

Introducing the ethical cycle model for resolving ethical conflicts in medical practice: addressing challenges in treating pandemic patients

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Abstract

Ethical dilemmas are among the most important ethical problems in medicine. With the advent of COVID-19, the moral problems of physicians have taken on new dimensions as the specific features of this disease pose additional ethical challenges that require particular solutions.

One common way to solve ethical dilemmas is to use ethical decision making models. One of the most recent models in ethics of technology is the “ethical cycle” developed by Ibo van de Poel. By describing and comparing several models, this paper examines the application of the ethical cycle to physicians' ethical problems and medical ethics. This model can help solve complex problems in consultations and ethics committee meetings because it is comprehensive and covers various aspects of the discussion.

In this model, first the ethical problem is formulated and analyzed and then the potential options for action are proposed.

Subsequently, by referring to ethical theories and professional codes of conduct in the medical field, as well as applying the method of "reflective equilibrium," an ethical decision is reached. This decision is specific to each case and may not necessarily be the best solution for other individuals or situations.

Keywords: Medical ethics; Ethical problem-solving; Ethical cycle; Reflective equilibrium; Ethical case study.

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Introduction

As a disease with distinctive characteristics and outcomes (e.g., unprecedented pandemics as well as psychological, economic and social crises) (1, 2), COVID-19 has presented new challenges and serious dilemmas in the field of medical ethics. It has aroused great anxiety all over the world (3-5) and disrupted rational and ethical decision-making, causing physicians who lack sufficient capability and competency to manage such circumstances to exhibit immoral behaviors.

Ethical conflicts or dilemmas are among the most important ethical issues in medicine. Different schools of ethics seek to solve moral problems in various ways, for instance by ranking moral principles, making exceptions and relying on moral intuition (6). Using moral decision-making models can be a part of this process. There are various models for ethical decision-making (7, 8), and the van de Poel model¹ is one that is sufficiently comprehensive and can help to resolve ethical dilemmas (9).

To illustrate how this model works, we present a common case to demonstrate its application in addressing frequent yet complex challenges. The case involves a female emergency medicine

specialist who works in multiple hospitals designated for COVID-19 patients. According to her husband, this situation disrupts family affairs and destabilizes the household. Consequently, he becomes dissatisfied and files a complaint. He also prevents her from attending the hospital, even though she examines approximately two hundred COVID-19 patients daily during the peak of the pandemic and works two-night shifts per week.

Her husband has two jobs and frequently travels. She makes efforts to align her night shifts with his travel schedule whenever possible, and she has chosen the emergency specialty with his consent. Nevertheless, he pursues legal action against her.

In the following section(s), this dilemma is analyzed using the model proposed by van de Poel.

Methods

In 2020, valid databases (Google Scholar, Pubmed Ovid, Springer) were searched using the keywords “ethical decision-making model”, “framework”, “dilemma” and “ethical challenge”. Articles from the last 20 years were reviewed, while more recent articles were prioritized. The present study’s criteria for introducing, reviewing and comparing ethical decision-making models were their

innovation, design for values, the moral acceptability of technological risks, engineering ethics, moral responsibility in research networks, ethics of newly emerging technologies, and the idea of new technology as social experiments.

¹ Ibo van de Poel is Antoni van Leeuwenhoek, professor in Ethics and Technology at Delft University of Technology. His research focuses on several themes in the ethics and philosophy of technology: value change, responsible

efficiency, competence and ability to solve real challenges.

The proposed model for resolving ethical conflicts in medicine, particularly for ethics committees, is the van de Poel model, which has been relatively underexplored and less evaluated. This model strives to resolve ethical dilemmas through a careful formulation and analysis of the issue. It employs a method known as "reflective equilibrium," integrating ethical theories, codes of ethics and professional codes of conduct in the medical field on the one hand, and intuition and common sense on the other. Reflective equilibrium is a method in ethics and epistemology, aimed at creating coherence between our beliefs and moral principles through a process of back-and-forth adjustment between specific judgments and general principles. Reflective equilibrium refers to the mental process of moving between our judgments about specific cases and subjects, the governing principles, and the theoretical considerations that influence the acceptance of these judgments or principles (10).

