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Abstract

The evolution of payment mechanisms from fee-for-service to prospective payments that facilitate the generation of value by integrating the care cycles of medical conditions is an urgent need for health systems in order to generate more value for each dollar spent. The Colombian health system shows a tendency to migrate towards prospective payments, within which denominations have emerged in an anarchic manner. This paper seeks to identify the basic elements to be able to classify any prospective payment modality. Three criteria are proposed to classify prospective payments, and 24 modalities are proposed, with a clear emphasis on the desirability of those modalities that allow the integration of care cycles of medical conditions in order to generate more value for each dollar spent.

1. Introduction

On various fronts, it has been proposed that payment modalities for health care providers should evolve from modalities such as fee-for-service or historical budgets, which do not generate incentives for improving health outcomes, to modalities that do generate these incentives.[1] [2] [3] [4] These payment modalities have been generically called "value-based payments", and are part of the broader concept known as "value-based health care".

Health systems in the OECD also show a tendency to migrate from fee-for-service to prospective modalities that progressively transfer risk from the payer to the provider. In the United States, the trend towards bundled payments has been increasing since the last decade[5], while in Western Europe these trends are also observed in health systems as diverse as Germany, Spain, the United Kingdom and Portugal, among others.[6]

The trends toward value-based payments and toward prospective payments represent two axes that are independent but can also evolve simultaneously. For example, when risk is transferred to a provider for the care of a population, or for the provision of a type of service, regardless of whether health outcome indicators improve, this is referred to as prospective payment, but not value-based payment. And when incentives are established for providers to improve health outcomes, while maintaining fee-for-service payment schemes, it is referred to as value-based payment, but not prospective payment, as occurs, for example, when payments are recognized for coordination among providers to make it more feasible to achieve better health outcomes. However, when prospective payments are established with incentives to improve health outcomes, the two trends are combined.

Fee-for-service payment has three disadvantages clearly identified in the literature: 1) it stimulates greater output without necessarily generating better health outcomes; 2) it does not generate incentives to coordinate care between two or more health care providers; and 3) it does not generate incentives to carry out health promotion or disease prevention interventions, whether primary, secondary or tertiary.[7] These disadvantages of fee-for-service payment make it less likely that better health outcomes will be achieved.

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1 Porter M Teisberg E (2006). Redefining health care. Harvard Business Press.

2 Miller H (2009). From volume to value Transforming Health Care Payment and Delivery Systems to Improve Quality and Reduce Costs.

3 OECD (2016). Better ways to pay for health care. http://www.oecd.org/els/health-systems/paying-providers.htm.

4 World Economic Forum (2018). Value in Healthcare Accelerating the Pace of Health System Transformation WEF.

5 Agarwal R, Liao JM, Gupta A, Navathe AS (2020). The impact of bundled payment on health care spending, utilization and quality: A systematic review. *Health Affairs. 39(1):50-57.*

6 OECD (2016). Better ways to pay for health care. http://www.oecd.org/els/health-systems/paying-providers.htm. Fecha de acceso: Enero 25 de 2021.

7 Porter M, Teisberg E (2006). Redefining health care. Harvard Business Press.

These disadvantages of fee-for-service make it necessary to migrate towards payment modalities that encourage the generation of value, which has given rise to the trend called "from volume to value."[8] "Value" is understood as health outcomes in relation to the cost of obtaining those outcomes.[9] And the concept of health outcomes includes clinical outcomes, outcomes from the patient's perspective (Patient-Reported Outcome Measures, or PROMs) and the assessment of the patient's experience of care (Patient-Reported Experience Measures, or PREMs).[10] To enable the generation of value, it is necessary to align the different components of care throughout the care cycle of a specific type of patient or medical condition.[11] The care cycle is understood as the process involving the stages of a medical condition from its initial approach to its resolution, involving different care settings, knowledge disciplines, technologies and production factors. In the case of chronic conditions, this cycle of care continues indefinitely until the patient dies, or in some cases until the patient is cured in the medium or long term.

To generate the right incentives towards value generation, it is simultaneously required that the payment mechanism covers the given cycle of care. This can be achieved in a traditional fee-for-service context, but its effect is limited because it does not overcome the fragmentation of the care process that typically occurs in this context,[12] so it is much more effective to transfer part of the risk from the insurer to the provider, as will be seen below. This transfer of risk implies that the insurer calculates and defines an ex-ante estimate of the expected cost of a set of activities, interventions, procedures, drugs, devices and supplies that will be required to meet the needs of the care cycle of a group of individuals, and this is the amount it transfers to the provider. This ex-ante estimate is what gives the payment mechanism its prospective characteristic, since the provider receives a predefined fixed amount, without considering the actual frequency with which the services are provided, so that the actual (ex-post) cost of care may be higher or lower than the expected (ex-ante) value.

The Colombian health system has witnessed an accelerated transition from fee-for-service payment to prospective modalities other than traditional capitation for primary care services. From the insurer's point of view, it reduce its exposure to risk, and at the same time convert a variable cost as a consequence of the fee-for-service modality into a fixed cost under prospective payment modalities. On the other hand, many providers have also migrated to these prospective modalities because they allow them to make their cash flow more predictable compared to the uncertainty they experience regarding the actual collection of billings under fee-for-service. These two explanations suggest that the emphasis of this transition has been more towards the prospective payment axis than towards the value-based payment axis.

