ORIGINAL ARTICLE

Overview of Healthcare-Associated Infections in Intensive Care Units of a public hospital

Panorama das Infecções Relacionados à Assistência à Saúde em Unidades de Terapia Intensiva de um hospital público

Panorama de las infecciones relacionadas con la atención sanitaria en las unidades de cuidados intensivos de un hospital público

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ABSTRACT

Introduction: Healthcare-Associated Infections are illnesses acquired after the patient's admission to the hospital unit and which manifest themselves during hospitalization or after discharge. **Aim:** To analyze the panorama of health-related infections in patients admitted to intensive care units. **Outlining:** Cross-sectional, retrospective study, collected from the Hospital Infection Control Commission database in a public hospital from July to December 2022. Crude and adjusted odds ratios were calculated using logistic regressions. The study followed the ethical and legal precepts of resolution 466/2012. **Results:** There was a predominance of males and those aged over 60 years. The main clinical problems were co-infection with COVID-19 and co-infection with HIV. Regarding previous conditions, Systemic Arterial Hypertension stood out. When analyzing the etiological agents, the presence of Klebsiella pneumoniae showed a marginally significant association with an increase in the chances of death. **Implications:** The use of invasive devices, prolonged hospital stay and other factors such as age, associated comorbidities, were predictors of mortality among patients, as well as risk factors for the development of Klebsiella Pneumoniae Carbapenemase infection.

DESCRIPTORS

Cross Infection; Patient Safety; Infection Control; Intensive Care Units.

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INTRODUCTION

The Ministry of Health defines Hospital Infection (HI), currently Healthcare-Associated Infections (HAIs), as an infection acquired after patient's admission to the hospital, and which manifests itself during hospitalization or after discharge, the latter when it is related to hospitalization or hospital procedures carried out, that is, related to patient care. In 2007, the Centers for Disease Control and Prevention (CDC) recommended replacing the term hospital infection with HAIs, as they affect not only hospitals, but also other healthcare services.[1-3]

HAIs, often associated with invasive procedures, prolonged therapies, and interactions in the hospital environment, present not only a clinical challenge, but also imply substantial socioeconomic impacts, constituting an important health problem.[4]

Affecting approximately 1.5 million people annually around the world, they represent a critical concern in hospital settings and other healthcare institutions, putting patient safety at risk and challenging the effectiveness of healthcare systems. In intensive care hospitals, every 100 patients, 7 in developed countries and 15 in developing countries, will acquire HAIs.[5] In addition to the health risks, they can result in high mortality and prolonged hospitalization. The aforementioned increase in hospital stay increases the cost of care by more than three times, compared to the cost of a non-infected patient, in addition to favoring the selection and dissemination of multi-resistant microorganisms.[6-11]

Such problems contribute to untimely outcomes, with infections representing 20 to 30% of all nosocomial cases. Several risk factors for infection have been identified, among the most relevant: severity of the underlying pathology, adjacent diseases, degree of impairment of the immune system, invasive procedures, such as venous, central, and arterial catheters, dialysis, mechanical ventilation and surgical interventions, increased hospital stays, iatrogenic complications, overcrowding of units, and abusive and inappropriate use of antibiotics.[9,12-13]

The control and prevention of HAIs depend, to a large extent, on the adherence of healthcare professionals to simple preventive measures, such as hand hygiene, which must occur before and after contact with the patient, even with the correct use of gloves, covering the entire surface, hands and wrists.[14] Masks, gloves, hats and aprons also make up the arsenal of protective measures, both for healthcare professionals and the patient, depending on the situation. Sterilization, surface disinfection, cleaning and an appropriate waste management policy round off the list of precautions for a environment which has a culture that minimizes the risk of transmitting infections to patients or healthcare professionals.[1, 14-15]

