



Innovations for hospital governance to combat antimicrobial resistance: stakeholder perspectives

Inovações para governança hospitalar no enfrentamento da resistência antimicrobiana: perspectivas de stakeholders
Innovaciones para la gobernanza hospitalaria para combatir la resistencia a los antimicrobianos: perspectivas de stakeholders

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ABSTRACT

Background and Objectives: Antimicrobial resistance has global health and policy implications and tackling it in hospitals requires a range of strategic governance interventions that integrate management and involve leaders in the day-to-day running of the hospital. The aim was to analyse the perspectives of local leaders and stakeholders on innovations in the governance of a teaching hospital in tackling antimicrobial resistance. **Methods:** This is a qualitative study using interviews with local leaders involved in mandatory and advisory hospital committees, conducted between September and November 2023. **Results:** 13 stakeholders from the institution were interviewed, the majority of whom were women (76.9%), all self-identified as white and in a stable union (61.5%). Innovations were grouped into: Decision making based on service evidence; Use of research in practice; Antimicrobial stewardship; Development of health care teams; and Patient-centred and timely care. **Conclusion:** The research has made an important contribution to local decision making and to the management of the hospital's response capacity. It also contributes to strengthening the policy agenda and global and local agreements. Future research could address the development of models for hospital governance, as well as the implementation and evaluation of interventions to reduce the challenges identified.

Keywords: Governance. Antimicrobial Drug Resistance. Innovation. Hospitals Teaching.

RESUMO

Justificativa e Objetivos: A resistência antimicrobiana tem implicações sanitárias e políticas em escala global e seu enfrentamento em âmbito hospitalar requer diversificadas ações estratégicas de governança que integram a gestão envolvendo as lideranças na interpelação com o cotidiano do hospital. Objetivou-se analisar as perspectivas das lideranças locais, *stakeholders* sobre inovações para a governança de um hospital de ensino no enfrentamento da resistência antimicrobiana. **Métodos:** Trata-se de uma pesquisa de abordagem qualitativa por entrevistas com lideranças locais atuantes junto às comissões hospitalares obrigatórias e assessorias que ocorreram entre setembro e novembro/2023. **Resultados:** Foram entrevistadas 13 stakeholders da instituição, a maioria eram mulheres (76,9%), todos com a cor da pele autorreferida branca e em união estável (61,5%). As inovações foram agrupadas em: tomada de decisão baseada por evidências do serviço; utilização de pesquisas na prática; gestão de antimicrobianos; desenvolvimento das equipes de saúde e cuidado centrado e oportuno aos pacientes. **Conclusão:** A pesquisa demonstrou importante contribuição para a tomada de decisão local e para orientar a capacidade de resposta do hospital. Contribui ainda com o fortalecimento da agenda política e dos acordos mundiais e locais. Pesquisas futuras podem abordar o desenvolvimento de modelos para a governança hospitalar, como também implementar e avaliar intervenções para a redução dos desafios expostos.

Descritores: Governança Em Saúde. Resistência Microbiana A Medicamentos. Inovações. Hospitais De Ensino.

RESUMEN

Justificación y Objetivos: La resistencia a los antimicrobianos tiene implicaciones sanitarias y políticas a escala mundial, y abordarla en los hospitales requiere diversas acciones estratégicas de gobernanza que integren la gestión e impliquen a los líderes en el día a día del hospital. El objetivo era analizar las perspectivas de los líderes locales y las partes interesadas sobre las innovaciones para la gobernanza de un hospital universitario en la lucha contra la resistencia a los antimicrobianos. **Método:** Se trata de un estudio cualitativo mediante entrevistas con líderes locales que trabajan en los comités hospitalarios obligatorios y consultivos, que tuvieron lugar entre septiembre y noviembre de 2023. **Resultados:** Se entrevistaron 13 actores de la institución, la mayoría mujeres (76,9%), todas autodeclararon que su color de piel era blanco y estaban en unión estable (61,5%). Las innovaciones se agruparon en: Toma de decisiones basada en la evidencia del servicio; Uso de la investigación en la práctica; Manejo de antimicrobianos; Desarrollo de equipos de salud y Atención oportuna y centrada en el paciente. **Conclusión:** La investigación contribuyó de manera importante a la toma de decisiones a nivel local y a orientar la capacidad de respuesta del hospital. También contribuye a reforzar la agenda política y los acuerdos globales y locales. Futuras investigaciones podrían abordar el desarrollo de modelos de gobernanza hospitalaria, así como la aplicación y evaluación de intervenciones para reducir los retos expuestos.