Results

The Ethical Dilemma of Dual Loyalty

Dual loyalty is a situation where physicians consider themselves committed and responsible both to patients and to a third party (e.g., family members, hospitals and organizations, insurance

companies and military officials). Although physicians' primary duty is to be completely loyal to their patients, in certain situations they may have to prioritize the interests of others over those of their patients. Dual loyalty is related to a spectrum of interests, at one end of which lie the interests of the patient, and at the other the interests of the society (11-14).

As spouses, parents and children, physicians have responsibilities toward their families, and as health-care practitioners they have obligations to the society. According to the principles of professional conduct, physicians have to provide health-care services to all society members while observing safety rules and principles. Due to the severe pathogenicity and high contagiousness of the disease, full observance of immunity principles has not been possible in combating COVID-19. Moreover, the long incubation period and the presence of asymptomatic forms of the disease make it difficult to successfully prevent the transmission of COVID-19 to the family. To complicate matters further, the disease also appears to be frustrating, severe and even fatal in some persons.

Ethical Decision-Making Models

These models can help resolve ethical dilemmas and provide systematic, categorized frameworks and classifications for decision-making (15, 16).

The models can help clarify and resolve the challenges and facilitate the training of learners and physicians to acquire the necessary skills for decision-making and analysis of ethical issues (17). Furthermore, models make the forthcoming considerations and highlights available to the decision-maker in a unified, faster and more practical way, and make the process of problem analysis and evaluation easier (18).

One of the models that has recently been proposed in technology ethics by van de Poel is a comprehensive model called the “ethical cycle” (Figure 1). This model is a valuable tool for organizing and correcting ethical decisions. It helps individuals analyze a moral problem systematically and comprehensively, justify the final decision from an ethical perspective, and finally, use an iterative rather than linear process, thereby reaching an acceptable ethical and justifiable solution (9). The stages of the ethical cycle are as follows: statement of the moral problem, problem analysis, options for action, ethical evaluation, and reflection.

The Ethical Cycle Model and Dual Loyalty Dilemma

though there may be two or more positive norms or moral values, they cannot all be fully observed at the same time.

An individual may seek to resolve the ethical dilemma personally or use the help of counselors and a team to handle the conflict (19). The ethical cycle model is comprehensive and provides the appropriate information required for the ethical judgment stage, especially for ethics advisors, including ethics committees making group decisions. Ethics committees are the primary reference for resolving complex conflicts and must analyze various aspects of a problem to make the best decision (20). Within these committees, there may be a subcommittee called the “ethics consultation section” that can provide specialized solutions to the problem in the shortest possible time (21). A rationality-based model such as this may not be entirely practical for physicians in emotional situations, but it is well-suited for ethics counselors and ethics committee members when they need to find a sensible solution. In the next section, we will explain this model, focusing on the above-mentioned case. The ethical cycle consists of several steps, the first of which is to formulate the moral problem. In an ethical dilemma, even

