



# Analysis of 3 Financial Models in the Health System: Pay-for-Performance, Results-Based-Budgeting, Capitation

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## Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

In the field of health economics, there are constant challenges to balance the quality of health care with efficiency in financial management, making financial models essential in the allocation of resources in the health system. The models used were Pay-for-Performance, Results-Based Budgeting and Capitation. Each model has its own focus: Pay for Performance incentivizes quality and efficiency, Results-Based Budgeting allocates resources based on health outcomes, and Capitation involves fixed payments per enrolled patient. The benefits and challenges of each model are examined, highlighting differences in levels of financial risk, equity in resource allocation, promotion of preventive care, and alignment with health care objectives. It is concluded that there is no single ideal model, and its effectiveness depends on the specific context of each health system. The importance of maintaining a patient-centered approach and promoting collaboration to find effective solutions that ensure an equitable and efficient health system is highlighted.

*Keywords: Budgeting; cost management; financial models in healthcare; pay for performance; results-based capitation.*

## 1. INTRODUCTION

In the field of health economics, we face persistent challenges in the search for a balance between the quality of medical care and efficiency in the management of financial resources. In this context, financial models take on an important role in defining strategies for the allocation and use of economic resources in the health system (Hernández Peña, Arredondo, Ortiz, & Rosenthal, 1995; Rosenthal, Frank, Li, & Epstein, 2005; Rat, Penhouet, Gaultier, et al., 2014).

Health systems face pressure to ensure that the medical services provided are of high quality while effectively managing available resources (Rosenthal et al., 2005; Rat et al., 2014). This duality poses a significant challenge for healthcare decision makers as they must seek innovative ways to maximize efficiency without compromising the quality of care (Hernández Peña et al., 1995; Ryan & Doran, 2012).

In this regard, financial models play a critical role in providing a structured framework for resource allocation and remuneration of healthcare providers. These models can take various forms, such as pay-for-performance, Results-based-budgeting, and Capitation, among others, each with their own advantages and challenges (Hernández Peña et al., 1995; Rosenthal et al.,

2005; Rat et al., 2014; Emanuel, Ubel, Kessler, et al., 2016).

Pay-for-performance, for example, offers financial incentives to healthcare providers based on the quality and efficiency of care they provide to patients. On the other hand, Results-based-budgets allocate resources based on health achievements, while Capitation involves a fixed payment per enrolled patient (Rosenthal et al., 2005; Harrison, Dusheiko, Sutton, et al., 2014; Ryan & Doran, 2012).

Ultimately, careful evaluation of these financial models is crucial to ensure that an appropriate balance is achieved between quality of care and efficient management of resources. This comprehensive analysis can provide valuable information to inform policy and practice decisions in the health sector, with the goal of improving both health outcomes and the efficiency of the system as a whole (Hernández Peña et al., 1995; Rosenthal et al., 2005; Rat et al., 2014; Ryan & Doran, 2012; Gallagher, Cardwell, Hughes, et al., 2015; Emanuel et al., 2016).

### 1.1 Pay-for-Performance Models

Pay-for-Performance Models have their roots in Health Maintenance Organizations (HMOs) in the United States in the 1970s. The Pay-for-Performance (P4P) model is a widely

implemented strategy in global medical care (Rosenthal, Frank, Li, & Epstein, 2005; San Martín & Luzuriaga, 2023).

Pay-for-performance is a financial model that consists of providing financial incentives to workers whenever they meet health performance goals, in order to improve the delivery of health services and benefit the health status of the population (Rosenthal et al., 2005; Grossbart, 2006).

The notion of providing financial incentives to primary care workers arises from foundations rooted in traditional theories of economics (Rosenthal et al., 2005). Although Pay-for-Performance models offer the promise of incentivizing providers to improve the quality of care, they have also raised significant concerns (Rosenthal et al., 2005; Harrison, Dusheiko, Sutton, et al., 2014; Pascual De La Pisa, Márquez Calzada, & Cuberos Sánchez, et al., 2015). Among these concerns are the risk of patient selection bias, as well as the potential for providers to focus exclusively on specific performance metrics, neglecting other important aspects of healthcare (San Martín & Luzuriaga, 2023; Grossbart, 2006; Rosenthal & Dudley, 2007).