Palabras Clave: Gobernanza. Resistencia Microbiana A Las Drogas. Innovaciones. Hospitales De Enseñanza.

INTRODUCTION

The Pan American Health Organization (PAHO) and the World Health Organization (WHO) has defined antimicrobial resistance (AMR) as the ability of microorganisms (bacteria, fungi, viruses, and parasites) to alter themselves when exposed to antimicrobials (antibiotics, antifungals, antivirals, antimalarials, or anthelmintics), rendering them "ineffective".¹ Thus, it is a global health emergency established by the World Health Organization, due to its spread requiring a coordinated local and international response, which is increasingly important, a situation that was further exacerbated by the Covid-19 pandemic, given the high consumption of prescription and self-medication. In this way, AMR presents itself as a threat to global health, and its aggravation was observed in the context of the SARS-CoV-2 pandemic.²

However, antimicrobial resistance has health and political implications on a global scale. Furthermore, the challenges of infection control in healthcare services are compounded by the need for coordinated and multi-sectoral efforts involving clinical-biological, socioeconomic, and political perspectives. In this context, a quadripartite global alliance is gaining strength, comprised of: the World Health Organization, the World Organization for Animal Health, the Food and Agriculture Organization of the United Nations, and the United Nations Environment Programme. This articulation is based on the "One Health" approach, a socio-ecological approach to human, animal, plant, and environmental health, expressed through inter-institutional commitments that prioritize the issue of adverse drug reactions (ADRs). Therefore, sustainable solutions are sought through a political agenda, intersectoral and transdisciplinary actions in addressing AMR.¹

There are gaps in the production of research that addresses the political agenda of AMR, its implementation, and how it has been carried out in a post-pandemic scenario within health services.^{2,3,4} It is added that, according to a literature review conducted by Murray and colleagues based on the World Health Organization's global action plan, 2015, the gaps found relate to: improving laboratory infrastructure, improving patient management and data quality in local and global surveillance, reinforcing national plans; prevention and control of infections, especially in healthcare settings; education and improvement of communication, surveillance and research, and increased production and analysis of data to support strategies and policy decisions; optimization of antimicrobial use, strengthening antimicrobial stewardship programs; and investment in new medicines.^{5,6}

Thus, in light of the pandemic's repercussions, it is necessary to better understand the complex relationships

between hospital governance and the management of AMRs. When discussing AMR management in hospitals nationwide, it is necessary to contextualize them within the Unified Health System (SUS).⁷ It is worth emphasizing that in Brazil, SUS teaching hospitals occupy a strategic position for innovations in AMR management. They are traditional loci of teaching-service integration, and as part of their mission, they develop the teaching-research binomial to achieve qualified training and care.^{8,9}

Reducing the incidence of AMRs and improving infection control in hospitals requires diverse actions. Above all, the term hospital governance is understood here from a systemic point of view, which integrates the hospital's senior management or strategic management, the organization's leadership, and its control mechanisms. This apparatus is interrelated with the hospital's daily routine, personnel management, quality of care, financial management, patient services, among others. Added to this vision are aspects such as the operation of health networks and hospital networks, the organization of the health system itself, as well as its political and regulatory frameworks.¹⁰