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8 Miller H (2009). From volume to value: Transforming health care payment and delivery systems to improve quality and reduce costs. NRHI Healthcare Payment Reform Series. Robert Wood Johnson Foundation.

9 Porter ME (2010). What is value in health care? *N Engl J Med*. 363:2477-81.

10 OECD (2019). Measuring What Matters: The Patient-Reported Indicator Surveys. Disponible en: http://www.oecd.org/health/health-systems/Measuring-what-matters-the-Patient-Reported-Indicator-Surveys.pdf. Fecha de acceso: febrero 10 de 2021.

11 Porter M, Lee T (2015). Why strategy matters now. *N Engl J Med.* 372;18:1681-4.

12 Miller H (2009). From volume to value: Transforming health care payment and delivery systems to improve quality and reduce costs. NRHI Healthcare Payment Reform Series. Robert Wood Johnson Foundation. P 1.

This accelerated trend in Colombia has led to the emergence, more or less anarchically, of various risk transfer modalities that have been generically called "Prospective Global Payments" (PGP). However, this denomination groups together very diverse concepts that have not been adequately catalogued for their study and regulation. In this article we propose a taxonomy of prospective payment modalities in health care that allows their understanding and study, as well as their regulation and application in the contractual relationships between insurers and providers. The proposed taxonomy uses as a reference framework the synthesis work developed by Harold Miller for the United States,[13] which was adapted by one of the authors to the Colombian context.[14] Although there are other frameworks for analysis, such as the one proposed by the Health Care Payment Learning and Action Network,[15] and the proposal by Berenson et al[16], Miller's framework is more useful because it makes it possible to classify any type of payment mechanism based on its constituent elements.

The following seven sections of this article are organized as follows: Section 2 defines the basic elements for classifying any type of prospective payment mechanism. In section 3 we propose the two broad categories of prospective modalities and their sub-categories, and in sections 4 and 5 we define and analyze the specific modalities within each category. Section 6 briefly defines complementary payments. Section 7 opens the discussion and Section 8 summarizes the conclusions.

2. Definitions

In order to understand prospective payment modalities, it is necessary to start from Miller's definition of the constituent elements of payment mechanisms in health care[17]. These are: 1) the five components of medical cost, and 2) the two types of risk involved: primary risk and technical risk. A third element is the object of risk transfer. Although Miller's taxonomy does not make this last concept explicitly separate, our proposal explicitly describes it as a constituent element of the payment mechanisms, in order to include and classify some modalities that have emerged in the Colombian context.

2.1. The five components of the medical cost per member

The medical cost per member is the amount of money that an insurer pays for health benefits for each insured individual over a period of time, usually one year. This medical cost is the product of five multiplicative factors, namely:

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13 Miller HD (2009). From volume to value: better ways to pay for health care. *Health Affairs*. 28(5):1418-28.

14 Castaño RA (2014). Mecanismos de pago en salud: anatomía, fisiología y fisiopatología. ECOE Ediciones.

15 Health Care Payment Learning and Action Network (2017). Alternative payment model – APM framework. Mitre Corporation. Disponible en: http://hcp-lan.org/workproducts/apm-refresh-whitepaper-final.pdf. Fecha de acceso; diciembre 19 de 2018.

16 Berenson RA, Upadhyay DK Delbanco SF, Murray S (2016) A typology of payment methods. Urban Institute. Disponible en: https://www.urban.org/sites/default/files/publication/80316/2000779-A-Typology-of-Payment-Methods.pdf. Fecha de acceso: Abril 16. 2022.

17 Miller HD (2009). Op cit.

1. The number of medical conditions the insured individual presents with during the year. This component refers to both chronic and discrete conditions[18]. For example, a member who is diabetic and has a common cold during the year has two medical conditions (one chronic and one discrete).

2. Given a medical condition, the number of episodes of care the enrollee has within each medical condition during the year. An episode can be defined as a cycle of care that has a beginning and an end, and begins with an initial contact. This initial contact may be originated by the patient or by the provider, and from this initial contact a series of services are consumed to satisfy the health need that gave rise to the initial contact. The initial contact can originate for four reasons. The first reason is when episodes of exacerbation of a chronic underlying medical condition occur. The second reason is for discrete conditions, such as influenza, inguinal hernia or appendicitis. In these first two reasons, we speak of an initial contact originated by the patient. The third reason that gives rise to episodes of care is the periodic monitoring of a chronic medical condition, and the fourth reason is when the patient is referred to a specialist or to another care setting for an interconsultation or for the resolution of a medical need. In these last two reasons, we speak of a provider-originated contact. For example, in the case of a diabetic patient who presents a diabetic ketoacidosis with a hospital admission and some time later presents an event of hypoglycemia that is resolved in the emergency department, it is said that he/she had two acute episodes within that medical condition. A periodic follow-up, although not an episode of illness per se, is an episode of care whose initial contact is originated by the provider, and which triggers a series of consumptions to satisfy the objective of that contact. For example, in a patient with high blood pressure, a periodic follow-up aims to evaluate the patient's target organ function (kidney, heart, peripheral circulation), for which a series of diagnostic tests are ordered. Once the results of these diagnostic tests are obtained and a medical course of action is taken based on them, the episode of care is closed until the next follow-up appointment. Note that in discrete medical conditions, only one episode of care occurs. For example, in appendicitis, the patient is admitted through the emergency department, the surgical procedure is performed, the patient is discharged, and a post-surgical review is performed, which closes the cycle of care.