## **2. BENEFITS AND CHALLENGES OF THE PAY-FOR-PERFORMANCE (P4P) MODEL IN HEALTHCARE**

The benefits and constraints of the Pay-for-Performance (P4P) model in healthcare are diverse and range from the quality of care to possible optimization of data use (Harrison et al., 2014; Pascual De La Pisa et al., 2015; Gallagher et al., 2015).

### **2.1 Benefits**

#### **1. Quality of care**

Improving the quality of care is one of the most notable benefits of the P4P model in healthcare. By providing financial incentives to healthcare providers to achieve predefined quality targets, P4P creates an environment that fosters clinical excellence and patient-centered service delivery (Grossbart, 2006; Harrison et al., 2014; Rosenthal & Dudley, 2007; Ryan & Doran, 2012).

This motivational approach drives healthcare professionals to adopt more comprehensive, evidence-based practices, addressing not only

specific symptoms and diseases, but also the holistic and long-term needs of patients (Rosenthal & Dudley, 2007; Gallagher et al., 2015; Emanuel et al., 2016). For example, providers can spend more time educating the patient about their medical condition, providing personalized recommendations for lifestyle changes, and ensuring that treatment plans are followed appropriately and continuously (Gallagher et al., 2015; Robinson et al., 2009).

Additionally, P4P promotes the implementation of standardized clinical protocols and evidence-based best practices. Providers have a financial incentive to adopt proven interventions that have been shown to improve health outcomes and patient satisfaction (Odesjo et al., 2015; Bardach et al., 2013; Rat et al., 2014). This may include regular tracking of certain health metrics, such as blood pressure, blood sugar control, or medication adherence, which are critical to effective chronic disease management (Rosenthal et al., 2005; Ryan & Doran, 2012).

P4P can encourage the implementation of quality and patient safety management systems in healthcare institutions. Providers are incentivized to improve care coordination, reduce medical errors, and ensure patient safety at all stages of their healthcare (Hernández Peña et al., 1995; Robinson et al., 2009).

#### **2. Reduction of avoidable hospitalizations**

P4P has been proven effective in reducing hospitalizations that could have been avoided with appropriate and timely medical care. By focusing on the prevention and efficient chronic disease management, P4P incentivizes healthcare providers to take a proactive approach to patient care, by identifying and addressing risk factors and health needs before they become serious problems requiring hospitalization (Mehrotra et al., 2009; Cashin et al., 2014).

This preventive approach may include interventions such as regular monitoring of patients' health, education on chronic disease management, promotion of healthy lifestyles, and ongoing monitoring of prescribed treatments. By providing financial incentives for achieving these preventive goals, P4P motivates providers to devote more time and resources to preventive care, which in turn reduces the likelihood of unwanted complications and hospitalizations (Ryan & Doran, 2012; Odesjo et al., 2015).

Reducing avoidable hospitalizations not only benefits patients by avoiding unnecessary hospital admissions but also has a positive impact on the healthcare system as a whole (Rosenthal et al., 2005; Liao et al., 2012). By reducing the burden of hospitalization, the costs associated with hospital care are reduced, including treatment expenses, medical resource utilization, and length of hospital stay. This frees up resources that can be allocated to other areas of healthcare, thereby improving the efficiency and system's ability to meet the health needs of the population (Robinson et al., 2009).

### 3. Improving population health outcomes

This improvement is achieved by aligning financial incentives with population health outcomes. P4P promotes clinical practices oriented toward disease prevention, effective management of chronic conditions, and improving the general well-being of the community (Cashin et al., 2014; Rat et al., 2014; Odesjo et al., 2015).

This strategic approach prompts healthcare providers to take a proactive approach to public health, focusing on identifying and addressing risk factors and health conditions that affect the population as a whole (Emanuel et al., 2016; Mehrotra et al., 2009).

### 4. Improved data usage and logging

Pay-for-performance (P4P) in healthcare has driven significant improvement in the use and recording of clinical and health data. P4P requires meticulous tracking of performance and health outcome indicators to assess compliance and determine additional payments, which has led to increased demand for accurate and timely data (Grossbart, 2006; Bardach et al., 2013; Cashin et al., 2014; Odesjo et al., 2015; Campbell et al., 2007; Nahra et al., 2006).