In a recent scoping review, in 2024, on innovations in the management of antimicrobial resistance in teaching hospitals, it was evidenced that there are gaps in the production of the subject regarding studies developed in Brazil or Latin America. The main innovations identified there were activities usual to the fight against AMR, such as: reinforcement of precautions and cleaning and disinfection routines; professional training and education; forms and guides for prescription control; active audits and institutional epidemiological surveys and institutional committees and quality indicators.¹¹

The question stems from how to improve this fight. In this sense, innovation in health services presents itself as a complex challenge, since it consists of obtaining performance superior to the usual. The forces that shape services to innovate and, consequently, to have superior performance must be considered. The actors influencing this change, local leaders or stakeholders, must be considered.¹² Above all, when working at the local level to manage RAM, it becomes crucial to involve hospital governance actions.

In this sense, the objective is to analyze the perspectives of local leaders and stakeholders on innovations for the governance of a teaching hospital in addressing RAM.

METHODS

This is a qualitative research study using interviews, to be reported in accordance with the guidelines of the Consolidated Criteria for Reporting Qualitative Research (COREQ) in its version valid for Portuguese

spoken in Brazil.¹³ In this type of investigation, the aim is to capture particularities, with an interest in the conceptions, experiences, and interactions of the participants. An important aspect in this context is the position of the researcher himself. He is an integral part of the research, and his personal presence and immersion in the analyzed scenario influence the reflection and production of the results of qualitative research.^{13,14}

As for the study setting, it is a public teaching hospital from SUS — general and high complexity, totaling 342 beds, with emergency room and heliport, oncology, obstetrics, Adult, Pediatric and Neonatal Intensive Care Units. In addition, the hospital complex has five annexes, with specialty and rehabilitation clinics, and around 173 consulting rooms. Furthermore, it has been part of the Brazilian Hospital Services Company network since 2013, and is a reference for the health macro-region of the Southern Triangle of Minas Gerais, composed of 27 municipalities, with an approximate population of 800,000 inhabitants.¹⁵

To answer the question about innovations to address RAM, which permeate the governance of a SUS teaching hospital, its stakeholders were interviewed. This is a purposive sample, in which the leaders active in the mandatory and advisory hospital committees were identified, these committees being active with the hospital's senior management in their deliberative processes, as well as being composed of representatives of the hospital's workforce.

The survey of the committees took the form of a scientific publication, based on a document analysis entitled “Public governance practices in addressing antimicrobial resistance in a teaching hospital of the Brazilian Unified Health System: a document analysis,” which identified the governance mechanisms in addressing antimicrobial resistance in a teaching hospital.⁴ Fourteen committees were identified (Table 1), and their coordinators or, in their absence during the data collection period, their deputy coordinators were included in the purposive sample. The exclusion criterion was the absence or vacation of both the coordinator and deputy coordinator at the time of the interview. The main guideline was that participants should speak from a perspective related to their work on the committee, not just their personal view. Those with at least one year of experience were included. All invitees agreed to this criterion.

Table 1. Commissions surveyed.

Commission/committee/core group	Acronym ¹
Strategic Master Plan	PDE
Hospital Infection Control Committee	CCIH
Pharmacy and Therapeutics Committee	CFT
Drug Standardization Committee	CPM
Internal Committee for Accident and Harassment Prevention	CIPA
Internal Quality Assessment Committee	AVAQUALI
Antimicrobial Use and Control Committee	CUCA
Patient Safety Center	NSP
Epidemiological Surveillance Center	NUVE
Health Technology Assessment Center	NAT's
Clinical Analysis Laboratory	UACAP
Teaching and Research Management	GEP
Nursing Education Service	SEE
Multiprofessional Care Protocols Committee	CPAM

Abbreviation: Strategic Master Plan (PDE), Hospital Infection Control Committee (CCIH), Pharmacy and Therapeutics Committee (CFT), Medication Standardization Committee (COM), Internal Committee for Accident and Harassment Prevention (CIPA), Internal Quality Assessment Committee (AVAQUALI), Committee for the Use and Control of Antimicrobials (CUCA), Patient Safety Center (NSP), Epidemiological Surveillance Center (NUVE), Health Technology Assessment Center (NAT's), Clinical Analysis Laboratory (UACAP), Teaching and Research Management (GEP), Nursing Education Service (SEE), Multiprofessional Care Protocols Committee (CPAM).