Therefore, the broad comprehension of the risk factors, transmission mechanisms and prevention strategies is crucial to mitigate these adverse factors, and joint hospital and professional, strength is essential in the management of HAIs. Hospital Infection Control Committee (HICC) plays a fundamental role in identifying and acting in hospital sectors, seeking to implement the infection control program at an acceptable level, providing quality and excellent care for the patient, in addition to including mechanisms for timely feedback for professionals and managers.[16]

Care in the Intensive Care Unit (ICU) is constantly challenged by infections related to invasive procedures. The researched literature highlights that the carrying out these procedures can contribute to the occurrence of infection, due to the variety of sites in which they are necessary, combined with the long length of stay and the occurrence of multi-resistant bacteria.[7,17]

The occurrence of infections caused by multidrug-resistant bacteria is considered a serious health problem that requires intensive care. The prevalence of infection and resistance pattern may vary according to the sectors, with the ICU being the

most representative place. This reality is due to the need for frequent use of antibiotics, resulting in greater bacterial resistance to multiple drugs.[18]

Knowing the prevalent profile of microorganisms in a given location helps in control and in implementing interventions to minimize damage. In one country in America, more than half of ICU infections were related to methicillin-resistant *Staphylococcus aureus*. In France there were 70% of registered infections. In Brazil, around 80% of infections developed in these units are also related to *S. Aureus*, in addition to *P. aeruginosa* and *K. pneumoniae*.[19] The mortality rate in ICUs is known to be high, ranging between 9% and 38%. , depending mainly on the profile of the clientele assisted, when it comes to mortality in patients who developed HAIs, this rate can reach 70% of cases.[20-21]

In this way, given the complexity and severity of HAIs, and based on the lack of knowledge about the prevalence and profile of microorganisms commonly found in cultures, it is essential for several reasons to know the profile and incidence of HAIs in hospitals, highlighting the clinical importance, social and economic impact of these infections.

As presented, this study aims to assess the Prevalence of health-associated infections in patients admitted to intensive care units in a public hospital and identify the profile of strains found in antibiograms and correlate with the patient's outcome.

METHOD

Study design

Cross-sectional, analytical study, with retrospective data collection. It is noteworthy that the international guide for observational studies in epidemiology, the STROBE checklist, was used to present the data from this research.

Location and period of the study

The study was developed in a hospital that is a reference in infectious diseases in the state of Piauí, using the Hospital Infection Control Committee database. The study was carried out from August to November 2023.

The institution meets the demand for infectious diseases of low, medium, and high complexity, urgency and emergency, outpatient clinics, hospitalizations, diagnosis and therapy, intensive care for non-infectious and infectious diseases. The public hospital also has intensive care, with seven ICU beds available for patients with infectious and non-infectious diseases, as long as they do not require surgical intervention. The institution in question has three ICUs, totaling 25 beds distributed to care for infectious diseases and general ICU.

Population and sample

The study population consisted of patients admitted to ICUs. The sample was a census and comprised all monitoring records of patients admitted to ICUs with HAIs, carried out by the Hospital Infection Control Committee (HICC) from July to December 2022. The time interval used for analysis was only six months, however, it was enough to understand the overview of infections during the COVID-19 pandemic and achieve the research aims. The reduced period is related to the time the carrying out of health residency activities takes.

The inclusion criteria were records of patients hospitalized from July to December 2022 and who developed HAIs; and records of patients over the age of 18, with a minimum stay of 24 hours in hospital. The study exclusion criteria correspond to illegible, incomplete medical records that make it difficult to complete the research questionnaire. According to the eligibility criteria, a total of357 records of patients admitted to the ICU were evaluated.

Data collection instruments

The data collection took place from August to November 2023, as from managerial records of data collection from the hospitalized patients, carried out

by the HICC of the institution referring to the months of July to December 2022. The dependent variable (outcome) was the prevalence of HAIs and the independent variables were those related to sociodemographic and clinical data.

The data collection instrument was constructed based on the information contained in the HAIs assessment form of institution's HICC, namely:

1 – Patient characterization: age, sex, Body Mass Index (BMI), length of stay in the ICU, reason of the health of the ICU, type of origin and length of stay (in days) in the unit of origin.