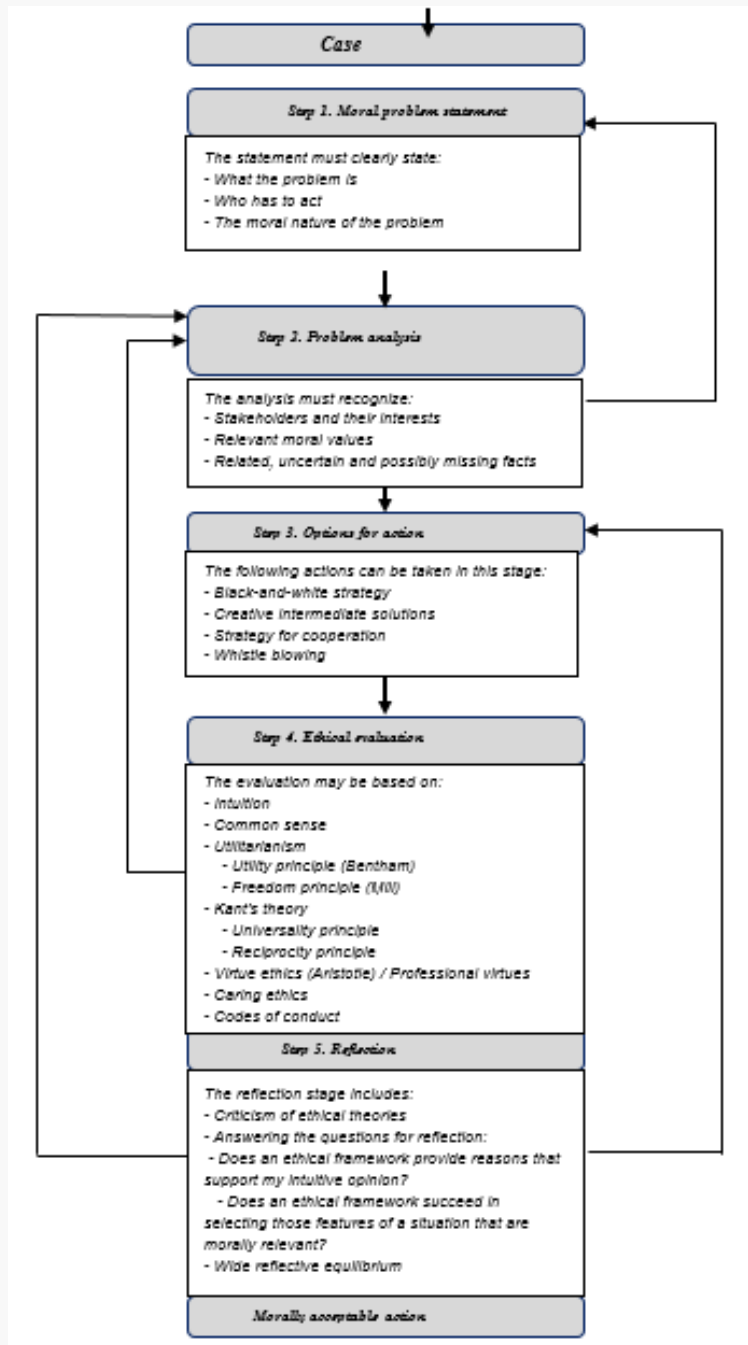


Figure 1: The ethical cycle

Step 1: Moral Problem Statement (the Moral Nature of the Problem and/or Who has to Act?)

In order to effectively apply the ethical cycle model to resolve moral problems, those problems must

be articulated clearly and precisely. An appropriate ethical question should specify the following three items: (i) What is the problem, (ii) Who has to act, and (iii) What is the ethical nature of the problem? In the case mentioned earlier, a physician who was working in the emergency ward of a hospital was trying to keep her work and personal life as unobtrusive as possible. During the COVID-19 pandemic, she continued to serve in several hospitals' emergency wards. While the society needed her expertise and services, her spouse and family wanted her out of the hospital. In the first step, this physician has to decide whether or not to continue working in the emergency ward despite family challenges. In the subsequent steps, the

formulation of the moral problem may change (e.g., when determining related values), or it may become clearer and more precise.

Step 2: Problem Analysis (Stakeholders and their Interests, Moral Right Holders and their Rights, Relevant Moral Values, and Relevant, Uncertain and Possibly Unknown Facts)

During the problem analysis stage, components related to a moral problem are described. In a moral problem, three main components can be identified: the stakeholders and their interests or moral right holders and their rights, the moral values related to the situation, and the relevant facts (Table 1).

Table 1. *Stakeholders and their moral values*

Stakeholders	Moral Values
The Physician	Maintaining a job (if it matters to her); the right to independence and autonomy (freedom to choose a job); the right to professional success and progress; performing the duty of treating patients; maintaining personal health; maintaining family life
The spouse and family of this female physician	Her management of house and family affairs (affected by reduction of the time spent at home, leading to dissatisfaction on the side of her spouse and children); maintaining her health and even saving her life (as a mother and spouse, she holds a job that has affected the health or life of family members); anxiety due to illness or even death of a family member
The hospital emergency ward	Benefiting from the services of a female physician; treating patients
The physician's colleagues	The burden of her duties falling on her colleagues until another physician replaces her
The health-care system	Expecting her to meet the society's medical care needs, since she has been trained for many years to meet such needs
COVID-19 patients	Health; treating disease; patient life

