

CASE STUDIES & TEACHING CASES

Accepting or refusing a donated organ for transplantation:
Dr. Jonas' dilemmaLUÍS ANTÔNIO DA ROCHA DIB¹CLAUDIA ARAÚJO¹JOEL DE ANDRADE^{1,2}MÔNICA FERREIRA DA SILVA^{1,3}¹ UNIVERSIDADE FEDERAL DO RIO DE JANEIRO (UFRJ) / INSTITUTO COPPEAD DE ADMINISTRAÇÃO, RIO DE JANEIRO – RJ, BRAZIL² UNIVERSIDADE FEDERAL DE SANTA CATARINA (UFSC) / UNIDADE DE TERAPIA INTENSIVA, FLORIANÓPOLIS – SC, BRAZIL³ UNIVERSIDADE FEDERAL DO RIO DE JANEIRO (UFRJ) / PROGRAMA DE PÓS-GRADUAÇÃO EM INFORMÁTICA, RIO DE JANEIRO – RJ, BRAZIL

It was 9 o'clock in the evening on a rainy Thursday when Doctor Jonas Andrade finished having dinner with his family. When he finally checked his cell phone, he saw five missed calls and a message from the Santa Catarina Transplant Center (CET-SC). The information brought a smile to his face – there was the availability of a kidney for donation! It would finally be possible to do Carlos' transplant, a patient with deteriorating health and on the waiting list for five years now to receive a "new" kidney. The doctor contacted the CET-SC to ask for information about the organ donated. He learned that it belonged to a man who when climbing a ladder to fix his roof, fell from seven feet. The head trauma progressed to brain death after three days of hospitalization. He was previously a healthy person with normal lab tests. His family had agreed on donating his organs. But there was a detail to be considered – he was 68 years old.

Jonas hung up the phone as he dropped his body onto the living room couch. His initial excitement faded...such a long wait and the organ was not ideal. Carlos was only 40 years old. How could he accept an organ from a donor almost thirty years older? On the one hand, it was almost certain that Carlos would have problems again in a few years. On the other hand, the patient was eager to "return to a normal life," as he always said, and this would only be possible with a kidney transplant. Other doctors would transfer the decision to the patient without hesitation, but Jonas firmly believed that Carlos would not be able to decide. Besides being a layman, he was directly vested in the case, so he wouldn't be able to reach the best decision based on science and reason. No... Jonas would have to take responsibility to accept or refuse the kidney offered even if the patient's consent was mandatory.¹ What would be the most sensible choice?

BACKGROUND

On the Monday of the week when Dr. Jonas received the news of the availability of the kidney, oblivious to what the future would bring, Sebastião woke up feeling really good, so he decided to finally face the task of changing some cracked roof tiles, a type of job he had done countless times in his years working in civil construction. A few months ago though Sebastião began to feel some knee pains, so climbing a ladder had become a more complicated task, but there had been leaks inside his house the last few days when it rained and the tiles needed to be changed as soon as possible. Sebastião ignored the pains and climbed the ladder to tackle the job with his usual ease. On his way down, however, he lost his balance and fell from a

¹ In Brazil, organ donation is governed by Consolidation Ordinance No. 4 of September 28, 2017. The document includes Ordinance No. 2,600 of October 21, 2009 that approves the Technical Regulation of the National Transplant System. In Section I, Kidney Module, is Art. 59: "To offer other options to meet the needs of the single list of potential kidney receptors, donors with expanded criteria may be used as long as art. 40 is followed. §1 The stated manifestation referred to in the heading of this article must be based on a Free and Informed Consent Form regarding the use of donor organs with expanded criteria signed by the recipient. §2 Donors with expanded kidney criteria can be used at the discretion of the transplanting team [...]". The decision is made within the technical criteria, whether expanded or not. The Brazilian Code of Medical Ethics in relation to transplants deals in chapter VI specifically with conduct that is prohibited by doctors such as the commercialization of human organs or tissue (Conselho Código de Ética Médica, 2019).

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height of seven feet. Unconscious, he was rescued by neighbors who took him to the closest public hospital. Upon arrival, Sebastião was sent to the Intensive Care Unit (ICU) with the diagnosis of a head trauma.

His brain death was confirmed at 4 am on Thursday. The family was notified at the hospital at 8 am. Tião, as he was affectionately called by those who loved him, was a generous person, dedicated to his family and friends. He had worked all his life as a bricklayer, and despite modest gains, he always provided for the needs of his family. His sudden death was a hard blow to his wife, Dona Nena. "Tião was as strong as an ox", she babbled, still in shock at the idea that an accident at home had taken her husband's life before he turned 70.

Sitting in chairs placed in one of the hospital corridors, Dona Nena and her two children were trying to process the news when they were called by the nurse and doctor on duty. Both were didactic as they explained that Sebastião had progressed to brain death, an irreversible condition, but one that would allow his organs to be donated for transplant. Dona Nena and Tião had never talked about organ donation, but she knew her husband's generous heart. Helping save the lives of others was something she was sure her husband would approve. So the family decided to donate.