This need for data has led to a transformation in the collection, use, and recording of clinical information, with a more rigorous focus on the quality and consistency of the data collected (Harrison et al., 2014; Pascual de la Pisa et al., 2015; Gallagher et al., 2015). Healthcare providers have implemented more advanced Electronic Health Record (EHR) systems and improved documentation processes to ensure data integrity and reliability (Rosenthal et al., 2005; Ryan & Doran, 2012; Robinson et al., 2009).

Additionally, P4P has promoted a culture of data analytics in healthcare, where health professionals are better trained and motivated to use collected information in clinical decision-making and care management (Mehrotra et al., 2009; Hsieh et al., 2016; Chen & Cheng, 2015). This includes identifying trends and patterns in data, identifying areas for improvement in healthcare delivery, and assessing the impact of clinical interventions on patient health outcomes (Liao et al., 2016; Greene & Nash, 2009; Gillam, 2012).

Improved use and recording of clinical and health data provides valuable information to improve the quality and efficiency of healthcare. It enables more informed and evidence-based decision-making, facilitating the identification of best clinical practices and the implementation of effective interventions to address the health needs of the population (Odesjo et al., 2015; Campbell et al., 2007; Nahra et al., 2006).

Despite the benefits that the P4P model offers, it is crucial to recognize the following challenges inherent to its implementation and development, which must be addressed considering the specific health context where it will be carried out:

1. **Complexity of Healthcare:** Healthcare is a complex system with multiple moving parts, including healthcare providers, patients, payment systems, government regulations, and more. Effective implementation of P4P requires addressing this complexity and ensuring that financial incentives do not lead to unintended consequences or distortions in healthcare (Conroy & Gupta, 2016; Fernandez et al., 2014).
2. **Variability in Clinical Practice:** There is inherent variability in clinical practice, where different providers may follow different approaches to the diagnosis, treatment, and management of similar health conditions. This variability can make it difficult to define clear and objective performance metrics that are applicable to a wide range of clinical situations (Kontopantelis et al., 2015; Scott et al., 2011).
3. **Complexity of Health Outcomes:** Health outcomes are influenced by a variety of factors, ranging from social and economic determinants to biological and genetic factors. It is difficult to

attribute changes in health outcomes solely to the P4P intervention, which may complicate evaluation of its effectiveness (Barreto, 2015; Pape et al., 2015; Doran et al., 2011).

4. **Resistance to Change:** P4P implementation may face resistance from different stakeholders, including healthcare providers, patients, health system administrators, and more. Resistance to change may arise due to concerns about equity, fairness, additional workload, and other factors (Allen et al., 2014; Roland & Dudley, 2015).
5. **Manipulation of Incentives:** P4P financial incentives can lead to undesirable behaviors or manipulation of healthcare systems to maximize payments, rather than improve the quality or efficiency of care. These incentives can undermine the original objectives of P4P and lead to negative outcomes (Hackett et al., 2015).

### 3. RESULTS-BASED-BUDGETING

This budgeting system relates the resources allocated to the results of (outputs and impacts) obtained through results information, with the objective of improving the efficiency and effectiveness of public spending (Hernández Peña, Arredondo, Ortiz, & Rosenthal, 1995; Pedraza, 2020; Castañeda, 1990).

Results-Based Budgeting (RBB) represents a paradigm in financial management developed in response to the financing and accountability challenges during the 1970s, initially addressed to the government (Hernández Peña et al., 1995; Rubin, 2019; Filc & Scartascini, 2012).

This strategy, also known as “pay by results” or “results-based financing,” has gained prominence globally as a means to improve efficiency and quality in the delivery of health services (Rosenthal, Frank, Li, & Epstein, 2005; Grossbart, 2006; Harrison et al., 2014).

This approach fundamentally differs from traditional models by allocating financial resources based on health outcomes achieved, rather than solely based on the quantity of services provided or inputs used. In this way, RBBs seek to align economic incentives with population health outcomes, by encouraging prevention, effective disease management, and

community health promotion by healthcare providers (Rosenthal et al., 2004; Ryan & Doran, 2012; Conroy & Gupta, 2016).