The next stage in problem analysis is related to moral values, which vary in different situations. Values associated with the discussed case are as follows: (i) general health, (ii) fidelity to maternal and marital responsibilities, (iii) commitment to patients, (iv) saving human lives and diminishing human suffering, (v) commitment to the health-care system, (vi) caring and concern for both family and patients, (vii) caring for the family's peace of mind, (viii) maintaining family life, (ix) avoiding actions that would hurt or break the family life, (x) freedom and autonomy, and (xii) commitment to colleagues (if they are affected by her decision, for example they are forced to cover her shifts). By specifying these values, the formulation of the moral problem can change as follows: What should this physician do to address the following ethical considerations? (i) public health and obligations to the medical profession, (ii) her right to freedom and autonomy, (iii) fidelity to maternal and marital responsibilities, and (iv) maintaining the health of herself and her family.

In the initial formulation of this case's moral problem, the physician had to decide whether to continue working in the emergency ward despite family challenges. This formulation proposed a black-and-white strategy: the physician had to

choose between continuing to work in the emergency ward and not working there. The new formulation emphasizes the relevant moral values and does not directly focus on possible solutions, thus offering more creative search space for finding various options.

The third stage in problem analysis involves considering relevant facts that stakeholders may disagree with. In a moral problem, the facts might be uncertain or non-deterministic, and can be used only if clear assumptions are considered. If the final practical choice selected at the end of the ethical cycle depends on such assumptions about the problem reality (which is usually the case), the final ethical judgment can be stated through conditional statements: "If X is true, option A is the ethically acceptable action; however, if Y is true, option B is ethically acceptable."

Related, Controversial, Uncertain and Possibly Missing Facts

Facts about the Disease

Due to COVID-19's infection severity and high transmission probability, full observation of immunity principles against this virus was not possible during the pandemic. Hence, the physician in our case is highly likely to get infected with the COVID-19 virus in the workplace. If she contacts

the disease, due to its long incubation period and asymptomatic forms, transmission of the disease to the family cannot be prevented. In addition, this disease is sometimes fatal, and therefore, continuing her job in the hospital may endanger a family member's life.

Facts about the Physician's Relationship with her Family

Although the physician chose this specialty with the family's consent, continuing to work under the circumstances may damage her family life. In the event of a family breakdown, her spouse and children will be affected, and the type and depth of damage depend on factors such as the children's age. In addition, we need to find out more about the family conditions before this disagreement to see whether they were in a stable and balanced condition.

Facts about the Physician's Spouse

Is her spouse a reasonable person? Is he only concerned about his personal interests, or can he also consider the society's interests? Such information is important in evaluating the third option.

Facts about the Hospital and Treatment Team

The unfavorable pandemic situation has created difficult circumstances for the medical staff, and if the physician leaves her job in the emergency ward,

the hospital will face the challenge of finding a suitable alternative. We should find the answer to questions such as "What percentage of physicians will refuse to serve?", and "How difficult is it to find a replacement physician?"

Step 3: Options for Action

In resolving a moral problem, typically a black-and-white strategy is adopted ("to take the action" or "not to take the action"), which seems overly simplistic in complex situations. In real life, options are usually not ready-made and should be conceived by agents. Utilizing strategies such as physician collaboration and consultation with other stakeholders, including the family and the hospital, increases the possible options. Sometimes, brainstorming and consultation can lead to a win-win situation where no one is harmed.

Whistle-blowing means interviewing the media or publicly announcing an adverse situation. It should naturally be the last resort because it usually imposes high costs on both individuals and organizations. However, it is necessary in some situations, such as when human safety and health are endangered and other options are unavailable.

The initial formulation of the case focused on choosing one of the two paths, but the next formulation shifted the focus to choosing an intermediate solution to act on both to the possible

extent. Some of those creative intermediate solutions are listed in Table 2.