The CET-SC was notified of the potential donor and the necessary tests began to be run. It was important to identify as soon as possible which patients on the waiting list would be compatible with the organs so that they could be offered. Each patient on the waiting list is linked to a transplant team that is contacted when organs come up for donation. Contact is usually made with transplanting physicians since they have the most experience on the team and have the power to decide whether or not they accept the organs offered. In the case of Tião's kidneys, the first contact was made at 1 pm on Thursday with the team of the patient Ricardo, a diabetic, age 24, but the offer was refused given the condition of Ricardo's health and the donor's age considered advanced. Cesar, 65, was second on the list. His doctor was contacted and became interested in the organ, but the patient was out of state and could not return in time. CET-SC went back to the list and contacted the team for Dona Vera, a 67-year-old woman who had been on the waiting list for several years. Because she was hospitalized with pneumonia at that time, she could not receive the transplant.

It was already evening when the CET-SC tried to locate Dr. Jonas, the transplanting doctor responsible for Carlos, a 40-year-old patient, who was next in line for receiving a kidney. After several calls and an unanswered message, about when the Center was getting ready to move on to the next one on the list, the doctor finally made contact, although he seemed indecisive about accepting or not the organ offered.

CARLOS' ROUTINE

Carlos had developed a serious kidney problem at age 30 and had been in line waiting for a kidney since he was 35. He survived by taking dialysis treatment three times a week. Each time he went to the clinic, he spent three to four hours connected to the machine that filtered his blood, doing the work that his kidneys could no longer do. He could only possibly stop this routine with a transplant. Between dialysis treatments, Carlos felt severe symptoms of kidney disease such as shortness of breath, fatigue, muscle cramps, and nausea. He waited anxiously for a compatible kidney so that he could return to a life closer to normality. Carlos did not travel and kept waiting for that wonderful moment. Every time the phone rang, he had hopes of it being the offer of a kidney. Over the five years of waiting, some organ offers came up, but none worked out. Once he was sick and couldn't do the transplant; on another occasion he was traveling with his wife when he received the offer and couldn't get back in time. After that he never left Santa Catarina again. The third time, everything seemed like it was going to work out, but the kidney was rendered unviable during the surgery to remove it from the donor. On that occasion, Carlos was already at the hospital when he received the news that "they had damaged the organ." That spiraled him into a depression. He couldn't believe his lack of luck because he had been told that 80% of the patients had a kidney by the second year in line. "I think I'm one out of five", he thought when he tried to console himself. If he knew that less than 4% of patients were in his situation, waiting in line for a kidney for at least five years, then he would be convinced that the universe was conspiring against his health. After all, luck or misfortune consist of statistics interpreted from a personal point of view.

Carlos had a good relationship with Dr. Jonas, to whom he complained that “his life was on hold” waiting for an organ. The doctor would always encourage him “to not despair” and that he was going to get “the right kidney for him.” Carlos found Dr. Jonas to be a little closed, a man of few words. He also seemed to be somewhat proud when he boasted in the “good results” achieved with the transplants he performed. Carlos feared that the doctor would be overly cautious in choosing the organs so as not to tarnish his transplant indicators.

Carlos questioned his doctor if it would not be possible to work with a larger range of organs for transplantation. In that conversation, Dr. Jonas was emphatic in his answer: “It is a technical decision that must be made by the doctor. The patient has neither the knowledge nor the emotional detachment necessary to make the best choice. You can trust my decision.”

ORGAN DONATION

In the case of patients with terminal renal failure such as Carlos who require regular dialysis, renal transplantation is the best therapy as it provides greater survival and quality of life. In addition to being more effective, they imply in lower costs for the health systems in the long-term when compared to options such as dialysis and hemodialysis (Silva et al., 2016).

In several countries of the world, such as Brazil, there is much more demand for organs for transplantation than supply of donations. The success of organ transplants is one of the factors that explain the critical shortage of organs. Another important factor is the “wasting” of potential donors, which occurs for several reasons such as over emphasis on the contraindications, refusal of the family to authorize donations, or failures during the removal or transportation of the organs. Renal transplantation is the best performing, but still less than 50% of the transplants needed are performed.² In Brazil, according to official data, more than 50,000 patients were on the waiting list in 2021.

With an aging population, and therefore of the donor pool, many experts point out that many more organs could be used by adopting expanded criteria. For example, in 2015, more than 50% of donors in Spain were older than or equal to 60 years of age when they died. These donors are classified as expanded criteria donors according to criteria from the United Network for Organ Sharing [UNOS]. Among these, 30% were over 70 years old and 10% were over 80 years old. This group of patients older than 60 contributed with 41% of renal transplants due to donor death, while 51% of liver donors, and 24% of lung donors (Matesanz et al., 2009).

There are barriers to organ donation by people over the age of 60. The patients receiving organs with expanded criteria need more care after the transplant, which increases costs. There is also a lack of standardization in the decision-making processes, which results in medical contraindication for the donation of this type of organ, which is perceived as being of lower “quality” and with greater risk of resulting in unsuccessful transplantation. Doctors such as Jonas do not like to take additional risks in a procedure already so uncertain by nature.