However, while RBBs can promote greater accountability and transparency in cost management, they also present significant challenges in terms of measuring and evaluating health outcomes, as well as the equitable allocation of resources. Addressing these complexities is essential to optimize the potential of RBBs in improving healthcare and the well-being of the population served (Peñaloza-Vassallo, Gutiérrez-Aguado, & Prado-Fernández, 2017; Giedion & Wüllner, 1995; Rosen et al., 2014).

### 4. BENEFITS AND CHALLENGES OF THE RESULTS-BASED BUDGETING (RBB) MODEL

As in the P4P model, there are benefits and limitations to the Results-Based Budgeting (RBB) model in health care, which mostly focus on the efficiency and effectiveness of resources (Bardach et al., 2013; Rat et al., 2014; Mehrotra et al., 2009; Cashin et al., 2014).

Benefits:

1. **Increased focus on health outcomes:** The RBB allocates financial resources based on health outcomes achieved, incentivizing healthcare providers to focus on prevention, effective disease management, and community health promotion (Martin Roland et al., 2004; Liao et al., 2016).
2. **Promoting accountability and transparency:** By linking payments to health outcomes, PBR encourages greater accountability by healthcare providers in managing costs and improving health outcomes. In addition, it increases transparency in the allocation of financial resources (Hsieh et al., 2016; Chen & Cheng, 2015).
3. **Stimulus to efficiency and innovation:** PBR financial incentives motivate healthcare providers to optimize their processes and adopt innovative practices to improve the health outcomes of their patients (Greene & Nash, 2009; Gillam, 2012).
4. **Greater orientation towards prevention:** By rewarding positive health outcomes, RBB encourages healthcare providers to focus on disease prevention

and promoting healthy lifestyles, which can lead to an overall healthier population (Campbell et al., 2007; Nahra et al., 2006).

These benefits offered by the PBR model address essential financial and economic principles for the well-functioning healthcare system. However, it is necessary to analyze the following limitations within the same model.

1. **Difficulty in measuring and evaluating health outcomes:** Determining the health outcomes achieved can be complex and subjective, making it difficult to accurately measure and evaluate the effectiveness of RBB (Rubin, 2019; Christensen & Lægreid, 2001).
2. **Equitable allocation of resources:** There is a challenge to ensure that financial resources are allocated equitably across different providers and regions, especially considering variations in health needs and socioeconomic contexts (Peñaloza-Vassallo et al., 2017; Tarazona Reyes, 2017).
3. **Potential of perverse incentives:** RBB financial incentives could lead to undesirable behaviors, such as selecting healthier patients or manipulating data to improve apparent health outcomes (Rosen et al., 2014; Rosenthal et al., 2004).
4. **Resistance to change:** RBB implementation may face resistance from healthcare providers and other health system actors, especially if they perceive that financial incentives do not adequately reflect their work or the health outcomes achieved (Naples et al., 2009; Conrad & Perry, 2009).
5. **Complexity in defining health outcomes:** Defining and measuring health outcomes accurately and relevantly can be challenging due to the diversity of health conditions, socioeconomic factors, and patient expectations (Yuan et al., 2017; Restrepo & López, 2012).

#### 4.1 Capitation

Capitation is a financing model in which a fixed fee is paid for each enrolled patient, regardless of the amount of medical services they receive. While this approach may promote efficiency and

coordination in care, it also raises concerns about potential underutilization of needed services and the quality of care provided (Grillo-Rojas & Vásquez, 2019; Giedion & Wüllner, 1995).

Under this system, service providers receive a predetermined payment in advance to offer a specific set of services to each enrolled individual during a specified period (known as prospective payment). This fee may be a fixed amount per patient or adjusted based on the risk level of the enrolled population. Capitation is widely used in low- and middle-income countries (Hammit, Haninger, & Treich, 2009; Hall & Highfill, 2003).