The interviews took place between September and November 2023, by prior appointment. To ensure privacy and minimize external interference, the meetings were held at the hospital itself, in a room reserved for this purpose. A single meeting was held, lasting approximately 60 minutes, and there were no refusals to participate. Prior to data collection, a pilot application was carried out among the researchers themselves in order to adjust approaches, application time, and standard concepts.

The approach began with the application of a structured questionnaire for the sociodemographic characterization of the participants. Next, the question was: “Regarding the management of RAM within our hospital and considering your role in the Hospital Committee/Commission/Device, what potential, innovations, and/or technological horizons are used and/or desired?” The interviews were conducted in an open manner, allowing for a more fluid conversation. When doubts arose about the concepts, these were clarified by the interviewer. The interviews were audio-recorded.

The interviewer, one of the authors of this study, underwent prior training and participated in an elective course in a professional master's degree program in public administration (PROFIAP), entitled “Special Topics in Public Organization Administration - Qualitative Research,” with a workload of 60 hours. In addition, she is a public servant, has worked at the researched hospital as a biologist for 22 years, and has been part of the hospital's unit leadership team for 5 years. These aspects of the interviewer ultimately broaden her immersion and experience within the studied context. This, it is believed, enabled the participants' access and adherence to the study.

interview, since the interviews were leader-to-leader, a horizontal approach, minimizing judgments and constraints due to hierarchy.

For data analysis, the interviews were transcribed in full using the Transkriptor® application. At the end, a report was compiled with the full transcripts in a Word® document. Participants were coded according to their representation on hospital committees. In-depth readings of the report were carried out jointly and by a pair of researchers from this study, in a meeting for scrutiny and consensus, in November 2023. The pair produced a single textual record that portrayed the understanding of the stakeholders as a whole, through the context they narrated, always in accordance with the content analysis structure proposed by Minayo.¹⁴ In this way, the aim was to identify, in addition to the semantic structures, the interactions that these presented with the context of the sociological structures of message production.¹⁴ The description of the narratives was presented in a table. The sociodemographic characteristics of the interviewees were analyzed using statistics. descriptive.

Regarding ethical aspects, this study is part of a larger research project entitled "Convergent care research for the implementation of evidence-based practice among the teams of a public teaching hospital," approved on June 9, 2017, CAAE number: 64910317.6.0000.5154 and substantiated opinion number 2.110.319, from the *Universidade Federal do Triângulo Mineiro*, in accordance with the resolution of the National Health Council 466/2012. The research also followed resolutions 510/2016, of the National Health Council, and 580/2018. Data were collected after understanding and signing the Informed Consent Form by the participants. Fourteen potential respondents representing stakeholders from the committees were identified.

RESULTS

Thirteen stakeholders from the institution were interviewed, one of whom represented two committees: NAT and Multiprofessional Protocol. The majority were women (76.9%), all with self-reported white skin color and in stable relationships (61.5%). They work as nurses (38.5%), pharmacists (30.8%), doctors (15.4%), physiotherapists and law graduates (7.7%, both). 84.6% have more than 20 years of experience in the field, with the highest degree distributed among doctorates (38.5%), master's degrees and specializations (30.8%, both).

The responses given by the interviewees were not limited to expressions of agreement with the current situation. Furthermore, there were not only expressions of apparent cordiality or agreement out of fear of potential retaliation. This was understood as something

positive, since the mediation of the interviews aimed to achieve this result. It is believed that greater horizontality was achieved in the chosen method due to the interviewer's characteristics and immersion in the scenario, as she was also a stakeholder in the hospital institution. The perspectives indicated by the interviewees regarding the potential for innovations and/or technological horizons of the public teaching hospital in addressing RAM were outlined in five areas as described (Table 2).