DR. JONAS' DECISION

Dr. Jonas was part of a transplant team known for its conservatism in the choice of organs. They only accepted very good organs and from patients up to 60 years old. This stance gave the team a good reputation with its performance indicators, a fundamental factor for obtaining accreditation from the Ministry of Health and maintaining the authorization to perform transplants. The teams are linked to an institution that provides two performance indicators for the Ministry to analyze every year: patient survival rate (percentage of patients who remain alive after one year of transplantation) and graft survival rate (percentage of transplanted organs that remain functioning after one year). The higher the rates, the better for the institution and the team because it has provided good results. There is pressure from hospitals to ensure that the indicators of their teams are very good because accreditation for transplanting means financial resources for the institution and for the team since it is a procedure of high complexity and well paid. The Ministry of Health, however, does not specify what is a “good”

² 6,283 renal transplants were performed with a demand for 12,510 kidneys. These are the numerical data of organ donation and transplants performed by state and institution from January to December 2019 (Brazilian Register of Transplants [RBT], 2019).

or a “bad” indicator, but there is continuous pressure to “reach the best possible indicator.” Dr. Jonas’ team performed only 58 transplants between 2018 and 2021 with a patient survival rate of 94% and a graft survival rate of 95% in the period.

Despite this, there was pressure from the CET-SC Coordinator to increase the use of organs donated, thus encouraging to accept organs that, although considered not ideal, would help save lives. He had just called a meeting in which he showed very discouraging data about the use of organs in the state: of the 618 kidneys offered throughout 2021, 376 (60.8%) had been refused by transplant teams. This situation was considered “unacceptable” as people die every year waiting for an organ.

Dr. Jonas was aware of successful international experiences with the use of organs from elderly donors. He had recently read a study from Spain on organ transplantation of 85-year-old people to also elderly patients, as part of a policy called “Old for Old”. But this was not the case of Carlos, who was only 40 years old and whose option was a kidney from a 68-year-old donor. It was not a simple decision! Jonas knew of another more “bold” transplant team who accepted kidneys from patients over the age of 60, so he decided to contact a colleague from this team to learn more about the indicators. He was positively surprised: in 2020, the survival rate of the patients was 81% and the grafts was 93%. Those were not bad numbers, but not as good as his.

Jonas was wrapped up in his thoughts when he was interrupted by his cell phone ringing. It was CET-SC again requesting an immediate answer. A kidney could only stay out of the body without blood circulation for a maximum of 36 hours. And this one was an organ from an elderly patient, which is even more perishable. The process of checking on patients above Carlos on the waiting list had taken a lot of time. There were only 12 hours left for the transplant to be performed, otherwise Sebastião’s kidney would be irreversibly lost. But what would be better for Carlos? Accept or refuse the kidney now? Would there be an offer of an ideal organ in the near future? An ideal kidney depends on several factors related to the donor such as length of hospitalization, age, absence of significant comorbidities, and absence of infectious processes. With so many variables, it is very difficult to predict when all of them will be met.

Jonas missed having indicators to help in this decision, such as “non-ideal organs last X% less years on average and result in Y% worse quality of life.” Such data, however, did not exist. Information about this came from the medical literature. A much cited article estimated some indicators for patients in the United States (Ojo et al., 2001). The study compared results of patients who were not transplanted and remained on dialysis with patients who received a less than ideal kidney and patients who received an ideal kidney. Patients who received the non-ideal organ had a survival rate of 74% in five years, while the graft survival in this period was 53%. Patients who received an ideal kidney in the same period had survival of 67% and grafts were 80%³. The adjusted annual mortality rate was 6.3% for dialysis patients, 4.7% for patients who received the non-ideal organ, and 3.3% for ideal kidney receptors. The estimated remaining life span was about 15 years for dialysis patients and 20 and 29 years for non-ideal and ideal kidney receptors respectively. These results indicated that the transplantation of a borderline kidney is associated with a significant benefit not only in survival when compared to maintenance dialysis, but also the most relevant: the patient’s quality of life.

NOW

Under legal terms, Jonas could perform the transplant provided the patient also gave his approval. The doctor was absolutely sure that Carlos would agree and be quite enthusiastic about getting a glimpse of a different routine for his life. But the doctor still had to consider that Carlos had no knowledge of all the technical implications known to him. In this case was he too worried about indicators and failing to empathize with his patient?

Jonas tried to ponder the variables, but the insistent voice coming from his cell phone interrupted his line of reasoning: “Doctor Jonas, what is your decision? Are you going to accept this organ or not? We need your answer to move forward with the process and not lose this kidney. We have other people in line if you don’t accept it. Doctor Jonas, are you there?”

³The study had an adequate statistical significance of $<p 0.001$.

TEACHING NOTES

Accepting or refusing a donated organ for transplantation: Dr. Jonas' dilemma

Abstract

The case presents the dilemma faced by Dr. Jonas, the physician responsible for the decision to accept or refuse a kidney for transplant for his patient, Carlos, who has been waiting for a kidney for five years. Dr. Jonas is guided by rationality and science and wants the best for his patient. However, he wants to maintain his excellent success rates in transplants. Carlos is eager to “come back to life” with the transplant, getting out of the terrible dialysis routine. With the death of Sebastião, a kidney is available for Carlos, but he is a 68-year-old donor, and Dr. Jonas is hesitant to accept the non-ideal organ for his 40-year-old patient. The case proves to be opportune to discuss Judgment and Decision Making (JTD) processes, especially the escape from rationality by simplifying behavioral heuristics and their consequent biases. The case was developed to be used in JTD or management disciplines in Health and Healthcare services in *lato* or *stricto sensu* postgraduate programs. By discussing the case, students are expected to develop skills to structure decision-making and avoid common behavioral pitfalls.