3. Given an episode or contact for any of the four reasons described in the previous paragraph, the number and type of services used during that episode or derived from it. For example, when a diabetic patient has an episode of ketoacidosis and is hospitalized, emergency care services, hospitalization, inpatient physician visit, medications, and diagnostic tests are consumed. Another example is a patient who presents with appendicitis (a discrete medical condition) that generates an episode of care (initial care, appendectomy and recovery), during which the necessary services are consumed to resolve the case. In the case of

18 Discrete conditions are those that occur only once and have a beginning and end in a short period of time (for example, appendicitis), or that occur two or more times but with no connection between one and the other (for example, flu-like symptoms).

periodic follow-ups, the previously cited example of the control of high blood pressure generates consumption of diagnostic tests and the reformulation of medications. Many times a service can be discriminated with a specific code, even though it includes other elements that in turn can be identified with a specific code. For example, the surgical procedure of appendix removal may have a specific code, but it includes services of the surgeon, anesthesiologist, room fees, sutures, medications used in pre-trans- and post-surgery, etc., which may in turn have specific codes.

4. Given a type of service, the processes, inputs, or factors of production that are consumed for each service. Some of these elements can be discriminated with a specific code. For example, in the case of medications for the acute episode of ketoacidosis in the diabetic patient, crystalline insulin and NPH insulin were prescribed, and in the case of periodic monitoring of the hypertensive patient, a creatinine test was ordered, and enalapril was reformulated for three more months. Human resources are included in the production factors.

5. Given a process, input or production factor, the corresponding price or cost of each of these. In the case of the insurer, we speak of price because it is the amount paid to the provider for each specific code; in the case of the provider, we speak of cost because it is the amount incurred in delivering the service.

2.2. The two types of risk: primary risk and technical risk

From the point of view of health risk, medical cost involves two types of risk: primary risk and technical risk. Primary risk (or insurance risk) is divided into two subtypes: 1) the primary risk of incidence, which is understood as the variation in the incidence or prevalence of medical conditions; and 2) the primary risk of unavoidable severity. The variation in incidence or prevalence refers to the actual number of cases per year of each medical condition, which may be above or below the expected number of cases. For example, if the expected incidence of appendicitis per year is one per thousand members, an insurer with one million members would expect to have one thousand cases of appendicitis in a year. In reality, the observed incidence is almost always above or below the expected incidence, and rarely equals the expected incidence exactly. In the case of chronic conditions, although in strict epidemiological terms we do not speak of incidence but of prevalence, for the purposes of this taxonomy we include them within the concept of primary risk of incidence, since at the beginning of a given period, patients with chronic conditions from the previous period are considered "incident" on day one of the new period. In addition, patients with previous chronic conditions but who move from one insurer to another, or from one provider to another, are new to the receiving insurer or provider and from the point of view of the recipient should be considered incident.

Primary risk of severity refers to the variation in the severity of medical conditions at the time they are detected. For example, an appendicitis may show up at the emergency department in an early stage, or in an advanced stage almost to the point of perforation. The less severe case exhibits a lower risk and therefore is likely to consume fewer resources in its treatment, while the more severe case is likely to consume more resources. Note that this variation in severity refers to unavoidable severity, and is therefore assumed to be exogenous.

The second type of risk is technical risk, also called performance risk. This is divided into two subtypes: technical risk of utilization and technical risk of avoidable morbidity. Technical risk of utilization is the variation in resource consumption that is not supported by evidence. For example: two cases of appendicitis with equal severity and no additional risk arrive at two different hospitals and there are no complications in their management. In hospital A, the patient is discharged within 24 hours and consumes a CT scan, blood count, urinalysis and the surgical procedure with a one-day stay. In hospital B, the patient is discharged after three days and consumes one surgical procedure, one CT scan, one abdominal ultrasound, one CT urography, three blood counts, three urinalyses and three arterial gas and electrolyte studies. Clearly, given that the two cases are similar and there were no complications, the pattern of resource consumption at hospital B does not correspond to what the evidence recommends and can be considered an unwarranted variation in utilization, i.e., a technical risk of utilization.

The technical risk of avoidable morbidity refers to those complications (acute or chronic) of medical conditions or their treatment, complications that would be avoidable if the provider had a very effective, timely and coordinated model of care. For example, if a diabetic patient presents an episode of diabetic ketoacidosis because his medication was not delivered in a timely manner, it can be asserted that this episode is completely avoidable, and is therefore considered a technical risk of avoidable morbidity. Another example is that of a patient with acute myocardial infarction who comes to the emergency department and is not seen immediately to confirm or rule out the diagnosis, but is left waiting. The waiting time results in greater severity of the infarction and therefore a greater consumption of resources, but this situation was completely avoidable, so it is also considered a technical risk of avoidable morbidity. Because acute complications are not always completely or partially avoidable, and it is not always obvious to determine avoidability, it is preferable to speak of potentially avoidable complications.[19] It should be noted that avoidable adverse events that are a consequence of patient safety failures are also considered as technical risk of avoidable morbidity.

19 deBrantes F, Rastogi A, Painter M (2010). Reducing Potentially Avoidable Complications in Patients with Chronic Diseases: The Prometheus Payment Approach. *Health Services Research.* 45(6):1854-71.