Table 2. Creative intermediate solutions

Workplace Solutions	Family Solutions
Reduce working hours in the emergency ward while reminding the family of the value of her service during the COVID-19 pandemic	Remind the physician's spouse that she chose this job with his consent, and now she wants to fulfill her work obligations
Consult and coordinate with emergency ward management to employ safer methods in the workplace to prevent the staff from contracting COVID-19	Obtain the consent of the spouse and family by consulting with them to adopt a more favorable way such that family interests are less harmed in continuing to serve patients
Attend less dangerous situations in the hospital	Obtain the consent of the spouse through mediation of others, including the elders of the family
	Obtain the consent of the spouse by requesting him to visit the hospital and observe the social crisis situation closely, and talk to head of the emergency ward
	Get help from a family counselor
	Use higher standard safety equipment than what is normally used in the workplace, even at personal expense, to minimize the family's psychological anxiety

Step 4: Ethical Evaluation

In this step, based on formal and informal moral frameworks, various options for action are evaluated from an ethical perspective. Formal ethical frameworks include codes of ethics (based on professional ethics) and background ethical theories (e.g., utilitarianism, Kant's theory, and virtue ethics). The result of this step is an ethical evaluation of the various options, but the evaluations do not necessarily yield similar results because, in each situation, different frameworks create different options for action.

Utilitarianism

According to the act utilitarianism theory, physicians should do what brings the greatest good for the greatest number of people in the long run.

Therefore, at least at first glance, continuing to work as a physician in the hospital will have more public benefits than any other alternative. At a closer look, however, any damage to family life jeopardizes the family's interests. Potential harms should be balanced against the benefits for all parties affected by the action in order to evaluate the benefits realistically. However, utilitarians such as John Stuart Mill argued for the quality of benefits and the importance of considering quality rather than quantity (22). The physician's role in the hospital is significant in the patient treatment chain, but she also has a duty to her spouse and children to maintain the family foundation and family members' health. In this case, the latter seems more important in terms of benefit quality.

Deontology

According to Kant's formula of universal law: "Act only according to that maxim by which you can at the same time will that it should become a universal law" (23). If this physician quits her job, she has acted according to this rule: "When your family interests demand it, leave public service". However, this rule cannot become a universal law because in that case, people in need of service will not be served, and service to the public will be challenged and lose its meaning.

Virtue Ethics

According to virtue ethics and as stated by Hursthouse, an action is right if and only if it is what a virtuous agent would characteristically do in the circumstances (24, 25), i.e., how a virtuous human being thinks in various situations is important (26). Resolving apparent dilemmas and conflicts based on rules of virtue requires ethical wisdom (25-27). Therefore, wise people can discern what is relevant and fundamental in situations where it is difficult to enforce decision-making rules (28).

The virtuous agent has qualities such as conscientiousness, courage, kindness, empathy, benevolence, prudence and expediency. Virtues such as conscientiousness, kindness and benevolence in the physician require her to

continue to provide service in the hospital, and courage translates to steadfastness in the face of danger (29). However, the virtue of empathy requires the physician to understand the concerns of her spouse and children about her job. She should consider her personal life and interests, because the virtue of loyalty to the family is also important. Given the high probability of contracting COVID-19 and infecting her family members, kindness and benevolence toward them should make her hesitate to continue her work during the pandemic.

Clearly, ethical wisdom is needed to resolve this conflict. In virtue ethics, the correct application of virtues is the responsibility of the agent with practical wisdom, and people without such wisdom should follow the exemplars (25-27). Therefore, the conclusion is not achieved solely by relying on principles because the agent must have practical wisdom and act through careful reflection on the conditions and facts. After examining the details and evaluating the complexity of the application of practical wisdom, the agent decides which rules to apply depending on the situation. In addition, it is possible for two virtuous human beings to respond differently to similar circumstances (25, 26, 30, 31).

The Four Principles Approach

Based on the method of Beauchamp and Childress, we can make decisions to solve moral problems using the four conventional principles of medical ethics (autonomy, beneficence, non-maleficence and justice). These principles are a form of prima facie duty in Ross's intuitive theory, formulated according to the medical profession's norms (32). Beneficence and non-maleficence require the physician to manage and treat patients in crowded emergency wards during the pandemic, thereby satisfying the needs of both patients and the society.