2 – Diseases and conditions prior to admission to the ICU: Systemic Arterial Hypertension (SAH), Coronary Artery Disease (CAD), Acute Myocardial Infarction (AMI), Congestive Heart Failure (CHF), Cerebral Vascular Accident (CVA), Diabetes Mellitus (DM), Chronic Kidney Disease (CKD), Chronic Obstructive Pulmonary Disease (COPD), Cirrhosis, Human Immunodeficiency Virus (HIV), Cancer, Immunosuppression, Debilitating orthopedic or neurological sequelae, non-listed diseases.

3 – During ICU stay: use of invasive mechanical ventilation and use of non-invasive mechanical ventilation.

4 – Monitoring upon admission: temperature, heart rate, respiratory rate, blood pressure and urine output (ml/h).

5 – Use of interventions and devices (use and time of use): vasoactive amine drugs, orotracheal device, tracheostomy cannula, arterial catheter, central venous catheter, venous catheter for hemodialysis, peripheral venous catheter, indwelling bladder catheter, chest tube, abdominal drain and nasoenteric catheter.

6 – Data on infection acquired prior to ICU admission: site, confirmation method and etiological agent.

7 – Data on infection acquired after to ICU admission: site, confirmation method and etiological agent.

Procedures for data analysis

The information was entered into databases, with double entry into a *Microsoft Excel*, spreadsheet, for validation to identify possible typing errors. SPSS version 25.0 was used for descriptive statistics by calculating averages, medians, standard deviations, interquartile ranges, minimums and maximums for quantitative variables, and frequencies for qualitative variables.

Regarding the inferential analysis, odds ratios (OD) were calculated, crude and adjusted, through logistic regressions, considering the inclusion of variables of the main etiological agents. 95% confidence intervals were used and are presented where appropriate. All analyzes were performed using SPSS 25.0 (IBM Corporation), $p < 0.05$ was considered statistically significant.

Ethical and legal aspects

This study was carried out in compliance with all the principles of Resolution 466, of December 12, 2012, of the Brazilian National Health Council (CNS). The study received authorization from the Co-Participating Institution, through a declaration that was submitted, together with other documents, to the Research Ethics Committee (REC) of the State University of Piauí (UESPI), being approved with opinion number no. 5,998,207. It should be noted that the Data Use Commitment Term and the request for exemption from the and Informed Consent Form were used.

RESULTS

The records of 357 patients were analyzed, patients admitted to the ICU and diagnosed with HAIs. Table 1 presents the sociodemographic characterization data of the patients. The distribution by sex shows a male predominance, while the most represented age range is patients over 60 years of age. Regarding outcomes, the majority of participants were discharged. The analysis of the origin indicates that the majority of participants were

admitted by external regulation (regulation is the process of evaluation of patients' status and management of the access to beds), pointing to specific dynamics in the health system. The length of stay variable suggests that the majority of hospitalizations were short-term ones, lasting less than 7 days.

Table 1. Distribution of patients by sociodemographic characterization (n=357). Teresina, PI, Brazil, 2023

Variables	Category	Total	Percentage
Sex	Male	197	55.21%
	Female	160	44.79%
Age	11 to 30 years old	56	15.69%
	31 to 60 years old	142	39.78%
	Over 60 years old	153	42.86%
	No registry	6	1.68%
Outcome	Discharge	157	43.96%
	Death	112	31.38%
	Not reported	79	22.15%
	External transfer	7	1.96%
	No registry	2	0.56%
Origin	Internal admission	76	21.29%
	Admission - Urgency	4	1.12%
	External regulation	273	76.47%
	No registry	4	1.12%
Days in the hospital	<7	163	45.60%
	8-14	81	22.68%
	>14	88	24.65%
	No registry	25	7.01%

Source: Research data.