Keywords: Judgment and Decision Making. Judgment Heuristics. Behavioral Heuristics. Organ transplantation.

Aceitar ou recusar órgão doado para transplante: o dilema do Dr. Jonas

Resumo

O caso apresenta o dilema enfrentado pelo Doutor Jonas, médico responsável pela decisão de aceitar ou recusar um rim para transplante do paciente Carlos. O médico é norteado pela racionalidade e pela ciência, quer não apenas o melhor para seu paciente, como também manter seus bons índices de sucesso em transplantes. Carlos está ansioso por “voltar à vida” com o transplante, livrando-se da terrível rotina de diálises ao longo de cinco anos na fila de espera por um rim. Com a morte de Sebastião, um rim fica disponível para Carlos. No entanto, trata-se de um doador com 68 anos de idade. Doutor Jonas hesita em aceitar o órgão não ideal para seu paciente de 40 anos. O caso promove a discussão de processos de Julgamento e Tomada de Decisão (JTD), especialmente a fuga da racionalidade por meio de heurísticas comportamentais simplificadoras e os consequentes vieses delas advindos. O caso foi desenvolvido para ser usado em disciplinas de JTD ou gestão na área de Saúde e Healthcare, com destaque para o papel das pessoas na prestação de serviços, em programas de pós-graduação *lato* ou *stricto sensu*. Com a discussão do caso, espera-se que os alunos desenvolvam habilidades para estruturar processos de decisão e evitar armadilhas comportamentais comuns.

Palavras-chave: Julgamento e Tomada de Decisão. Heurísticas de Julgamento. Heurísticas Comportamentais. Transplante de Órgãos.

Aceptar o rechazar órganos donados para trasplante: el dilema del Dr. Jonas

Resumen

El caso presenta el dilema al que se enfrenta el doctor Jonas, médico responsable de la decisión de aceptar o rechazar un riñón para trasplante del paciente Carlos. El doctor Jonas se guía por la racionalidad y la ciencia, quiere lo mejor para su paciente, además de mantener sus buenos índices de éxito en trasplantes. Carlos está ansioso por “volver a la vida” con el trasplante, librándose de la terrible rutina de diálisis de los últimos cinco años en la lista de espera de un riñón. Con la muerte de Sebastião, queda disponible un riñón para Carlos, pero es un donante de 68 años y el doctor Jonas duda en aceptar el órgano no ideal para su paciente, que tiene 40 años. El caso es oportuno para discutir los procesos de Juicio y Toma de Decisiones (JTD), especialmente la fuga de la racionalidad a través de la simplificación de las heurísticas conductuales y los consecuentes sesgos que surgen de ellas. El caso fue desarrollado para ser utilizado en JTD o disciplinas de gestión en el área de Salud y Cuidado de la Salud, enfocándose en el papel de las personas en la prestación de servicios, en programas de posgrado *lato* o *stricto sensu*. Con la discusión del caso, se espera que los estudiantes desarrollen habilidades para estructurar procesos de decisión y evitar trampas comunes de comportamiento.

Palabras clave: Juicio y toma de decisiones. Heurística del juicio. Heurísticas del Comportamiento. Trasplante de órganos.

Educational objectives

This is an Armchair case written on the basis of fictitious, although realistic data, originated from the authors' experience in managing Health cases. The pedagogical objective is to discuss in the classroom concepts of judgment and decision-making (JDM) in cases of organ transplantation. The priority point of view is that of the transplantor who is the health professional responsible for the decision to accept or refuse an organ for transplantation. It is expected that the criteria considered in such a decision be discussed by the students covering their different interpretations. The case can be used in graduate studies dedicated to the subjects of JDM in health services management, public services management, or even in other subjects not related to the health sector.

Sources of information

Primary and secondary data were used for writing this case. The primary data were obtained from the experience of several years of one of the authors who is the coordinator of a transplant center in Brazil. The primary data, which mainly allowed to understand the decision process on the acceptance of donated organs, were complemented by secondary data on organ donation, which can be accessed and verified in the notes at the end of the text of the case itself.

TEACHING PLAN

The case would benefit from adopting a participant-centered teaching process, as will be clarified in the teaching plan presented in this session. There is no single way to use it and it can be supplemented by previous or later readings. The case aims to bring concepts from the JDM area to the discussion of students in a context of a critical decision, as it can result in life or death for a patient, and with different stakeholders. These concepts are presented in a didactic way in several books. Two recommendations are Bazerman and Moore (2012) and Kahneman (2013). Other reading recommendations will appear below as different discussion topics are addressed.

