The Ethics of Technology and Human Error in the Hospital: Using Utilitarianism to Examine the 2017 Vanderbilt University Medical Center Incident

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

At the Vanderbilt University Medical Center in 2017, nurse RaDonda Vaught made a crucial mistake that would change her life and the realm of medicine forever. When tending to her 75-year-old patient, who was being prepped for an MRI, Vaught sought out medication to calm their anxiety to ensure a successful imaging procedure (Kelman, 2022). However, instead of the standard injection of Versed, she mistakenly administered Vecuronium, a powerful paralytic, which resulted in the patient's death. This misunderstanding occurred after Vaught intentionally overrode the hospital's automatic dispensing cabinet (ADC) to provide medication without the supervision of a board-certified physician. This feature of the ADC is put in place so that caretakers can administer life-saving medication in times of great emergency. Vaught was later convicted of negligent homicide, resulting in her being stripped of her nursing license, fined, and placed on probation for this incident (Oung, 2022).

Many scholars such as Barry, Swanson, & Pearlman and Lambert & Schiff analyze this case as an opportunity to shed light on both legal and training deficiencies within the healthcare system. However, these current approaches to the event fall short in grasping the ethical dilemma that is at hand. By doing so, we fail to recognize the actors within the situation as people who faced troubling moral decisions. An ethical framework such as utilitarianism, which is the calculation of overall morality of good and bad consequences, must be used to analyze this situation and each decision within it (Van De Poel & Royakkers, 2011). Therefore, I argue that in accordance with the theory of act utilitarianism, the actions of RaDonda Vaught were morally wrong while those made by the designers of the automatic dispensing cabinet were justified. This is supported firstly by the deliberate emergency override of the ADC during a time of relative calm. At the same time, the engineers that configured the ADC are morally justified in their

design choices, especially in the inclusion of the emergency override feature. This feature was made in the attempt to save lives and allow for quick and effective administration of drugs in a time of need. Consequences that arise out of this action such as the loss of life and legal repercussions corroborate with my claim and allow for utilitarianism to definitively label the moral standing of the act itself. I will elaborate upon these reasons with the help of a moral balance activity to definitively state that Vaught acted morally wrong while the engineers of the ADC were justified in their design choices.

Literature Review

While several scholars share their insight upon the ethical complications of the RaDonda Vaught legal prosecution, scholars fail to consider the morality of the individual decisions within the case itself. Many writers focus upon the precedent that the court ruling makes on the healthcare community. They emphasize that this case shows that doctors and nurses are personally and legally responsible for the actions they make while on the job, especially situations of human error (Collins & Burke, 2022). Others emphasize the case as merely an example for future reference of improvements necessary in healthcare professional training and administration.

In their publication in the Journal of Perinatology, Barry, Swanson, & Pearlman outline the impact the conviction of RaDonda Vaught may have on the safety of patients in the future. They explain that since the error was voluntarily reported to the hospital after the act, Vaught's conviction decreases the initiative of medical professionals to do so in the future (Barry et al., 2022). They find that instead of using the situation as a way of holding individuals accountable, it should be used as opportunities for growth and learning to advance the overall competence of

the healthcare system. While this raises the awareness for the complexity of the situation and the many actors that played a role in the death of Vaught's patient, it fails to recognize the morality of these decisions themselves. Instead, it focuses on the ethical consequences of just the legal case proceedings and how it will affect the world of healthcare in the future.

Another study on this case is from the Journal of the American College of Clinical Pharmacy by Bruce Lambert Ph.D. and Gordon Schiff M.D. This article focuses on the lessons that this situation can create in the healthcare system. They outline nine steps that hospital systems can take to add extra support for the healthcare professionals that deal with the prescription and administration of medications (Lambert & Schiff, 2022). Although this study is great for the advocation of change driven by this tragic event, it unintentionally dehumanizes the event and fails to acknowledge the fact that this ended in the loss of life. In fact, both studies fail to recognize the humanity of the situation and shrinks the event down to one only useful to study for its systematic implications. Through the lens of Act utilitarianism, I will analyze the actions of this event and the consequences that come with them, especially the important factor of the value of a human life. While these studies delve into the legal and future workplace implications of the event, I look to contribute ethical analysis on the actions made by both Vaught and those responsible for the design of the ADC.