It was found that the main clinical problems were co-infection with COVID-19 and co-infection with HIV. Regarding previous conditions, Systemic Arterial Hypertension, pneumonia, and diabetes mellitus stood out. As to the ventilatory support, the most prevalent was the use of Mechanical Ventilation (MV). When it comes to the location where the infection occurs, the respiratory tract appears to be most affected. As for the etiological agent, the most prevalent were: *Klebsiella pneumoniae*, *Acinetobacter baumanni*, *Pseudomonas aeruginosa* e *Escherichia coli* (Table 2).

Table 2. Clinical characteristics with types of oxygen therapy and main etiological agents. (n=357), some patients had two or more comorbidities. Teresina, PI, Brazil, 2023

Variables	Category	Total	Percentage
Diseases and prior conditions	COVID-19	91	15.22%
	Systemic Arterial Hypertension	82	13.71%
	HIV	77	12.88%
	Pneumonia	54	9.03%
	Brain Stroke	47	7.86%
	Diabetes Mellitus	38	6.36%
	Neurotoxoplasmosis	32	5.35%
	Tuberculosis	31	5.18%
	Heart disease	29	4.85%
	ABrI/Dyspnea	24	4.01%
	Smoking	20	3.34%
	COPD	15	2.51%

	Convulsive crisis	14	2.34%
	Chronic Kidney Disease	13	2.17%
	Leishmaniasis	7	1.17%
	Meningitis	6	1.00%
	Asthma	5	0.83%
	Snake accident	2	0.33%
	Others	6	1.00%
Ventilatory support	MV	147	**40.27%**
	AA	126	34.52%
	NC	50	13.70%
	RM	33	9.04%
	NT	7	1.92%
	HFNC	2	0.55%
Location			
	Respiratory tract	109	**45.04%**
	Bloodstream	76	31.40%
	Urinary tract	56	23.14%
	Cerebrospinal Fluid	1	0.41%
Etiological agent	*Klebsiella pneumoniae*	50	**27.03%**
	Acinetobacter baumanni	38	20.54%
	Pseudomonas aeruginosa	39	21.08%
	Escherichia coli	22	11.89%
	Stphylococcus haemolyticus	11	5.95%
	Enterococcus faecalis	6	3.24%
	Staphylococcus epidermidis	6	3.24%
	Staphylococcus epidermidis	3	1.62%
	Staphylococcus epidermidis	3	1.62%
	Streptococcus agalactiae	2	1%
	Burkholderia pseudomallei	1	0.54%
	Bitrobacter freundii	1	0.54%
	Staphylococcus epidermidis	1	0.54%
	Streptococcus agalactiae	1	0.54%
	Proteus mirabilis	1	0.54%

Caption: Human Immunodeficiency Virus (HIV), Acute Breathing Insufficiency (ABrI), Chronic Obstructive Pulmonary Disease (COPD), Ambient Air (AA), Mechanical Ventilation (VM), Nasal Catheter (NC), Reservoir Mask (RM), Nebulizer Therapy (NT), High-Flow Nasal Cannula (HFNC).
Source: Research data.

The analysis of outcome's (discharge or death) OR related to the infection route indicates that there was no significant difference in the chances of death compared to discharge. When analyzing the etiological agents, the presence of *Klebsiella pneumoniae* showed a marginally significant association with an increase in the chances of death.

Table 3. Outcomes' (discharge or death) OR analysis related to the route of infection and main etiological agents. Teresina, PI, Brazil, 2023

Variables/outcome	Discharge	Death	OR (CI 95%)	Z	P
Respiratory tract	44	37	1,178 (0.7150 to 1.9433)	0.645	0.5190
Urinary tract	23	9	0,5485 (0.2445 to 1.2304)	1.457	0.5485
Bloodstream	32	30	1,3142 (0.7552 to 2.2868)	0.967	0.3337
Escherichia coli	10	8	1,1214 (0.4290 to 2.9312)	0.234	0.8151
Klebsiella pneumoniae	19	22	1,6231 (0.8389 to 3.1403)	1.438	**0.0493***
Acinetobacter baumanni	19	10	0,7378 (0.3305 to 1.6472)	0.742	0.4580
Pseudomonas aeruginosa	18	11	0,8566 (0.3894 to 1.8843)	0.385	0.7005

Caption: Odds Ratio (OR); *p <0,05 indicates significant value.
Source: Research data.