Regarding chronic complications of chronic medical conditions, although they are medical conditions in their own right, they may be preventable or not preventable. For example, the development of diabetic retinopathy may be completely avoidable in some patients with optimal management of their diabetes, whereas, in others, despite this optimal management, this medical condition will develop. Thus, avoidable chronic complications are considered technical risk of avoidable morbidity, although because of the difficulty in determining their avoidability, it is also preferable to refer to them as potentially avoidable complications.[20]

An exception to the stated definitions of primary risk of avoidable severity and technical risk of avoidable morbidity is the case of a provider who is exposed to morbidity caused by the omissions of another provider. For example, in a payment for breast cancer that does not include screening, the stage of cancer progression at the time of treatment initiation depends on another provider having screened in a timely manner. Any suboptimal level of screening implies a higher technical risk of avoidable morbidity at the provider responsible for screening, which will lead to the cancer provider having to deal with greater avoidable severity. This situation suggests that the primary risk of severity can be defined in terms of that morbidity that a given provider is unable to intervene, even if it is not strictly exogenous.

2.3. Object of risk transfer: episode, risk group and service component

In prospective payments, the transfer of risk from the insurer to the provider may involve episodes, chronic medical conditions or service components. The concept of an episode refers to a cycle of care that has a clearly identifiable beginning and end, and typically involves a discrete medical condition (e.g., appendicitis), an acute episode of a chronic condition (e.g., diabetic ketoacidosis), or an elective invasive procedure (e.g., herniorrhaphy), and its subsequent resolution. For example, the cycle of care for a coronary episode has a beginning (when the acute myocardial infarction is diagnosed) and an end (three months or six months after the acute event, as defined between the payer and the provider). Elective surgery such as hip joint replacement also has a beginning (e.g., admission for the surgical procedure) and an end (twelve months after the surgical procedure). As discussed in section 2.1, a periodic follow-up of a chronic condition corresponds to a contact, which has a defined cycle of care since it starts with the first encounter and closes when the information necessary to make a treatment decision is obtained.

For its part, the concept of risk group refers to a cycle of care that has a beginning (when the medical condition is diagnosed) but does not have an end, at least in the short term. This cycle of care may last for several annual periods, or for a lifetime in the case of a chronic incurable condition.

20 deBrantes F, et al (2010). Op. Cit.

Finally, the concept of service component refers to a category of activities, interventions or procedures (e.g. outpatient consultation, clinical laboratory, endoscopy, etc.), to a care setting (emergency, hospitalization, intensive care unit, special care unit, home care, ambulance transfers), to a medical specialty, or to drugs. These items are usually the ones used in the definitions of the insurers' actuarial benchmarks.

3. Prospective payment methods: definitions

The disorderly emergence in the Colombian context of prospective payment modalities other than traditional capitation for primary care requires the creation of a taxonomy that allows for their study and regulation, as well as the nature of the risk exposure incurred by the provider when entering into these payment modalities. The taxonomy we propose in this article is based on an understanding of the concept of the cycle of care, the constituent elements of medical cost, the types of risk and the object of risk transfer, as described in the previous section. Three criteria are proposed to establish this taxonomy: 1) whether the prospective payment mechanism facilitates the integration of the cycle of care; 2) whether the object of risk transfer is an episode, or a chronic condition; and 3) whether primary risk of incidence is transferred from the insurer to the provider.

The first criterion in our proposed taxonomy is to point out the key element that separates prospective payments into two broad groups: whether or not integration of the cycle of care is facilitated. Given the benefits (noted from the value-based health care literature) of integrating the care cycle of different chronic or episodic medical conditions, it is necessary to separate prospective payments into these two broad categories from the outset. Modalities that allow integration of the cycle of care are those that are defined in terms of chronic or discrete medical conditions. Prospective modalities that are defined in terms of service components do not allow the care cycle to be integrated and, on the contrary, perpetuate the fragmentation of the care cycle, making it very difficult to generate value.

The second criterion establishes whether the object of risk transfer is a discrete condition or a chronic condition. This criterion obviously does not apply to prospective modalities whose object of risk transfer is a service component. And the third criterion establishes whether or not primary risk of incidence is transferred to the provider. If primary risk of incidence is not transferred, we speak of individual payments, since each new case generates a prospective payment; if primary risk of incidence is transferred, we speak of global payments, since these are calculated on the basis of the expected incidence and severity in a given population. This latter category corresponds to what is known in the literature as population-based payments.

Table 1 summarizes the categories derived from the three criteria outlined above, and within each category the different prospective payment modalities described in the following sections are listed.

Table 1. Prospective payment modalities according to the three classification criteria (IP: Individual Payments; PGP: Prospective Global Payments).

		Individual	Global
They integrate the cycle of care	**Episode-based**	Episode-based IP Specialty-based IP IP based on level of complexity	Episode-based PGP Specialty-based PGP PGP based on level of complexity
	Chronic condition	IP based on risk group Specialty-based IP IP based on level of complexity	PGP based on risk group Specialty-based PGP PGP based on level of complexity
They do not integrate the cycle of care	**Based on components of service**	IP based of specialty consultation IP for diagnostic test IP for diagnostic processes IP by venue of care IP for prescription drugs Other	PGP based of specialty consultation PGP for diagnostic test PGP for diagnostic processes PGP by venue of care PGP for prescription drugs Other

4. Modalities that integrate the cycle of care

As noted above, in order to generate value, it is necessary to integrate as many service components as possible throughout the care cycle of a given medical condition. It was also noted that there are discrete medical conditions, and chronic conditions. For this reason, this category is divided into two, depending on whether the object of risk transfer is a discrete medical condition or a chronic medical condition. These two in turn are divided into two categories: those modalities in which no primary risk of incidence is transferred and those in which this risk is transferred.