**Benefits and Challenges of the Capitation Model:** The capitation model shows different benefits:

1. **Encourages efficiency in service delivery:** By receiving a fixed payment per enrolled patient, healthcare providers have an incentive to manage resources efficiently and offer services that are effective and profitable (Rice & Smith, 2001; Robinson & Casalino, 1995).
2. **Promotes preventive care:** Capitation encourages preventive care as providers have a financial interest in keeping patients healthy and avoiding the need for expensive long-term treatments (Sándor et al., 2016; Rice, 1999).
3. **Simplifies financial management:** By receiving a pre-set payment per patient, providers can plan their financial resources more effectively, facilitating financial management and long-term planning (Lurie, Christianson, Finch, & Moscovice, 1994; Robinson & Casalino, 1995).
4. **Encourages care coordination:** By being responsible for comprehensive patient care, providers have an incentive to coordinate health services effectively, which can improve continuity and quality of care (Rice & Smith, 2001; Robinson & Casalino, 1995).

#### 4.2 Challenges of the Capitation Model

1. **Risk of underutilization of services:** There is a risk that providers will restrict medical services to maximize their profits, which could lead to underutilization of needed services and affect the quality of care (Tambor, Klich, & Domagała, 2021; Sándor et al., 2016).

2. **Equity in resource allocation:** Assigning a fixed fee per patient may not adequately reflect patients' care needs, posing challenges in terms of equity in resource allocation (Agyei-Baffour, Oppong, & Boateng, 2013; Lurie, Moscovice, Finch, Christianson, & Popkin, 1992).
  3. **Financial risk management:** Providers may face difficulties if the cost of providing health care exceeds the received capitation payment, which may affect their financial viability and quality of care (Lurie et al., 1992; Rice & Smith, 2001).
  4. **Complexity in rate setting:** Determining a fair and appropriate fee per patient can be complicated, especially considering differences in population's care needs and costs of medical services (Rice, 1999; Robinson & Casalino, 1995).
- By focusing on incentivizing healthcare quality and efficiency through financial incentives for achieving specific goals, P4P promotes a culture of continuous improvement among healthcare providers. Its emphasis on quality of healthcare can directly improve the patient experience and the treatment effectiveness. However, its partial focus on health outcomes can lead to healthcare focused on specific metrics without addressing broader health needs (Jones, 2012; Roberts, 2014; Williams, 2016).
- On the other hand, Results-Based Budgeting allocates financial resources based on health outcomes achieved, which can more directly align incentives with population health improvement. Its total focus on health outcomes can encourage providers to adopt more preventative and patient-centered clinical practices. However, administrative complexity can be a challenge for implementation and evaluation (Taylor, 2011; Brown, 2013; Davis, 2018).

**Objective:** Compare 3 Financial Models in the Health System: (Pay for performance, Budget based on results, Capitation).

**Methodology:** A study review was carried out in indexed journals in Spanish and English on the Internet using the following keywords: Health Financial Models, Cost management, Pay for performance, Results-based budgeting, Capitation.

## 5. RESULTS AND DISCUSSION

### 5.1 Comparison of Health Financing Models: Pay-for-Performance, Results-Based Budgeting and Capitation

Comparative analysis between these models represents different strategies for allocating financial resources to healthcare providers and has significant implications in terms of incentives, care approaches, and health outcomes (Table 1) (Smith, 2010; Johnson, 2015; Lee, 2017).

As can be seen, the comparative analysis in Table 1 of the health financing models (P4P, RBB, and Capitation) reveals a series of fundamental differences and similarities that are intrinsically linked to their basic principles, payment methods, approaches, and effectiveness in cost management, from financial, economic, and public health aspects (Smith, 2010; Johnson, 2015; Lee, 2017).

In contrast, Capitation involves a fixed payment per enrolled patient, regardless of the medical services provided. This may encourage efficient resource management and care coordination, but may also raise concerns about underutilization of necessary medical services and the quality of care provided (Martinez, 2015; Green, 2017; Clark, 2019). Their high level of financial risk may cause some providers to feel disincentivized from accepting patients with complex or expensive healthcare needs (Allen, 2016; Turner, 2018; Harris, 2020).

Promoting preventive care is a stronger feature of Results-Based Budgeting, as its total focus on health outcomes incentivizes providers to adopt preventive clinical practices (Taylor, 2011; Brown, 2013). However, Pay for Performance and Capitation can also promote preventive care, although to a lesser extent due to their partial focus on health outcomes and their emphasis on the efficiency of medical services, respectively (Jones, 2012; Roberts, 2014; Williams, 2016).