In the analysis of the OR of the main etiological agents related to some variables, *Escherichia coli*; *Acinetobacter baumanni* and *Pseudomonas aeruginosa* showed no significant difference. *Klebsiella pneumoniae* showed a significant difference in the increased odds of death (adjusted).

Table 4. Analysis of the OR of the main etiological agents related to age, interaction time, outcome (adjusted, without another etiological agent) and use of mechanical ventilation. Teresina, PI, Brazil, 2023

Variables	EC	OR / p value	KP	OR / p value	AB	OR / p value	Pa	OR / p value
11 to 30 years old	6	1.1667 p=0.6561	4	0.257 p=0.1252	4	0.4667 p=0.3265	9	1.576 p=0.2365
31 to 60 years old 11 to 30 years old	12		28		15		10	
31 to 60 years old	5		13		13		13	
>7 days	6	0.7193 p=0.5231	14	0.7357 p=0.6322	7	0.7337 p=0.6376	7	2.0263 p=0.1389
>7 days	5		10		5		4	
<14 days	8		22		17		20	
Discharge	11	0.9623 p=0.9415	18	**1.5962 p=0.0452**	17	0.7116 p=0.4726	16	0.6616 p=0.4048
Death	7		19		8		7	
MV	16	1.1667 p =0.7564	30	0.8889 p= 0.7783	22	0.9697 p= 0.9467	20	1.0667 p=0.8897
AA	7		10		8		8	

Caption: Escherichia coli (EC); Klebsiella pneumoniae (KP); Acinetobacter baumanni (AB); Pseudomonas aeruginosa (PA). Mechanical Ventilation (MV); Ambient Air (AA); Odds Ratio (OR); *p <0,05 indicates significant value.
Source: Research data.

DISCUSSION

We observed that there is a predominance of male audiences, which corroborates other studies.[22-23] Vulnerability to diseases can be influenced by a variety of factors and males can present specific characteristics that increase or decrease the risk of certain health conditions such as risky behavior, smoking, excessive alcohol consumption and resistance to preventive medical care,[24] in addition to the lack of physical activity and engagement in exercise can impact the cardiovascular and metabolic health of men, who are more likely to die from chronic diseases.[25-26]

The fear of serious illness, the shame of exposing the body, the absence of specialized units for men's health, a limited availability of public services and the increase in the number of accidents and violence, may have been contributing factors to this higher prevalence of males.[23,27-28]

There was a predominance of patients over 60 years of age admitted to the ICUs. Studies estimate that 60% of ICU beds are occupied by patients over 65 years of age, and the average length of stay for this group is seven times longer than that of the younger population.[29] This hospitalization is influenced by several factors, including population aging, with increasing life expectancy, the elderly population is growing, leading to a greater demand for intensive healthcare,[30-31] higher incidence of chronic diseases and the need for complex medical interventions,[32-33] frailty and decreased functional reserve associated with aging can make the elderly more susceptible to acute events and require intensive care.[34] Understanding these factors is crucial for planning

health policies and adequate allocation of resources, aiming to provide quality care to elderly people in the ICU and optimize clinical results.

In this research, the main cause of hospitalization was co-infection with COVID-19. Other studies confirm this datum, for example, a study carried out in the United States found that the percentage of patients with COVID-19 who required hospitalization was six times higher in those with pre-existing medical conditions than in those without medical conditions (45.4% vs. 7.6%) (STOKES *et al.*, 2020). A meta-analysis of 212 studies with 281,461 individuals from 11 countries/regions observed that around 23% of patients have severe COVID-19, that is, that one which requires intensive care, and these patients demonstrated a mortality rate of around 6% (LI *et al.*, 2021).