4.1. Modalities whose object of risk transfer are discrete medical conditions.

Discrete medical conditions are characterized because their cycle of care has a clearly identifiable beginning and end. Some of these involve a single contact with the provider (e.g., a kidney stone) and others involve two or more contacts (e.g., acute myocardial infarction, which includes the initial contact for the acute episode and successive contacts after discharge for care until the end of the cycle of care). In some cases the episode is not equivalent to a discrete medical condition per se, but to a surgical procedure, but it is still true that in these cases the cycles of care are clearly delimited in their beginning and end.

4.1.1. Modalities that do not transfer primary risk of incidence.

In individual modalities, a fixed sum is established for the care of a discrete medical condition. Because of their individual nature, each new case generates a new payment. The following modalities are included in this category:

1. Episode-Based Individual Payment. Examples of this modality are: payment for acute coronary event, from the beginning of the acute episode up to three or six months following, including re-infarctions, re-hospitalizations and complications; payment for joint replacement up to 12 months after the surgical procedure, including rehabilitation; payment for maternal and perinatal care, including delivery, puerperium and care of the newborn and the mother up to 30 days post-delivery.

2. Specialty-Based Individual Payment. In this modality, a fixed payment is established for each new case presented within predefined episodic conditions corresponding to a specialty. Although a specialty is not per se a medical condition, it is included in this category when it is able to comprehensively cover cycles of care for discrete conditions. For example, in ophthalmology, defined payments may be established based on the specialty, which include discrete conditions such as mild ocular trauma, conjunctivitis, pterygion, etc. Even when a discrete condition requires the concurrence of two or more specialties, the index specialty may integrate these additional specialists to integrate the cycle of care for such medical conditions.

3. Individual Payment Based on Level of Complexity. Although a level of complexity is also not a medical condition, many discrete medical conditions can be fully resolved at one or more levels of complexity subject to this modality. An example of this modality is the payment for acute episodes of care with hospitalization in tertiary care hospitals, including post-acute recovery, as in the case of coronary episodes or strokes. In this modality, individual payments are not defined according to the medical condition but according to the level of complexity at which they are addressed and resolved, but the cycle of care may be integrated in a single provider.

4.1.2. Modalities that transfer primary risk of incidence

In global modalities of payment, a fixed sum is established for the care of cases of a discrete medical condition originating in a predefined population and geographic area. Because of their population-based nature, and unlike individual payments, each new case does not generate a new payment since the amount of money expected to cover the cost for the care of discrete medical conditions originating in that population has already been defined ex ante. This category includes the following modalities:

1. Episode-Based Prospective Global Payment.

2. Specialty-Based Prospective Global Payment.

3. Prospective Global Payment Based on Level of Complexity.

The examples of these modalities are the same as those mentioned in the individual modalities, and the only difference is that, in addition to individual costs, the payments are calculated based on the expected incidence, which implies that the provider is exposed to primary risk of incidence.

4.2. Modalities whose object of risk transfer are chronic medical conditions.

Chronic medical conditions are characterized because their cycle of care has a clearly identifiable beginning but no end, at least in the short term. They usually involve several episodes of care during the year, whether for exacerbations, periodic follow-ups or referral to other care settings.

4.2.1. Modalities that do not transfer primary risk of incidence.

In individual modalities, a fixed sum is established for the care of a chronic medical condition for a period of time and is renewed each time a new period begins. Its individual nature implies that each new case generates a new payment. The following modalities are included in this category:

1. Individual Payment Based on Risk Group. Examples of this modality are: payment per patient with HIV, or per patient with type 2 diabetes. The concept of risk group is preferable to that of chronic condition, since chronic conditions may occur simultaneously in the same individual, and separating them into different contracts would generate a new type of fragmentation, no longer by service components but by medical conditions. In Miller's framework[21] this modality is called condition-adjusted capitation.

2. Specialty-Based Individual Payment. As noted in section 4.1.1, specialty is not a medical condition. But in many chronic conditions the care cycle is covered by a single specialty (e.g., glaucoma or macular degeneration in ophthalmology) or by an index specialty that integrates other specialties, as for example in severe atopic dermatitis, which is managed mainly by dermatology but may require the support of allergology, otolaryngology or pneumology, under the leadership and coordination of dermatology.

3. Individual Payment by Level of Complexity. Although a level of complexity is not a medical condition, many cycles of care for chronic conditions can be fully covered at one or more levels of complexity that are paid under this modality. For example, the management of multiple sclerosis requires high-complexity outpatient care and care for relapses can be delivered in the same high complexity hospital that delivers the outpatient management of the patient.

21 Miller (2009) op cit.

4.2.2. Modalities that transfer primary risk of incidence.

In global modalities of payment, a fixed sum is established for the care of chronic medical conditions originating in a predefined population and geographical area. Because of their population-based nature, and unlike individual payments, each new patient diagnosed does not generate a new payment since the amount of money expected to cover the costs for the care of chronic medical conditions originating in that population has already been defined ex-ante. This category includes the following modalities:

1. Prospective Global Payment Based on Risk Group.

2. Specialty-Based Prospective Global Payment.

3. Prospective Global Payment Based on Level of Complexity.

The examples of these modalities are the same as those cited in the individual modalities, and the only difference is that, besides de individual costs, the payments are calculated based on the expected incidence, which implies that the provider is exposed to the primary risk of incidence. Note that prospective global payments by specialty and by level of complexity can include both discrete and chronic conditions.