Conceptual Framework

To analyze whether the designers of the automatic dispensing cabinet and RaDonda Vaught acted morally within this situation, I will draw upon the ethical framework of utilitarianism. This case includes many moral dilemmas that must be addressed and can be systematically analyzed through the lens of utilitarianism to try of casting ethical contemplation

about such a momentous mistake. Set out in Jeremy Bentham's *An Introduction to the Principles of Morals and Legislation* of 1789, utilitarianism is a form of consequentialism that focuses on the "utility" of a moral decision (Van De Poel & Royakkers, 2011). In the purest sense of the ethical framework, a decision is morally favorable if it causes more pleasure than pain. This can allow individuals to definitively and quantifiably indicate actions as right or wrong using a moral balance sheet. This method weighs the intensity, duration, certainty, and proximity of both qualitative and quantitative consequences of an action (Van De Poel & Royakkers, 2011).

From this assertion, countless scholars have revised this ethical framework to address its many criticisms. One of the biggest questions of utilitarianism is whether different forms of pleasure and pain are more important or useful than others. That is, can one consistently compare physical and bodily pleasures to that of spiritual or mental sensation? Extending on Bentham's original writings, John Stuart Mill elaborates that there is a hierarchy of pleasure such that the more dignified satisfaction is more desirable than that of primitive ones (Van De Poel & Royakkers, 2011). He also added the freedom principle which declares that people are welcome to strive to obtain their own pleasure if it does not infringe upon the freedoms and pleasures of others. Therefore, one must heavily consider the impact that their decisions have on others and not overinflate the potential selfish rewards of moral choices.

Drawing on act utilitarianism, which is the assessment of specific actions of an individual rather than their overall morals, I will analyze the specific decisions made in this case of human error. I will begin by separating the decisions made by the designers of the automatic dispensing cabinet and RaDonda Vaught. Then, will I go into the details of all their decisions in this case and explain what the parties involved acted upon against their alternatives. Through this, I can analyze these actions by using a moral balance sheet to decide whether these certain decisions

were made morally using utilitarian principles. I will first use the utility principle to analyze the basic pleasure or pain caused by the act itself. Then, I will use the freedom principle investigate whether the choices made in this situation infringed upon the pleasures of others or restricted their freedoms. From the assertions made by using these two principles, I can create an accurate qualitative assessment on the moral implications of this case.

Analysis

RaDonda Vaught

Using act utilitarianism, I first investigate and confirm that the actions made by RaDonda Vaught during this tragic situation were not morally justified and did more harm than good. Although there were many actions taken after the fact in terms of self-reporting and reparations, I will focus on the main action that caused the situation to occur. Before the act of mistakenly administering Vecuronium instead of Versed, RaDonda Vaught bypassed all safety guidelines and overrode the automatic dispensing cabinet's requirement of approval from a physician. Although there was no emergency or urgency of any kind at hand, Vaught carried out this override against all precautions from both technology manufacturers and the hospital itself. Although there was no publicly available information from the Vanderbilt University Medical Center on the override procedure, in a user's manual of a similar ADC system used in the Vaught case from another hospital, they describe the override as a feature used for injectable narcotics and emergency medications (Robert Wood Johnson University Hospital, n.d.). Although this might be seen as an obvious piece of information, this means that there are certain medications that are deemed necessary for the hospitals to be stored with an opportunity to be obtained during an emergency override. This elaborates on the fact that the override is set in place for healthcare professionals

to use in times of need and only for access to medications that can treat patients in times of great physical or mental duress.