It is recommended that the teacher suggest for each individual to prepare for the session beforehand, as this practice always enriches the discussion of the case in the classroom. In view of the above, the following assignment questions are suggested:

1. How do you evaluate the hesitation of Dr. Jonas about the organ to be transplanted?
2. If you were in the doctor's place, would you approach the situation differently? Why?
3. What criteria should influence the decision to accept or not an organ for transplantation? Is it possible to avoid "wasting" organs for donation?

Students should be organized into small discussion groups before starting the session with the entire class. The number of students per group depends on the size of each class. Ideally, groups of four to seven students work well. Considering that the students have previously read the case and ideally have reflected on the assignment questions, this discussion can be scheduled to last from 20 to 30 minutes. The teacher can go through each group to stimulate discussion, reinforce the assignment questions, and keep the students focused. Next, the case will be discussed with the entire class and the time planned for this can vary from 70 to 90 minutes depending on the time available for the session and the teacher's didactic interests. Below is a suggestions in how to divide up the time according to the topics discussed.

Opening the case for discussion with the entire class (15 minutes)

The discussion opening should be used to cause the students to realize that although the subject is delicate, it needs to be discussed and addressed. Perhaps speaking or thinking about it is difficult for some people, who would prefer not to do so. Some students can bring impacting personal experiences such as them knowing someone on the waiting list for a transplant or who have been through an organ donation situation with a close relative, and want to share their feelings and fears. It should also be clear that it is difficult to reach an "optimal" decision according to different points of view. There are different

factors that should be considered along with different objectives on the part of stakeholders. The teacher can ask some of the following questions to start the discussion:

1. What is your opinion about organ donation?
2. Should we make use of organs from elderly patients for transplants?

The teacher will realize that the students will be able to take one of two positions. Although conflicting, they provide an excellent “warm up” for discussing the case:

- c) Maintain a distance from the situation and be more “rational”, which usually leads to the choice of using organs from elderly patients in order to “move the list along” and save more lives.
- d) Put yourself in the doctor’s or even in the patient’s shoes. For those who put themselves in the doctor’s shoes, the tendency is to hesitate to accept an organ that is not ideal. When seeing it from the patient’s perspective, opinions are more divided depending on individual preferences (“I want to decrease uncertainty” versus “the best is the enemy of the good”).

In the rare case (in our experience) of the class manifesting, at first, unanimity in relation to any of the above positions, it is up to the teacher to play the role of the “devil’s advocate” and defend the other position.

There are also two excellent alternatives to start the discussion of the case in order to create greater engagement, especially for younger classes:

- i) Ask beforehand for one of the students to play the role of the doctor (“Dr. Jonas”) and another of the patient (“Carlos”). When the whole class comes together, these students could stage a dialog on the decision to be made. The teacher could instruct in advance the interpretation of the roles by each student.
- ii) Divide the class into pairs so that the conversation between Dr. Jonas and Carlos happens simultaneously in each pair. Instructing students to speak quietly is a good way to ensure that the class is speaking at the same time but in an orderly manner. Some students may also play the role of observing the conversation.

If you choose this type of dynamic, a role playing game, the teacher should add at least five to ten minutes to this step.

At the end of the opening, the pros and cons of organ acceptance by expanded criteria and the motivations of the main stakeholders (surgeon and patient) should be (ideally) listed on the white board (see Appendix A). The appendices at the end of these teaching notes may constitute the plan from the classroom white board during the discussion of the case with the entire class.

Discussion questions

The discussion questions that will guide the rest of the interaction with the entire class are listed below. They will be answered by the students through a teacher-coordinated debate, which can propose transition questions to guide them in this discussion.

1. How do we make decisions?
2. What are the main decision heuristics and how do they work?
3. Which biases may arise in the decision to accept an organ by expanded criteria?
4. How can we reach an improved decision-making process?

Analysis of the case with literature support

The analysis of the case shows the decision that needs to be made by the doctor, Jonas: accept or refuse a kidney from a deceased elderly donor for transplantation in his patient, Carlos, who has been waiting in the donation line for five years. This is the focus of the teaching case and involves understanding how our brains deviate very easily from rational processes when there is uncertainty involved. It should be emphasized that there will always be uncertainty.

Question 1: How do we make decisions? (20-25 minutes)

JDM is a formal field whose principles and discoveries are applicable to a wide range of sectors such as Health, Law, Accounting, and others. In Administration and Business, JDM processes are ubiquitous in management situations such as strategic planning, marketing, finance, or operations. Buchanan and O'Connell offered a historical evolutionary view of the field in 2006.

The study of JDM has two main approaches: normative and descriptive. The normative approach focuses on how decisions should be made and often follows prescriptive models of Classical Economics based on the principle that decision-makers are always "rational" beings or "maximizers" of utility. The descriptive approach aims to understand how decisions are effectively made and is based on Behavioral Economics, which incorporates many concepts of psychology to analyze human behavior. See, for example, Bazerman and Moore (2012), Kahneman (2013), and Thaler (2015).

This case allows the discussion of both approaches and their focus lies on behavioral issues of decision making, which are fundamental to understand a complex process such as organ donation and transplantation. In order for students to start the discussion about Dr. Jonas' decision to accept or not the available organ, the following transition question can be posed.

[TQ1]: Is Dr. Jonas following a "rational" decision-making process?