5. Modalities that do not integrate the cycle of care.

Prospective contracting modalities in which the object of risk transfer is a component of the care cycle, such as in-vitro diagnostics, drugs, care settings (e.g., home care, ICU), do not allow for integration of care cycles since each provider is responsible only for its part of the cycle, which ends up perpetuating two of the three disadvantages of fee-for-service: 1) the absence of incentives for coordination, which leads to fragmentation of the care cycle, and 2) the absence of incentives for primary, secondary and tertiary prevention. The only difference with the disadvantages of fee-for-service is that it does not stimulate higher *output* but, on the contrary, discourages it, which in theory could decrease the technical risk of utilization. But in terms of the concept of value-based health care, reducing costs simply by reducing the frequency of use of service components can go to the extreme of denying medically necessary services, thereby destroying value for the patient as this can lead to an increase in the technical risk of avoidable morbidity.

As can be seen in Table 1, the criterion referring to episodes vs. chronic conditions does not apply in these modalities, but the criterion of transferring or not the primary risk of incidence does apply.

5.1. Modalities that do not transfer primary risk of incidence.

1. Individual Payment Based on Specialty Consultation. Unlike the payment described in section 4.1.1., in this modality the payment only includes an initial contact with a specialist and a set of diagnostic tests or other activities (including follow-up consultations with the same specialist) that are derived from the initial contact and that are performed within a predefined period of time. Note that the specialty payment modalities described in Section 4 emphasize that they focus on integrating cycles of care, either for discrete conditions or chronic conditions, whereas in this modality the specialist does not integrate any cycle of care but addresses the patient on an ad-hoc basis.

2. Individual Payment for Diagnostic Tests. In some cases, an initial contact payment is established for one or more types of diagnostic support. For example, when a patient requires a cardiology diagnostic test (holter, electrocardiogram, stress test, etc.), a fixed payment is made for the first contact with the provider who will perform it, regardless of the type of diagnostic support required by the patient or whether it needs to be repeated in a given period of time.

3. Individual Payment for Diagnostic Processes. In some cases the diagnostic process, such as the confirmation of a suspected cancer case or the staging process, can be simplified into a fixed payment that includes all the components of the diagnostic process (e.g., medical consultation, clinical laboratory, biopsy, pathology and diagnostic imaging). Although this modality integrates the service components of the diagnostic process, because it is restricted to one stage of the care cycle (diagnosis), it is included in the category of those that do not allow for the integration of care cycles.

4. Individual payment by Care Setting. This modality establishes a fixed payment per day of stay according to the care setting (ICU, NICU, general ward), known in the literature as "per-diems". It also includes the modality of fixed payment for emergency care (typically triage 3 and 4), fixed payment for home care and fixed payment for ambulance transfers.

5. Individual Payment for Prescription Drugs. This modality is infrequent, but it may occur that a drug package is established for, for example, outpatient management of surgical wound infection.

6. Individual Payment for Other Components of the Service. There are some modalities that do not conform to those described earlier in this section but make it difficult to integrate the care cycle. For example, individual payment per cycle of chemotherapy, individual payment for radiation therapy, or payment per cycle of rehabilitation with physical therapy.

5.2. Modalities that transfer primary risk of incidence.

These modalities differ from those described in section 5.1. in that the amount to be transferred is estimated based on the needs of the different service components arising in a predefined population and geographic area. For this reason, the provider entering into these payment modalities is exposed to the primary risk of incidence. The modalities included in this category are as follows:

1. Prospective Global Payment Based on Specialty Consultation.

2. Prospective Global Payment for Diagnostic Tests.

3. Prospective Global Payment for Diagnostic Processes.

4. Prospective Global Payment by Care Setting.

5. Prospective Global Payment for Prescription Drugs.

6. Prospective Global Payment for Other Components of the Service.

6. Complementary payments

In a contract under the prospective payment arrangements described in Sections 4 and 5, these arrangements represent the largest share of the provider's revenue and are therefore referred to as "base payments". This designation implies that there is an additional, or complementary, payment that represents a smaller proportion for the provider in such a contract.[22] We define complementary payments as those additional payments, or withholdings from the agreed payments, that are paid/returned to the provider at a later date, based on compliance with structure, process, product or outcome indicators. Complementary payments for compliance with structure and process indicators do not imply transfer of primary or technical risk from the insurer to the provider. But payments for outcomes, specifically payments for health outcomes and PROMs, do involve the transfer of both types of risk. Value-based payments are based on these outcome indicators in addition to PREMs.

For example, when an outcome indicator is set, such as "hospital readmissions within 30 days for the same cause," the provider's failure to meet the indicator may be explained by a higher primary risk of severity, as well as a technical risk of avoidable morbidity. A rehospitalization may be due to the fact that the patient was not adequately supported after the initial hospital discharge, and is therefore attributable to the provider and is therefore considered a technical risk of avoidable morbidity.

22 Cattel D, Eijkenaar F, Schut F (2020). Value-based provider payment: towards a theoretically preferred design. *Health Economics, Policy and Law.* 15(1):94–112.