Another framework derived from the four principles pertains to medical profession commitment, one aspect of which is altruism, or the conviction to always prioritize the patient's interests. In the Charter of Professional Commitment, the clause on professional responsibility and access to quality services for patients also implies that physicians provide optimal care even in difficult and pandemic conditions because such circumstances are part of the medical profession's nature. According to Article 51 of the Principles of Professional Conduct, "Physicians are obliged to provide health services to all individuals, including those with special and contagious diseases, in accordance with the rules and principles of safety"(33). According

to the standards of professional commitment expected of medical service providers, the physician should not refuse to treat patients and should observe all protective standards in the process.

In addition, the ethical principle of reciprocal duty requires that the society support individuals who encounter inordinate hazard or burden to protect public interests. Thus, individuals risking their lives and health during pandemics of infectious diseases should receive priority access to scarce resources. Providing protective equipment and prioritizing care are among the most objective forms of safety and support for the medical staff. Reasonable and evidence-based protection of staff is part of the health-care system's ethical responsibility. Accordingly, the physician has the right to refuse to provide healthcare if she can prove that the protective measures are not adequate; otherwise, she should continue to perform her duties while observing health and safety measures, or leave the job.

Informal Ethical Frameworks

In addition to the formal codes and theories mentioned above, informal frameworks, such as common sense and intuition, may be used as a basis for ethical evaluation. To demonstrate how

these frameworks are used in an ethical investigation, we will use intuition as an example.

The "intuitionist framework" is quite simple: you decide which course of action is more intuitively acceptable to you, and you make the case for it (9).

The doctor's intuition in this case might prioritize protecting the family because family members, especially children, are more vulnerable, or she might think that saving patients' lives is more important than other values.

There are certain issues about using intuitions to solve ethical problems. For example, in different circumstances, people's intuitions can vary and differ from one another, and there is always a chance that people will mistake intuition for their typical emotions. Additionally, in order for moral agents' intuitions to be acceptable, they must fulfill certain requirements. Ethical problems would probably be solved if we were equipped with an intuitive power to distinguish between right or wrong, but pertinent psychological and anthropological evidence refutes the existence of this kind of power (34).

Step 5: Reflection (Examination and Evaluation of Ethical Theories, Answering Questions and Equilibrium)

Different ethical frameworks do not necessarily lead to the same results, so more reflection on the

results of the previous step is needed to select a sensible option for action. The approach used for this reflection is known as "wide reflective equilibrium". Its purpose is to create coherence in three types of beliefs: 1) considered moral judgments, which we have already examined (in one situation) and therefore believe in their correctness, 2) moral principles, and 3) background theories, which include ethical and other relevant theories such as psychological and sociological theories.

In the process of reflection, various ethical judgments in a case are weighed against each other to reach equilibrium. Therefore, it is important to argue for or against different frameworks (which may include one's intuitive opinion or common sense) to reach a conclusion that could not be achieved by examining each framework separately. The purpose of this step is to choose an action from different options. Ethical consultation with others who have a share or role or are likely to be influenced by the decision may influence the final decision.

In order to demonstrate how the background theories and formal frameworks must be examined, we will scrutinize the application of act utilitarianism, deontology and virtue ethics in our case below:

The theory of act utilitarianism considers only benefits, so it ignores duties and rights. In this case, the physician must determine if the long-term benefits for all individuals affected by her action will be greater if she chooses to continue her work in the hospital; however, duties (such as patient care) and rights (such as the physician's right to autonomy) are not considered in act utilitarianism. It is very difficult to calculate the potential benefits of an operation for two reasons: first, some of the relevant benefits are qualitative and therefore too complex to evaluate properly, and second, it is difficult, if not impossible, to calculate the long-term benefits and harms of various options, such as the benefits of patient treatment and health restoration, or the harms of a physician's job to herself and her family (35, 36).

Kant's deontological view, on the other hand, emphasizes the physician's duty to patients and the physician's right to autonomy but neglects potential benefits and harms. In addition, Kant offers an absolute view that ignores exceptions and cannot resolve potential conflicts (36). Moreover, this view does not take the physician's feelings and motivations into account. Rational perceptions, which Kant believes to be the only reasons for taking the right action, are external factors unable to motivate the subject because reason can only

motivate the agent to perform an action if the agent has previously internalized it in conscience (37).