As we need to make several decisions on a daily basis, the systematic and time-consuming demands of an absolutely rational decision-making process are not feasible. The most significant decisions are made by personal judgment and not by a defined prescriptive model (Bazerman & Moore, 2012). Kahneman (2013) introduces the concept of duality of mental processes to a wider audience by calling our "fast", intuitive, and more error-prone thinking as System 1 and our "slow", laborious, and more-reliable thinking as System 2. Although there is a continued debate on such a proposition (De Neys, 2021), the division into two types of thinking is considered dominant in Psychology and Behavioral Economics (Evans & Stanovich, 2013; Grayot, 2020).

Both Systems 1 and 2 are active when we are awake. System 1 runs automatically, while System 2 remains in a comfortable low-effort mode. System 1 continuously generates suggestions for System 2, which, if endorsed, turns impressions, feelings, and intuitions into beliefs and impulses into actions. In a normal context, System 2 adopts the suggestions of System 1 with little modification as you usually believe in your impressions and act according to your desires, which is usually positive. System 2 is always mobilized when a question arises for which System 1 does not offer a quick answer or when you are caught by surprise. System 2 also monitors its own behavior and usually has the last word. In short, acting together, Systems 1 and 2 manage our decision-making and their division of work tends to be efficient to minimize our effort and allow us to deal with the complexity of the world and the need to make decisions all the time. The problem is that System 1, to save time, tends to replace more complex questions with simpler ones, heuristics, and ends up making systematic mistakes, which we call biases (Kahneman, 2013).

For Dr. Jonas to follow an absolutely rational decision-making process, he would have to be able to (1) define the problem with absolute precision, (2) identify all the criteria, (3) ponder the criteria, (4) generate alternatives, (5) evaluate each alternative according to each criterion, and finally (6) calculate the ideal solution (Bazerman & Moore, 2012). However, he does not have all the relevant information to follow this process. For example, Carlos may face the problem and decision criteria differently from Jonas. What weight would Carlos attribute to a more "used" kidney compared to the weight assigned by the doctor? How useful will an ideal kidney be for him compared to a kidney with expanded criteria? How to compare the life of Carlos post-transplant (if successful) with his current quality of life in the dialysis routine? Not to mention that Jonas doesn't know exactly when an ideal organ will be available or if a new problem will not occur, as previously, at the time of transplantation. Throughout this discussion the teacher can put on the white board the uncertainties existing in the process and outline a tree for this decision, emphasizing that the future is unpredictable (see Appendix B). Regarding uncertainty, Weisberg (2014) elaborated an instigating text.

Question 2: What are the main decision heuristics and how do they work? (20-25 minutes)

When System 1 does not find a satisfactory answer to a difficult question, our brain will find a related question that is easier and will answer it instead. The target question is the evaluation we intended to produce, while the heuristic question is the simplest question we end up answering. For example, a difficult question would be “Are you happy?” We would need to start by trying to define what happiness is to then assess if we fit into every prerequisite so that we can consider ourselves happy. However, the feeling of happiness is fluid, so it’s easier to answer the question: “Are you happy with your life today?” (Kahneman, 2013).

Thus, we can think of a transition question to stimulate the debate on this topic:

[TQ2]: What can Dr. Jonas be thinking about to make the decision to accept or not Tião’s kidney? What may Carlos be thinking differently about the same decision?

In the case of Dr. Jonas, we can relate his thinking to two of the most common heuristics: availability and representativeness (Tversky & Kahneman, 1974). Another heuristic to be considered is the affection heuristic (Kahneman, 2013). Here the teacher can show a Box (see Box A in Appendix C) on a transparency with the right column blank to be filled in by the students in the classroom.

Availability Heuristics leads physicians to make judgment of the probability of an event happening based on their previous experience in a similar situation, resulting in a generation of hypothesis with distorted confidence. Representativeness Heuristics is the increase in the probability of physicians using a protocol for diagnosis with exaggerated emphasis on particular aspects of their evaluation in order to support their hypothesis, leading to incorrect classification due to excessive confidence in the prevalence of some conditions as explanatory of the phenomenon observed. The presence of strong emotions greatly affects the cognition of decision makers.

Question 3: Which biases may crop up in the decision to accept an organ by expanded criteria? (20-25 minutes)

A heuristic is a mental rule, strategy, or shortcut that you can use to find a solution to a problem. Heuristics can help us understand the world reliably and reduce our mental burden. However, they are not always perfect and there is a tendency to use them inappropriately to form beliefs. A systematic error resulting from the use of heuristics is called cognitive bias (Kahneman, 2013).

It is worth noting, with the caveat that it is not an academically rigorous repository, that Wikipedia provides a comprehensive and continually updated list of hundreds of cognitive biases with references and examples (Wikipédia, 2024).

A transition question to deepen the discussion would be:

[TQ3]: What mistakes would Dr. Jonas be making when reaching a decision? And Carlos?

Again we recommend that the teacher present a Box (see Box B in Appendix D) that lists some biases that can be discussed in this case, leaving the right column blank to be filled in by the students in the classroom. There are multiple possibilities of biases and our suggestions are not exhaustive.