Complementary payments in Colombia usually represent a small proportion of the provider's income, between 1% and 10%. Experience in OECD countries shows that when these payments represent less than 5% of the provider's income, they do not imply a high transfer of risk, and do not induce substantial changes in their behavior, so this percentage needs to be higher, perhaps between 15% and 20%.[23] However, to the extent that there is less uncertainty in clinical decisions and greater control by the provider over the other variables that impact the health outcome, the outcome will be more predictable. If, in addition, the health outcome is more observable and verifiable, it will be more appropriate to allocate more of the provider's revenue to the complementary payment.

7. Discussion

With the present taxonomy of prospective payments we seek to define, based on the constituent elements of the payment mechanisms, the different categories and payment modalities within the categories, so that their study and regulation can be done in a more structured and formal manner. Despite the anarchic way in which these prospective modalities have emerged in Colombia, our taxonomy allows classifying any modality regardless of the name given to it, thus achieving the objective of arriving at an exhaustive classification of the multiple payment modalities that arise and which in turn evolve in multiple ways.

In this taxonomy, we propose two broad categories: payments that allow the integration of care cycles and those that do not or make it more difficult. These two categories make it possible to separate the modalities that make it possible to generate greater value in health, since this requires integrating the care cycle of a given medical condition. Likewise, modalities that integrate cycles of care respond very well to value-based payments, whether these take the form of complementary payments or non-monetary incentives.

As noted in the introduction, in order to generate value, it is necessary to integrate the care cycle of a given medical condition and transfer risk to the provider. By establishing a prospective payment, the savings generated by managing these types of risk create a powerful incentive that ends up creating more value, for the same or less money. However, risk transfer and value generation do not always go hand in hand. On the one hand, payments per episode and per risk group make it possible to evolve towards value-based payments, since they generate an incentive for the provider to include in its value proposition the greatest possible number of components of the respective care cycle, whether it has them within its own delivery unit or coordinates or subcontracts them with other delivery units. Given this ability to integrate the care cycle, the provider will be more likely to respond positively to value-based payments.

23 Friedman J, Scheffler R (2016). Pay for performance in health systems: theory, evidence and case studies. En: World Scientific Handbook of Global Health Economics and Public Policy, editado por Richard Scheffler. World Scientific.

At the other extreme, prospective payments by service component make it difficult to generate greater value for each dollar spent, as they perpetuate fragmentation because each provider is responsible for the service it provides, but none is responsible for integrating the cycle of care for a given episode or medical condition. Worse, this fragmentation can exacerbate the denial of medically necessary services, as the inability to manage the technical risk of utilization and avoidable morbidity generated by other providers can lead a given provider to engage in the denial of medically necessary services. For example, if a provider of in-vitro diagnostics that is paid under a prospective modality faces an actual demand higher than expected, it will try to maintain its financial equilibrium by delaying or denying the provision of services, since it will not be able to manage the technical risk of utilization that is generated by another provider, whose physicians exhibit a high frequency of ordering unnecessary laboratory tests.

Payment modalities are not neutral, in that they generate positive and negative incentives that determine provider and payer responses.[24] Accordingly, the prospective modalities analyzed here generate positive incentives that have already been mentioned in the previous sections, but they also generate negative incentives that, far from resolving the negative consequences of fee-for-service, generate their own dysfunctionalities, which end up destroying value instead of enhancing it. These negative incentives lead to provider responses that are clearly identified in the literature: denial of services, transfer of costs to other providers or to the patient himself, and rejection of patients who may represent very high costs of care.

It could be argued that individual payments by episode and individual payments by chronic condition, which do not involve transfer of primary risk of incidence, are the best prospective payment option to stimulate the generation of more value for each dollar spent. This is because, while they generate the incentives to align different care settings and knowledge disciplines throughout the care cycle of the episode or condition in question, they do not expose the provider to variation in incidence that is difficult to modify. This limited ability to modify the primary risk of incidence is because, by its nature as a health care provider, it generally does not have the capabilities to modify the primary risk of incidence (e.g., by inducing lifestyle changes in a broad population). In addition, when a provider is exposed to primary risk of incidence, it faces a lower number of cases compared to the insurer, so it will be exposed to greater random variation in incidence.

On the other hand, regarding prospective global payments by episode and by risk group, although they expose the provider to primary risk of incidence, which may be riskier for a provider with few cases per time period, still retain the benefit of encouraging the alignment of care settings and knowledge disciplines throughout the care cycle of medical conditions, thus facilitating the generation of greater value for each dollar spent. Some authors argue that it is not appropriate to expose the provider to the primary risk of incidence, as it is a risk that the provider cannot manage.[25] However, it is

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24 Conrad D (2016) The Theory of Value-Based Payment Incentives and Their Application to Health Care. Health Services Research. 50:S2, Part II (December 2015). DOI: 10.1111 /1475-6773.12408

25 Miller (2009). Op cit.

also clear that this primary risk exposure can be reduced by establishing risk protection mechanisms such as risk corridors, incidence adjustments and exclusions.[26]

Our taxonomy is not exhaustive because, although some categories allow for the integration of the cycle of care of a given medical condition, in other cases they do not allow such integration. Such is the case with payments by level of complexity and payments by specialty. In the former, fragmentation can occur when the care cycle of a medical condition involves care at two or three levels of complexity that is not delivered by the same provider.

