Monitoring access to enhancement

Differences in wealth between individual members of society mean that access to enhancement is unequal. This leads us to the question of whether individuals undergoing enhancement should have the costs paid from the public purse, for example by including such procedures in the list of medical procedures that are funded by social insurance. This question becomes even more pressing as forms of enhancement offering competitive advantages may further increase existing social inequality, if not everyone has equal access to them[38].

Public funding would not initially appear to be an obvious solution for enhancement not aimed at restoring the loss of function associated with, for example, disease. However, the difficulty in distinguishing between the restoration of function and the improvement of function has already been pointed out. Furthermore, insurance funding is already available for many costs not associated with treating disease (for instance, the costs of contraception and abortion)[16]. Finally, forms

of enhancement may in future offer such major advantages to those that undergo them that unequal access would be regarded as clearly unjustifiable[6].

4.7 Stimulating a social debate

The progress of enhancement means that further reflection and debate is necessary. In particular, consideration needs to be given to where the boundaries of medicine lie. It is impossible to draw a clear distinction between where medicine ends and where enhancement begins. For that reason, we need a social debate on the question of when enhancement can be considered as part of a doctor's duties.

The government should shape the debate. This must clearly be done in conjunction with other groups, such as the medical profession and patient organisations. The outcome of the debate may eventually be useful for the medical profession in helping it develop professional standards for enhancement, which are currently not in place for the majority of existing forms of enhancement.

5 Conclusions and recommendations

It is not possible to answer the question of whether enhancement has a place within the medical field, and if so under what conditions, in terms of concepts (e.g. using a concept of disease). The question is of a normative nature and needs to be resolved in the light of moral considerations. This can only produce general conclusions as many different possibilities are concealed behind the term 'enhancement'. Most of these possibilities are furthermore clouded in uncertainty as the techniques are still in their infancy or even purely speculative. However, it is clear that many forms of enhancement can (or will be able to) make a significant contribution to our quality of life. Whether that turns out to be the case will be partly dependent on the circumstances. The state has a duty to implement the necessary policies to ensure the provision of information, protect the welfare of individuals, protect the public good and promote social equality. Further investigation and debate is needed to determine what forms of enhancement require particular attention.

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Appendix 1

Standing Committee on Medical Ethics and Health Law

(Beraadsgroep Gezondheidsethiek en Gezondheidsrecht)

prof. JA Knottnerus, president of the Health Council of the Netherlands; Health Council, The Hague, president
prof. JKM Gevers, professor of health law; Academic Medical Centre, University of Amsterdam, vice-president
prof. ID de Beaufort, professor of medical ethics; Erasmus University Medical Centre, Rotterdam
dr GCML Christiaens, gynaecologist; University Hospital, Utrecht
prof. RPTM Grol, professor of quality of care; University Medical Centre St Radboud, Nijmegen
prof. JCJM de Haes, professor of medical psychology; Academic Medical Centre, University of Amsterdam
prof. GA den Hartogh, professor of ethics; University of Amsterdam
prof. HAMJ ten Have, professor of medical ethics; University Medical Centre St Radboud, Nijmegen
dr AC Hendriks, health lawyer; Dutch Equal Treatment Commission, Utrecht
dr WLM Kramer, pediatric surgeon and traumatologist; Wilhelmina Childrens' Hospital, University Medical Centre, Utrecht
prof. FE van Leeuwen, professor of epidemiology; Netherlands Cancer Institute, Amsterdam
dr M van Leeuwen, executive director of the Health Council of the Netherlands, adviser
dr J Legemaate, health lawyer; Royal Dutch Medical Association (KNMG), Utrecht
prof. HDC Roscam Abbing, professor of health law; Utrecht University
prof. M de Visser, vice-president of the Health Council of the Netherlands; Health Council, The Hague
prof. GMWR de Wert, professor of biomedical ethics; Institute of Health Ethics, Maastricht University
prof. DL Willems, professor of medical ethics; Academic Medical Centre, University of Amsterdam
A Bood; Health Council of the Netherlands, The Hague, scientific secretary
dr WJ Dondorp; Health Council of the Netherlands, The Hague, scientific secretary