Question 4: How can we reach an improved decision-making process? (20-25 minutes)

It is finally time for students to discuss how to avoid mistakes in such a decision and how to improve the process as a whole. A transition question would be:

[TQ4]: Is it possible to establish a general policy for cases like this? What would it be?

Education is a broader path to mitigating the impact of biases. Important steps can be taken to learn about biases and their risks and to identify situations where they are most likely to occur or in which situations the consequences will be most serious. Kahneman (2013) pointed out that the focus on error does not detract from intelligence just as attention to diseases in medical texts is not contrary to good health. To perform a good diagnosis, a doctor needs to acquire a large set of disease labels, because each of them links an idea of the disease with its symptoms, possible background and causes, possible developments,

and interventions to cure or mitigate the disease. Learning medicine consists in part of learning the language of medicine. Systematic errors are biases that are repeated predictably under specific circumstances. Most of our judgments and actions are generally appropriate, but trusting in a heuristic produces a predictable bias in judgments. The idea that our minds are susceptible to biases is usually accepted, but it is easier to identify and label other people's mistakes than to recognize our own. Considering this, the students will point out much more easily what Dr. Jonas and Carlos can do wrong, but they will have more difficulty in putting themselves in the role of someone who should avoid such mistakes.

A discussion that may arise involves the dichotomy between (1) leaving the responsibility with the transplanting physician and (2) creating an improved protocol to inform the decision being taken. We believe it is difficult in the short term to take the decision-making power away from the doctor, and even undesirable. However, knowing (and informing decision-makers) using parameters with good results from non-ideal organs is a promising way to reduce organ waste, save lives, and improve patient quality of life. Authors such as Marewski and Gigerenzer (2012) argue that doctors use heuristics of simple application to have better results in different treatments. In fact, it is important not to confuse the treatment that some authors such as Gigerenzer himself (1991) give to these heuristics with the possible negative effects of heuristics as pointed out by Kahneman (2013). Simplifying decisions against uncertainty is inevitable for humans, so heuristics will always occur, but care needs to be taken so that they do not produce systematic errors (the biases). Thus, the systematic refusal of non-ideal organs seems to be a common bias in the medical community.

A case discussion will not suggest in the end the "right" decision because of all the uncertain factors that may affect it. However, the students will be able to leave with several ways of learning about the subject and improve their decision-making process, even if they are students from areas that do not belong to health management. Perhaps the most important thing is that students leave the session reflecting on the case and its dilemmas because this is a sign that the discussion of the topic has transcended the classroom.

As an option, a "closing" can be included depending on the remaining time of the session. The teacher could revisit the main concepts discussed during the discussion in a more structured way. However, just as what takes place in the discussion of a case, we need to remind you that these teaching notes themselves provide some paths, but do not exhaust them.

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DATA AVAILABILITY

The entire dataset supporting the results of this study was published in the article itself.

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APPENDIX A

Opening (example of white board, not exhaustive)

PROS of organ acceptance by expanded criteria:

- Would reduce the waiting list for a transplant
- Would save lives
- Survival indicators are better than dialysis
- Quality of life is better than dialysis

CONS of organ acceptance by expanded criteria

- Organs may have a shorter service life
- Increases the risk of the transplant failing
- Possibility of worsening the reputation of the transplant teams – impact on accreditation
- Probability of increasing subsequent costs for the country's health system

APPENDIX B

Anatomy of the Decision

- What is the problem => Save and improve the quality of Carlos' life.
- What are the criteria for the decision => Additional years for Carlos, quality of those years, indicators of the transplant team, costs for the health system. Any others?
- What criteria are most important? For whom?
- What are the alternatives? Sketch a decision tree.
- How can alternatives be evaluated? What is the ideal solution?

Uncertainties of this process

- What is the chance of successful transplantation when done with an ideal versus a non-ideal organ?
- What is the quality of life after transplantation? How do you compare that with dialysis?
- How good will Tião's organ be for Carlos?

Sketch a Decision Tree (to be considered by the instructor before class, who may be interested in addressing this topic, which is outside the scope of these teaching notes).

- Initial decision node: accept or not Sebastião's kidney.
- If accepted: uncertainty node with different scenarios (kidney works very well, kidney works worse than an ideal organ, kidney works badly). Each scenario implies in different years of life remaining and its probabilities can be discussed based on the literature available (see specific references on organ transplantation with expanded criteria suggested earlier). We believe that this point will only be relevant for classes with advanced specialization in the area of Health.
- If not accepted: uncertainty node with different scenarios (an ideal kidney becomes available within one year; an ideal kidney becomes available between 1 and x years; an ideal kidney never becomes available). As each scenario also implies in different years of remaining life, one could try to estimate these probabilities.
- It is important to note that a Decision Tree, in this case, will never indicate an unequivocal optimal solution, but only inform the decision-maker better about the uncertainties of the entire process and the data that should be considered.
- When analyzing the situation from the perspective of both society and the patient, it seems to be clear that the transplantation should be done. However, it is important to consider Dr. Jonas' medical expertise, although one may question perhaps excessive concern about his success rates