In payments by specialty, the examples cited for ophthalmology show that care cycles can be integrated according to specialty, but there are other cases in which this is not the case. For example, the management of uveitis when associated with autoimmune diseases clearly requires a high level of interaction with other specialties. If this interaction is not achieved, payment by specialty would generate fragmentation of the care cycle, so it would be more appropriate to establish payment by risk group, in which the interdisciplinary team that manages the autoimmune condition refers the patient to the ophthalmologist for evaluation and management, but retains the responsibility of coordinating this referral so that everything related to the eye disease is perfectly integrated into the care cycle.

Medical specialties vary as to what proportion of their practice is made up of episodic or chronic medical conditions whose cycles of care can be integrated under a given specialty. It could be argued that, in the case of ophthalmology, a high proportion of its practice meets this characteristic, whereas cardiology, given that it has to deal with more systemic comorbidities and systemic complications of heart disease, it hardly exhausts the care cycle of a discrete medical condition, let alone a chronic one. In other specialties there may be a set of medical conditions that require the index specialty and occasional support from a few specialties that can be easily coordinated by the index specialty, but where it is feasible to integrate the cycle of care. But in those same specialties there will be other medical conditions where it is very difficult to integrate other specialists, and in these cases payment by specialty will result in fragmenting the cycle of care.

Regarding payments by episode or by risk group, while they most of the time can successfully integrate the cycle of care for discrete or chronic medical conditions, they also face the challenge of acute or chronic comorbidities and complications that are not closely linked to the underlying medical condition. This creates new problems of fragmentation, but no longer by service component but by medical condition. An extreme case to illustrate this challenge is that of a patient with hemophilia and HIV, two chronic medical conditions sufficiently complex to warrant specialized programs, but when they occur in the same patient it becomes evident that neither program has the skills to manage both conditions optimally.

26 Cattel et al (2020). Op Cit.

One way to reduce the limitations of the various prospective modalities, while protecting the provider from excessive exposure to risk, is to mix different modalities within a single provider. For example, for comprehensive cancer management, the confirmation and staging processes can be contracted under the individual payment modality for diagnostic processes, and once the treatment has been defined, an individual payment is established per medical condition, adjusted for severity, or even separate individual payments for pharmacological therapy, radiotherapy and surgical procedures. In turn, low-frequency, high-cost interventions or medications required by the patient can be excluded and paid for on a fee-for-service basis. This mix of payment modalities in the same provider, referred to in the literature as "blended payments"[27] makes it possible to integrate the care cycle even though some of them are classified in the category of those that do not allow integration of the care cycle.

The application of our taxonomy to the DRG payment modality shows that it does not necessarily correspond to the category of payment per episode, although it is presented as such in many texts on payment mechanisms. In its general conception as a payment mechanism for hospital services,[28] it could be argued that it is an individual payment by care setting, with a sophisticated risk adjustment mechanism that reduces the provider's exposure to the primary risk of severity, but does not necessarily integrate the care cycle of the underlying medical condition. For example, the DRG payment for an episode of COPD exacerbation is clearly limited to the care of an acute episode in the hospital but is not integrated with the rest of the cycle of care for this chronic medical condition. Another example is the payment for acute coronary episode care which does not include cardiac rehabilitation and re-infarctions over a 3 to 6 month period.

But in some cases the care cycle of a medical condition is fully covered in hospital care, as in the case of some elective or urgent surgical procedures; in these cases, payment for the corresponding DRGs would be equivalent to payment per episode. For example, an episode of appendicitis or an inguinal hernia repair has a cycle of care that can be classified in a DRG, and this cycle is fully covered by the different areas of the hospital.

It is pertinent to apply our taxonomy to a payment modality in which an amount of money is agreed to perform or deliver a fixed number of activities, interventions, procedures, drugs, or devices, during a fixed period of time. Although in Colombia this modality is usually referred to as prospective global payment, our taxonomy clearly shows that in this payment modality there is no transfer of primary risk or technical risk. Rather, it is equivalent to fee-for-service in which a number of services are agreed in advance over a period of time.

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27 OECD (2016). Op Cit.

28 Busse R, Geissler A, Quentin W, Wiley M. (2011). Diagnosis-Related Groups in Europe: Moving towards transparency, efficiency and quality in hospitals. European Observatory of Health Systems and Policies.

A variant of this type of fee-for-service payment is when the insurer sets a fixed sum of money for the care of a given population or risk group, but defines the number of activities to be performed for each patient. The insurer then verifies that the provider has performed these activities and if it finds that fewer activities have been performed than should have been performed, it deducts them from the payment at a predefined rate.

This type of contract limits the provider's ability to adjust resource consumption to the severity of each individual to reduce the technical risk of avoidable morbidity, which contrasts with the fact that the payer exposes the provider to the technical risk of avoidable morbidity when it penalizes the provider for avoidable acute episodes or when the insurer establishes a supplemental payment for health outcomes. If the payer wants the provider to generate value, it must give the latter the flexibility to optimize the intensity of resource use according to the needs of each patient, which is not compatible with a simple count of activities per patient, since such a count does not allow variations according to the individual needs of each patient.

8. Conclusions

The taxonomy presented here seeks to facilitate the study and regulation of prospective payment modalities that have emerged more or less anarchically in the Colombian health system. Understanding the payment modalities from their constituent elements makes it possible to create this taxonomy in such a way as to identify the nature of the risk exposure that each modality represents for the provider, as well as the incentives that derive from such risk exposure.

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