Virtue ethics has also been criticized for its insufficiency in determining virtuous agents or finding exemplars, as well as failure to provide precise criteria for correct actions (38, 39). This theory provides a good explanation of the ethical motivation for internalizing ethicality and offers a comprehensive method for ethical decision-making based on the character, purpose and motives of the subject (40). Hence, in these cases, theories such as virtue ethics and care ethics are more effective than action-oriented views like Kant's absolutism and utilitarianism. While traditional solutions are too abstract and general to meet the emotional and psychological contexts of health and care, virtue ethics is an appropriate alternative for solving moral problems in the health-care field (41).

Among the informal cases, we will only examine intuition. As mentioned in the fourth step, one person's intuition may lead them to consider saving patients' lives as the most essential value, but another person's intuition may cause them to be concerned about the family's fate. Therefore, the best choice is an action supported by both values rather than a single value. As mentioned in the third step, creative intermediate solutions are better than a black-and-white strategy because choosing an

action via the latter will violate one of two critical values on the other side.

Among the intermediate solutions, family solutions have priority over workplace solutions because workplace solutions aim to adapt the conditions of the hospital to the physicians' family conditions and limit the services related to saving the patients' lives. In contrast, family solutions are geared to satisfy the family and create a new understanding and agreement. In this way, there is no disruption in hospital services. Choosing the best family solution is entirely contextual (9). In other words, as mentioned in the second step, we are dealing with "uncertain and possibly missing facts" that depend entirely on the family's circumstances. For example, in the third step, we saw that most family solutions depend on negotiations among family members, who may consult with a counselor or a respectable relative with more experience, depending on the facts and family conditions.

As mentioned above, there are many problems in the application of intuition and relying on it, but according to van de Poel, intuition-based judgments could be evaluated by the wide reflective equilibrium approach:

"Does an ethical framework provide reasons that support my intuitive opinion? ... If not, do I have to revise my intuitive opinion, and in what way?" (9)

Therefore, at this stage, we evaluate judgments based on intuition along with background theories, such as moral theories. Family solutions seem to be more successful in promoting the public interest through saving patients' lives. As a result, these solutions can provide the desired public benefit of act utilitarianism. However, the physician's role is qualitatively more significant in maintaining the family's foundation and ensuring the health of its members. On the other hand, the doctor will be successful in public service, which can become a universal law from the perspective of Kantian theory. Virtue ethics somehow confirms these solutions because the physician should continue to serve in the hospital according to virtues such as conscientiousness, kindness and benevolence to patients, and at the same time, she can practice the virtues of empathy, loyalty and benevolence in her family.

Nevertheless, success of family solutions depends on the facts and conditions. For example, if the physician cannot obtain the consent of her spouse and family by any of the mentioned methods, or alleviate their concerns about the health risks in acute pandemic conditions, she will have to shift to hospital solutions. However, these solutions also may fail, as the hospital may reject her request to work shorter hours or to be transferred to a less

dangerous ward because of the critical need for her expertise in the department. In this case, we have no choice but to refer to one of the black-and-white solutions. Therefore, the doctor has to choose between serving in the hospital and not working there.

Here we will return to ethical frameworks. According to Kant's theory, continuing to serve patients in the emergency room would be moral because it could become a universal law. From the perspective of act utilitarianism, it is moral to continue working in the hospital because it promotes the greatest amount of good for the greatest number of people. However, the theory of virtue ethics does not help us reach a specific conclusion in choosing one of these two options because virtuous person's decisions can be different or unrecognizable in such cases.

Overall, our goal for the last step was to choose a well-argued option using the "wide reflective equilibrium" approach. We saw that among the options, the use of creative intermediate solutions is a priority, and among them, family solutions are preferred because they are likely to cause little or no disruption in the service to patients. Moreover, these solutions are confirmed by formal theories such as utilitarianism, Kant's theory and virtue ethics, and intuition, which is an informal solution.

However, if these solutions are rejected by the family, hospital solutions can be considered. If the hospital disagrees with this kind of solution, the doctor has to choose one of the black-and-white options, i.e., continue to work, or quit the job. Between the last two options, continuing to work in the hospital and serving patients is a priority because theories such as Kant's theory and utilitarianism justify it.

