In biomedical engineering ethics

Engineering

Running Head: Development of Tissue Engineered Heart Valves; A Case Study of Pedia Valves. Department As an independent and integral field in the entire healthcare sector, biomedical engineering draws knowledge from various other fields and hence responsibility. Scientific fields of medicine, technology and engineering both contribute to the expertise and responsibilities of biomedical engineering. Considering that the health of the public is very paramount, biomedical engineers are charge with the responsibility of upholding very high ethical standards as embodied in their Code. A number of areas in the professional code of ethics for biomedical engineering therefore apply to this case study.

In the case study there is clear evidence that in that development of the TEHVs Pedia Valve as a start-up company is responding to biomedical engineering obligations. They are employing their research knowledge, skills and capabilities towards enhancement of public welfare in terms of health and safety. Considering the limitations of the current equipment in use such as bioprosthetic valves and Cadaver homograft valves such need for repeated future surgeries as well as inherent risks, the company is striving to increase safety for the patients.

There are also the obligations in terms of biomedical engineering and training. They are required to comply with available guidelines in terms legal, governmental, research and ethical responsibilities. There is need to respect rights of subjects, colleagues the science community and entire public. In making the choice between the two options the company has also considered the question of training especially for the doctors and other medical personnel. To this end I think the company has complied significantly and obtained the necessary FDA approvals. There are various

ethical and professional considerations applicable to the case study of Pedia Valves which the company has not ignored.

A major ethical issue in the case study as has always been when it comes to using modern technology to give life to patients is the question of faith. While Pedia Valve and other likeminded companies undertake research and testing in order to innovatively enhance life, there always voices from the religious community especially who think it is the work of God to give life. There are also the ethical issues of using animals and humans as subjects for researching and testing the technology. The argument from opponents has always been that the rights of subjects are violated.

In making of the decision of whether to enter the market with the first or second option, there are important issues of patient safety, cost aspects and the training & maintenance requirements. Firstly, the core reason for development of the TEHVs is because available valves in the market are considerably limited in terms of safety of the patient. THS appears considerably expensive as compared to MVU since these valves have to be maintained by the company, insured and managed from only four centres in the US. This will also mean the patients must obtain the valves from the US making their costs exorbitant. However, THS is able to almost replicate human hearts and studies involving it have shown huge efficacy. Trials done on animals for instance have shown a lot of promise. As such based on the evaluations and considerations I will opt for option one.

In conclusion therefore, biomedical engineering is a very promising field that has a huge potential of innovatively enabling many terminally ill patients cheat death and liver longer. Pedia Valve is one biomedical engineering company moving from research to the development of TEHVs to address

valvular heart disease. A number of ethical and professional issues are involved in the case but overall the company has complied and attained FDA approvals to go ahead with the technology. Option one scores high on patient safety and welfare which is a paramount consideration even with the associated high costs requirements for highly trained personnel.