When looking at this action with the utility principle in mind, the moral balance does not work out favorably for Vaught. The positives in this sense were that she was able to cut down on the time that she would have had to used waiting for a doctor's approval of her request for Versed. This waiting time could have increased the distress of the patient and a buildup of anxiety for the MRI. This would allow Vaught to not only prevent additional perceived suffering of the patient, but also free Vaught up to help other patients that were entrusted to her at the time. This can be seen as a positive in terms of the possible outcomes of the action. On the other hand, the utility principle can be used to expose the many negatives of this action. Firstly, the override could have and did have adverse effects on her standing within the hospital and her career. This is because, like previously presented, the action was in direct opposition to the intent of the feature. Operating machinery in a way that disregards regulations and guidelines set out by the manufacturer could have posed a threat to Vaught's job security. Finally, by enacting an unnecessary override, Vaught risked the possibility of the death of a patient and the consequences that came with that. The Goal of a nurse should be to protect and sustain patients during a time of illness and/or injury. By disregarding safety guidelines, Vaught risks failing at the very essence of what it means to be a nurse. Vaught falls short of fulfilling her duty of caring for the patient with diligence and in a precise manner. Another consequence of a patient's death is monetary and legal repercussions. Vaught, after her conviction, was not only stripped of her nursing license, but she was also fined $3000, had to pay $60000 in prosecution costs, and had to serve 3 years of supervised probation (Barry et al., 2022). This is a catastrophic negative consequence in this situation because not only does Vaught owe monetary reparations, but she also must find a new

way to earn this money as she cannot return to nursing. When considering these consequences in the moral balance sheet that we are performing, the negatives far outweigh the positives. The loss of money, death of a patient, and overall failure to perform her expected career duties overshadow the small amount of good that came from a faster administration of drugs.

In the same sense, when we evaluate the act of this unnecessary emergency override with utilitarianism's freedom principle, it is still found to be morally unjust. When comparing the possible favorable consequences previously stated with the possible restriction of freedoms of the individuals connected to the situation, it is apparent that the action is not reasonable. The loss of life for a patient is an enormous and permanent loss of freedom for the person. Meanwhile, administering the wrong medicine undermines the trust that the patient and their loved ones put into the professional competency of Vaught. It is akin to lying to the patient about her own abilities and effectively tricks them into resting in the care of someone that cannot protect them from their own carelessness. Although Vaught hopefully did not intend to end the life of her 75-year-old patient, her negligence was culpable in their death.

Given this moral balance sheet with both principles of utilitarianism in mind, it should be easy to see the fact that Vaught's original action of an emergency override was morally wrong to do so. Despite these reasons, critiques to the total moral judgement of Vaught in this particular action propose that the harm did not come from the act to override the emergency feature of the ADC, but rather in the mistake of dispensing Vecuronium instead of the desired Versed. They elaborate that because of the inconsistency in drug naming standards within VUMC, Vaught is not entirely culpable (Williams et al., 2023). In the ADC system, Versed, which is the brand name for the drug, was referred to by its generic name, Midazolam. Although this could be blamed on lack of training from the hospital, this eventual error could have been prevented if

Vaught relied on the safeguards and regulation put in place to catch such mistakes. Therefore, although others might be reasonable in shifting the focus from Vaught to the medical center, it is still on the individual to follow rules and regulations set up to keep people safe. The approval of a second opinion from a board-certified doctor could have been the difference between the life and death of Vaught's patient.

The Engineers

Now that we have analyzed the actions of the individual prosecuted for this human error, I investigate and confirm that the ethical decisions made by the engineers who designed the automatic dispensing cabinet were morally justified. For this specific instance, I will use act utilitarianism to identify the morality of the decision to include an emergency override within the system. Although the brand of ADC was not specified, the BD Pyxis automatic dispensing cabinet could be used as an industry standard of this technology and was designed similarly to address the slow processes of pharmacies in the in-patient hospital setting (Newman, 2016). The technology is meant to speed up the time from prescription to the administration of drugs. According to BD's website, the Pyxis was designed to "help increase inventory visibility and address your medication error challenges to ensure medications and supplies are available when they are needed across care settings" ("BD Pyxis™: Connected Medication Dispensing Solutions", n.d.). Although this was its intention, could this technology have a role to play in the death of RaDonda Vaught's 75-year-old patient? The technology itself had a part to play in this situation, however, I assert that the engineers who designed this system acted justly in including an emergency safeguard. Within the in-patient setting, when a patient is in distress such as a case of cardiac arrest, a code is instated for that floor of the hospital. This means that a collective effort from doctors and nurses is required to save the life of an individual in critical condition.