APPENDIX C

Box A
Main decision heuristics

Heuristics (Kahneman, 2013)	Case
<p>Availability – We evaluate events as being more likely if similar events are easily “available” in our memory, usually because they are newer or more striking.</p>	<p>Dr. Jonas may remember transplant cases that went wrong because the donated organ was not ideal. Or even not having success stories available in his memory with non-ideal organs simply because he has not used them. When talking to the doctor of the other team, the information became available, but there is a difference between what we live and what we only hear about (Kahneman, 2013). Carlos, on the other hand, already has in his memory every time that he “almost” got an organ and may prefer to risk receiving a non-ideal organ instead of continuing with his long wait. He does not know the “end of waiting,” but only remembers the frustrations from “losing” organs.</p>
<p>Representativeness – We confuse probability with plausible and often judge the probability of an event occurring again by how some salient factors or characteristics are “representative” of past events.</p>	<p>Dr. Jonas has a history of great success in transplants, always with organs considered to be ideal, which “rewards” his conservative position. A non-ideal organ for him is not associated with this profile and brings great risk. The study of literature articles can help bring a better understanding of the proportions of successful transplants with different organ types (Heilman Green, Reddy, Moss, & Kaplan, 2017). Here maybe Carlos thinks of his life before the kidney problem and how a transplant, almost magically, will take him back to it. A functional kidney, and only it, becomes the defining factor of his life.</p>
<p>Affection – A mastery over the conclusions about the arguments is more pronounced when emotions are involved. For example, our emotional attitude determines the arguments we consider to be most convincing about red meat, use of nuclear energy, or tattoos. If we do not like any of these elements, we will probably believe that the risks associated with them are high and that the benefits are insignificant.</p>	<p>Dr. Jonas allows his likes and dislikes to determine his beliefs about the world. He possibly has an emotional stance about non-ideal organs and ends up focusing more on the risks than on the benefits of using them. He also refuses to share the decision with Carlos, even though he is the main interested party. It is possible to discuss that part of the decision belongs to each one with the technical part undoubtedly being up to Jonas, but the evaluation of the result in terms of quality of life can and should receive input from Carlos. Carlos, of course, is emotionally involved with the situation. Would he be able to evaluate the alternatives? Maybe his wife could help him better understand the pros and cons of continuing on dialysis and staying in the line or going for a riskier choice.</p>

Source: Elaborated by the authors.

APPENDIX D

Box B
Possible biases

Biases	Case
<p>Excess Confidence – This is the “mother” of all biases. It usually comes hand-in-hand with confirmation heuristics, which leads to search for data to support early diagnoses (Bazerman & Moore, 2012).</p>	<p>Dr. Jonas runs the risks of deciding prematurely that Tião's organ is not desirable for Carlos because he has a good record of successful transplants only with organs considered to be ideal. He may also be convinced of his conclusion and not listen to other team members or to search for data systematically.</p>
<p>Dunning-Kuger Effect – Cognitive bias that leads people with little knowledge on a subject to overvalue their own knowledge (denying inherent uncertainty), while experts on the subject may underestimate their own capacity (Kruger & Dunning, 1999).</p>	<p>Carlos, being a layman, may think that the decision to accept a non-ideal organ is simpler when it is actually not.</p> <p>Jonas may be paralyzed precisely by mastering the subject and understanding its complexity. However, a decision has to be made according to the possible alternatives and not always that the ideal will be available.</p>
<p>Herd Effect (+ regret bias) – Tendency to side with the majority when making decisions so as to avoid standing out or to avoid regretting a decision that went wrong (Ariely, Loewenstein, & Prelec, 2006).</p>	<p>Jonas perhaps does not want to take the risk of accepting a non-ideal organ and, if the transplant fails, be accused of the decision (or feel guilty). It is safer to accept ideal organs and follow standard decision-making protocols.</p> <p>Carlos, on the other hand, fears later on regretting not having been transplanted with Tião's kidney and continue on the waiting list “forever”.</p>
<p>Omission Bias – This is a common approach, up to a certain point, in medicine and in business: It is the tendency not to act in order not to run the risk of harming a patient or taking a business to a loss, which is also linked to the regret bias. However, being very conservative can lead to delays in treatment or in action plans, generating inappropriate responses (Kahneman, 2013).</p>	<p>Inaction by Dr. Jonas could harm Carlos, who would have the chance of a better life for a few years with Tião's kidney. Undoubtedly, the “best” is better than “good” here, but uncertainty regarding the deadline for the ideal solution can make the “good” alternative more acceptable.</p> <p>The teacher can ask the class for a vote on individual preferences, making the students put themselves in the place of Carlos and Jonas, and then in the role of the transplant center coordinator who will have a systemic view of the challenge.</p>
<p>Sunk Cost Fallacy – It is common to justify a current choice by the investments of time, money, and effort already committed. You avoid assuming that there were wastes, despite there being irrecoverable costs (widely documented in Economics texts).</p>	<p>Dr. Jonas could rationalize that Carlos has been on the waiting list for five years, which is too long for him to accept a non-ideal kidney now.</p> <p>Costs incurred prior to a decision made are irrecoverable costs. They should not influence the decision as there is no possibility to avoid them in any scenario. Including them when making a decision takes the focus away by the decision makers from the differences between scenarios, costs, and benefits that are effectively relevant.</p>

Source: Elaborated by the authors.