Discussion

Due to the distinctive features of COVID-19, physicians have faced difficult ethical challenges, including the dual loyalty dilemma. The high mortality rate, lack of definitive treatment, high pathogenicity that rendered personal protective equipment almost ineffective, lack of preventive treatments, long incubation period and asymptomatic forms have seriously and painfully affected physicians. Staff who have an underlying illness or live with the elderly or sick individuals are more likely to face ethical problems such as the dual loyalty dilemma. Moreover, persons who deal with patients for a longer period are more likely to contract the disease and spread it to their families (42).

One of the best, but not so popular methods in Iran is using ethical decision-making models. Choosing

a model and acquiring competency in applying it will facilitate and expedite decision-making and enhance the ability to resolve conflicts. Some of these models are simpler and therefore easier to apply, although they may have shortcomings as well (8).

Most ethical models list their desired values and reach solutions by considering them and evaluating possible options. For example, Johnson et al., in their proposed four-component model, showed through many examples that an appropriate ethical solution can be achieved by considering four factors (medical indications, quality of life, background characteristics and patient preferences) (43). Edmond L. Erde stated that clarifying the concepts of well-being, patient inclinations and individuals' position in terms of morality and social requirements is the main step in resolving ethical conflicts (44). Even the Hundert model does not set specific values but introduces an approach to balance the decision-maker's values (16).

Some models list possible solutions and evaluate the consequences of each by considering different sets of criteria, for instance the positive and negative effects of an action and compliance with the values (45), or the criteria developed in the models (46).

Other models have defined a process for ethical decision-making. Bernard Lo (47) and the University of British Columbia (48) belong in this category. These models, which may be common in some stages of the process, try to consider different aspects of an issue and achieve more accurate and defensible results. These models are more complex and require more advanced skills to use, and most of them depend on group thinking and decision-making, so in addition to complexity, they are not suitable for individual use. In some cases, consulting with others is part of the process used in the model.

The model used in this study, the ethical cycle, is of the recent type. This model is able to help solve complex problems in consultations and ethics committee meetings because it covers various aspects of the discussion. However, it may not work for urgent decision-making. For example, a doctor at the patient's bedside who has to make a prompt decision cannot use this model to resolve a moral dilemma because it is complex and time-consuming.

Starting the steps with the moral problem statement is another advantage of the ethical cycle model. An incomplete statement of moral dilemmas can lead to an unclear understanding of the situation's difficulty, resulting in the incorrect resolution of

ethical issues. Thus, even if a good solution is offered, the real problem is solved incorrectly because of the insufficient problem framing. Formulating the ethical problem allows for a better understanding and description. The ethical cycle identifies stakeholders and pertinent ethical values in the second phase. The outcome of this thought process is a more accurate identification of all parties concerned with the problem as well as all related values. Consequently, there is less chance of overlooking any of those involved and their values.

Another advantage is using creative intermediate solutions, which increases the number of available options and can resolve or simplify a seemingly irresolvable moral dilemma. Also, the "wide reflective equilibrium" approach enables us to achieve coherence between the different layers of our moral beliefs, such as intuition-based moral judgments, moral theories and moral principles. These features of the ethical cycle indicate that it is quite comprehensive compared to other methods and can be recommended for solving complex ethical problems.

Conclusion

Regarding this case, we can finally conclude that intermediate solutions, especially family solutions

that do not disrupt service to patients, are a priority, and even if the physician is forced to choose a black-and-white solution, it is preferable to continue serving patients.

Ethical evaluations of ethical dilemmas should be seriously considered in pandemic times, and hence, this study suggested the use of van de Poel's decision model for such assessments. During pandemics, different situations should be anticipated in advance, and the necessary instructions should be developed for such circumstances.

We suggest examining and comparing the ethical cycle model with alternative problem-solving methods in medical ethics and other areas of applied ethics in multiple cases and revising it as necessary.

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None.

Conflict of Interests

Figure 1 (The ethical cycle) has been quoted directly from the book by (as cited), and formal permission has been obtained from the original author.

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