For these professionals to get the best results possible, they must act quickly and concisely. Therefore, if a medication is needed to save the life of a patient, they cannot be bogged down by the safeguards and procedures that are in place during relatively normal times. This is why the emergency override is in place to prevent such loss of life in a very commonly occurring instance (Paterson, Manning, Schmidt, & Provine, 2022). This means that the intended consequences of this feature are overall safety and a greater level of care for patients. The unintended outcomes of this are found in the deliberate misuse of this technology.

When applying the utility principle to the engineering decision of incorporating an emergency feature into the design, it is very favorable for the BD engineers. The negatives include unforeseen actions from healthcare providers in misusing the equipment. In this exact case, I have already provided examples of the user's manuals provided by hospitals about how to manage applications such as the emergency override. It is the responsibility of the engineers and manufacturers to provide ample information about the usage of their equipment, but if a professional does not heed to their recommendations and guidelines, it is fault of the consumer which is ultimately the hospital system and the individuals using the technology. Therefore, the possible downfalls of including this feature in the technology do not apply to the manufacturer if they have provided the necessary information about its usage. The positives of this decision's utility are compelling as well. The ability for doctors and nurses to effectively provide medication for people in a desperate time of need such as a code situation is the biggest positive and the intent for this feature. By providing healthcare providers with a quick and effective alternative to traditional pharmacological options, the BD Pyxis creates a commonly good consequence for not only the professionals, but those in the hospital who trust upon the expertise

of these individuals. The feature ultimately is meant to save lives which can be seen as a very favorable consequence.

When looking at the freedom principle to analyze this decision, we can still find it to be morally justifiable. The emergency override does not directly restrict the freedoms of the user or for anyone that it encounters. In fact, it trusts the individuals who maintain and utilize the technology that they will, in their own personal liberty, use the technology as it was intended and for the common good. There is no foreseen negative of entrusting the technology to the people that bought it. It is the responsibility of the hospital system to effectively train and regulate the use of the automatic dispensing cabinet. Audits and surveillance on the technology are options available to the hospital in which it is now installed and are out of the manufacture's hands. In fact, if BD were to continually regulate the technology while it is under the ownership of the Vanderbilt University Medical Center, it would restrict the freedoms of the individuals that work within the administration to govern their own belongings. Therefore, when we utilize the freedom principle to analyze the morality in the inclusion of an emergency override option in the ADC, it is found that the designers were perfectly justified in their actions.

When we look at the moral balance sheet with these two utilitarian principles in mind, it is apparent that the engineers that designed the BD Pyxis were morally right in their actions. By adding more regulations to the system, it threatens a slower channel for doctors and nurses to obtain medications in a time of need. This in turn goes against the very purpose of the technology and fails to respect the autonomy of the user. The override is in place to streamline and accelerate processes healthcare providers need to go through to get medications in a life-saving situation and adding more regulation to that defeats this purpose. Meanwhile, adding more safeguards to the ADC makes the system less user-friendly and does not allow the hospital

in which it is being operated to procure their own regulations and training materials that allow for a more personalized utilization of the technology.

Conclusion

Through this analysis based on the theory of act utilitarianism, it can be asserted that the action of RaDonda Vaught falsely enacting an emergency override of the ADC system was morally wrong. Meanwhile, it can be found that the designers of the ADC were justified in their inclusion of such a feature. Although it not a particularly scientific quantification of outcomes, the moral balance sheet for this instance gives us great insight into the positive and negative consequences of an individual making a decision that is comparable to that of Vaught. It shows that the loss of life, freedom, money, and duty far outweigh the gain of a few more minutes to care for her patient and all of those entrusted to her on that floor at the time. Now that the moral implications of this case are established, the broader societal implications of the incident should be addressed. More thorough training and guidelines within the hospital system could prevent a similar event from transpiring in the future. However, it was essential to first analyze the morality of an event that took the life of an elderly patient. This is not only to express the magnitude of the situation, but rather to preserve the precious value of a human life.

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