Table 2. Stakeholder Perspectives.

Innovations	Perspectives	Stakeholders
Evidence-Based Decision Making in the Service	<ul style="list-style-type: none"> It must be an action foreseen in the Strategic Master Plan or other institutional planning of the hospital; Develop an internal contract with the hospital's care units in which actions to combat antimicrobial resistance are agreed upon; Have a panel on hospital quality indicators that are sensitive to the topic of antimicrobial resistance, resistance/sensitivity profile of germs to antimicrobials. 	PDE, AVAQUALI, CCIRAS, NUVE
Using Research in Practice	<ul style="list-style-type: none"> Promote institutional research on the topic within the hospital itself; Have summarized and easily accessible reports, such as on a website, about research already conducted at the hospital on the topic; Support the development of new classes of antibiotics and drugs; Establish partnerships with Postgraduate Programs at the affiliated University. 	CFT, GEP, CUCA, NAT's, CCIRAS
Antimicrobial Stewardship	<ul style="list-style-type: none"> Strengthen hospital practice in accordance with antimicrobial stewardship as an antibiotic management program; Promote drug-therapy reconciliation for antibiotic therapy; Have applications that produce timely and systematic reports on the use of antimicrobials in the hospital; Have control over the release of antimicrobials through an auditable application. 	CFT, CUCA, NUVE, CCIRAS
Development of healthcare teams	<ul style="list-style-type: none"> Provision of training in different modalities – including in a virtual environment, as well as continuing education for hospital health teams; Development of campaigns to raise awareness throughout the hospital community, such as those on patient safety, with an emphasis on hand hygiene and zero adornment; Supervision with health teams on the subject, holding meetings to discuss the reality of each unit and adjust the course of action; Maintaining updated Precaution Protocols, Infection Control Protocols, and other related institutional routines in accordance with scientific evidence and ANVISA recommendations. 	NSP, CFT, CPM, CIPA, AVAQUALI, LABORATÓRIO, SEE

continue

Innovations	Perspectives	Stakeholders
Patient-Centered and Timely Care	<ul style="list-style-type: none"> Strengthen multidisciplinary-oriented discharge of patients; Strengthen networking, with shared responsibility of hospitals for the health of communities in their territories; Implement alert systems for ADR cases during hospitalization; Implement diagnostic improvements for ADRs using methods such as molecular biology. 	CPM, CUCA, NUVE, CCIRAS, LABORATÓRIO

Abbreviation: Strategic Master Plan (PDE), Hospital Infection Control Committee (CCIH), Pharmacy and Therapeutics Committee (CFT), Medication Standardization Committee (COM), Internal Committee for Accident and Harassment Prevention (CIPA), Internal Quality Assessment Committee (AVAQUALI), Committee for the Use and Control of Antimicrobials (CUCA), Patient Safety Center (NSP), Epidemiological Surveillance Center (NUVE), Health Technology Assessment Center (NAT's), Clinical Analysis Laboratory (UACAP), Teaching and Research Management (GEP), Nursing Education Service (SEE), Multiprofessional Care Protocols Committee (CPAM).

DISCUSSION

It is relevant, in the view of leaders, that efforts be made to advance technology, such as more efficient tools for such control. Research applied to clinical practice is a major factor in improving the situation, aligned with real local needs, promoting innovation in the face of the challenges experienced.

Reducing the incidence of AMRs and improving infection control in hospitals requires diverse coordinated actions, including intersectoral strategies and government leadership.⁴ Above all, innovation is crucial to tackling AMRs. The need to reconcile innovation, improvements, quality of care, and patient safety in the management of AMRs is emphasized.^{16,17,18}

According to a study by Freitas and colleagues (2024), improving decision-making skills is directly related to better patient outcomes and a reduction in clinical errors. The implementation of evidence-based practices and advanced technologies results in improvements in diagnostic accuracy and care efficiency.¹⁹

The innovative perspectives pointed out reflect the focus on improvement in the face of local needs. Evidence-based decision-making in the service indicates innovations ranging from action planning to technologies that provide a timely view of infection indicator monitoring, demonstrating that these actions optimize financial and, especially, human resources, contributing primarily to the prevention of increased infections.