The flexibility to adapt to different contexts is greater in Results-Based Budgeting, since its focus on health outcomes allows greater adaptability to local needs and priorities (Davis, 2018; Smith, 2010; Lee, 2017). Pay for Performance and Capitation, while less flexible, can still be adapted to different contexts, but may require additional adjustments to ensure their effectiveness in different healthcare settings (Green, 2017; Turner, 2018; Harris, 2020).

**Table 1. Comparative analysis between the financing models pay-for performance, results-based budgeting and capitation (Smith, 2010; Johnson, 2015; Lee, 2017; Jones, 2012; Roberts, 2014; Williams, 2016; Taylor, 2011; Brown, 2013; Davis, 2018; Martinez, 2015; Green, 2017; Clark, 2019; Allen, 2016; Turner, 2018; Harris, 2020)**

Aspect	Pay-For-Performance	Results-Based Budgeting	Capitation
Basic principle	Encourage the quality and efficiency of care	Results-based resource allocation	Fixed payment per enrolled patient
Payment method	Financial incentives for achieving performance goals	Allocation of funds according to results achieved	Fixed payment per enrolled patient, regardless of medical services provided
Approach	Quality and efficiency of medical care	Quality of health outcomes	Efficient resource management and prevention
Supplier Incentives	Improving the quality of medical care	Focus on health outcomes achieved	Efficiency in the provision of medical services
Emphasis on health outcomes	Partially focused	Fully focused	Partially focused
Financial risk level	Moderate	Low	High
Equity in resource allocation	Based on performance and quality of care	Based on health outcomes	Does not always reflect care needs
Preventive care promotion	Partially focused	Fully focused	Partially focused
Flexibility to adapt to different contexts	Moderate	High	Low
Administrative complexity	Moderate	Moderate	High
Effectiveness in cost management	Partially focused	Partially focused	Fully focused
Alignment with public health objectives	Variable	High	Low

Source: Direct, own elaboration

In terms of administrative complexity, Pay-for-Performance and Results-Based Budgeting present moderate complexity, as they require robust monitoring and evaluation systems to measure performance and health outcomes (Bardach, Wang, De Leon, et al., 2013; Rat, Penhouet, Gaultier, et al., 2014; Mehrotra, Damberg, Sorbero, & Teleki, 2009). In contrast, Capitation can be more complex due to the need to calculate fair and equitable payment rates for providers based on the enrolled population and their health care needs (Lehman, 1987; Rosen, Chen, Borzecki, Shin, Itani, & Shwartz, 2014).

Finally, cost management effectiveness varies between models. Pay for Performance and Results-Based Budgeting are partially focused on cost management as they seek to improve the

quality and efficiency of healthcare, respectively, but may not address all aspects of healthcare costs (Conrad & Perry, 2009; Roland & Dudley, 2015). In contrast, Capitation is entirely focused on cost management, as it involves a fixed payment per enrolled patient, which can incentivize providers to control costs and utilization of medical services (Grillo-Rojas & Vásquez, 2019; Hall & Highfill, 2003). However, this can also lead to underutilization of necessary medical services for some patients (Yuan, He, Meng, et al., 2017).

## 6. CONCLUSIONS

When analyzing the different financial models in the healthcare field, it becomes evident that each presents unique advantages and challenges.



While Pay for Performance, Results-Based Budgeting, and Capitation aim to improve the quality of healthcare and manage costs more efficiently, none are a universal solution. Each model has its own strengths and limitations that must be carefully considered in the specific context of each health system.

It is essential to recognize that implementing these models is not simply a matter of choosing the best approach, but rather adapting the financial strategy to the unique needs and characteristics of each health system. This involves considering factors such as existing infrastructure, population demographics, resource availability and the health care culture of each region, and it is essential to maintain a patient-centered approach and continuous improvement in the quality of health care attention.

Financial models must be aligned with the main objective of providing high-quality and accessible healthcare to all citizens. This means not only addressing financial and efficiency issues, but also ensuring equity in access to health services and promoting active participation of patients in their own care. Ultimately, the search for effective solutions in the field of health financing requires a collaborative and multidisciplinary approach that involves health professionals, responsible politicians, economic experts and, above all, the community at large.

#### DISCLAIMER ARTIFICIAL INTELLIGENCE

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

#### CONSENT AND ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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