The implication for practice suggests the need to create training programs that promote knowledge about evidence-based practice and its translation process to clinical contexts, as well as organizational projects that support formal leaders in this process.²⁰

The use of research in practice demonstrates the importance of teaching hospitals as research settings. They are traditional loci of teaching-service integration that have as part of their mission the development of the

teaching-research binomial to achieve qualified academic training and care.⁹ Service-teaching partnerships provide comprehensiveness in clinical discussions with updated and contextualized scientific references according to official norms and guidelines.

Necessary strategies are pointed out, such as evidence-based educational programs. Cohesive collaboration between professionals and managers is necessary, including in the development of protocols, as it reduces risks to patients' health and enhances the institution's credibility.²¹

Academia should prioritize communication skills in all its forms, as this is a fundamental strategy for the integration process between teaching and health services, just as the SUS (Brazilian Unified Health System) as a school should integrate with teaching, stimulating the commitment to the training of health professionals. The qualification and sustainability of the health system, in times of so many challenges, is a task for all of us.²²

Regarding antimicrobial stewardship, this is the main strategy used to address AMR (Antimicrobial Resistance) in health services, known worldwide as stewardship. In Brazil, Collegiate Board Resolution RDC No. 7 of 02/24/2010, article 45, is the legislation that regulates the rational and appropriate use of antimicrobials.²³ Information technology appears as a technological horizon for better management of these.

In this approach, it is recommended that hospitals have specific forms and guides for controlling antibiotic prescriptions. In order to establish in these guidelines a universal checklist for the hospital setting regarding antibiotic prescription therapy and timely detection for infection control, including the management of AMRs. In this way, it is possible to establish the level of compliance regarding the use of antibiotics and the limits established by control and audit programs.^{24,25}

With a patient-centered focus, all the actions mentioned reflect quality of care. The World Health Organization (WHO) in its report points globally to the focus on patient-centered care in terms of quality of health, ensuring health care, safety, timely care, effectiveness, efficiency, among others, guaranteeing rights and needs in a balanced way.⁶

However, the engagement of stakeholders - understood here as active leaders within hospital committees, their mobilization towards participation in the interviews of this study, promoted among them a reflection-action on the topic addressed. Influencing greater proactivity from these leaders, thereby strengthening and expanding the hospital's response capacity in addressing AMRs. Furthermore, given the research method adopted, the immersion that the interviewer presented in the scenario enabled the respondents' engagement and facilitated the unveiling of reality.

Regarding the limitations of the research, these were those expected by the very nature of the method adopted, especially those associated with the interpretation of the findings, affected by the subjectivity of the researchers in translating reality, since the results depend on the understanding of the research participants.

However, the entire intentional sample was reached. Thus, this research makes an important contribution to local decision-making and to guiding the response capacity of the analyzed hospital in its governance to address AMR. Furthermore, even though the responses were not validated by uninvolved peers, the dual position of the interviewer (researcher and field participant) did not seem to have compromised the study. With this, this research contributes to strengthening the political agenda and global and local agreements in the face of this growing global health threat. Future research can address the development of models for hospital governance, as well as implement and evaluate interventions to reduce the challenges presented here.

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AUTHORS' CONTRIBUTIONS

Tatiana da Silva Campos contributed to the bibliographic research, writing the abstract, introduction, methodology, discussion, interpretation and description of results, preparation of tables and references. **Fernanda Carolina Camargo** contributed to the bibliographic research, writing the abstract, introduction, methodology, discussion, interpretation and description of results, preparation of tables, conclusion and final review. **Alessandra Cabral Nogueira Lima** contributed to the research with methodology, interpretation and description of results. **Regiane Máximo Siqueira** contributed to the research with methodology, interpretation and description of results.

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.

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