The scientific literature shows that bacterial co-infection occurs in a higher percentage among ICU patients infected with COVID-19 (LANGFORD *et al.*, 2020). A study carried out in India shows that bacterial co-infections in patients with COVID-19 are one of the main causes of mortality. The study authors also reveal that among Gram-negative bacteria, *Escherichia coli*, *Klebsiella pneumoniae* and *Acinetobacter baumannii* are the most prevalent bacterial isolates and the rates of antimicrobial resistance among these bacteria were very high (SATHYAKAMALA; PEACE; SHANMUGAM, 2022).

Regarding previous conditions, the main cause of hospitalization was cardiovascular diseases (CVD) followed by diseases of the respiratory system. Cardiovascular diseases are the leading cause of death in developed and developing countries.[39] Despite there being a decline in mortality rates from Chronic Noncommunicable Diseases (NCDs), as shown in Feliciano's study, in Brazil, in relation to CVDs, these still have the highest average rates in the country.[40] Brazil is among the countries with the highest CVD mortality rate.[41]

In relation to days of hospitalization, an average of less than 7 days was observed, which is important in this context, as the patient's stay in the ICU should be as brief as possible, reversing the acute condition that allows transfer to a hospital of less complexity, avoiding complications associated with HAIs; muscle weakness due to immobility; prevention of delirium that negatively impacts cognitive function and long-term quality of life; cost reduction and resource optimization; and inappropriate use of the ICU.[42-45] Optimizing the length of stay in the ICU is, therefore, a multidimensional approach that aims to improve the clinical results of this patient, ensuring efficient use of these resources.

In the analysis of the study, the bacteria that showed important relevance in the increase in mortality rates was *klebsiella pneumoniae carbapenemases* (KPC), which corroborates other studies, which show advanced age and use of MV as the main predictors for KPC infection.[46-47] According to Cuervo, age, along with MV, heart disease, poor functional status and ICU admission are risk factors for mortality due to KPC infections. Another article also establishes age and the *Acute Physiology and Chronic Health Evaluation* (APACHE II) index as risk factors for KPC infection and mortality.[23,48-49]

KPC infection is a condition caused by bacteria of the genus Klebsiella that produce the KPC enzyme. This enzyme is capable of inactivating carbapenem antibiotics that are commonly used as a last resort in the treatment of serious bacterial infections.[23] Carbapenem resistance, conferred by the presence of KPC, represents a significant challenge in the treatment of infections, as it restricts the options of usable antibiotics. This resistance can result in infections that are difficult to control, with a greater risk of complications, spread in healthcare environments and impact on patient mortality. This resistance can result in infections that are difficult to control, with a greater risk of complications, spread in healthcare environments and impact on patient mortality.[50] The indiscriminate and often abusive practice of antibiotic therapy has led to the

development of resistance mechanisms common mainly in hospital environments.

It is observed that the bloodstream, urinary tract, respiratory tract and catheter insertion sites were the infection sites most frequently affected by KPC strains in patients. The literature highlights that the main risk factors related to hospital infections caused by these strains are: long hospital stay, ICU admission, hospitalization in other long-stay establishments and invasive procedures as previously mentioned.[47]

Knowledge of risk factors for infection facilitates the determination of preventive care and risk control, as well as can support decision-making within the scope of clinical practice, given the current concern with patient safety. The World Health Organization (WHO) already demonstrates this concern, by associating the importance of reducing infections with the costs they generate.[51]

Limitations

This study has some limitations such as sampling time <1 year and being carried out at a single health institution. However, the compiled data presents an overview of HAIs during COVID-19 pandemic and achieves the research objectives. It is also noteworthy that the scenario evaluated is similar to that presented in other national studies.

CONCLUSION

The prevalence of healthcare-associated infections in patients admitted to intensive care units in a public hospital was higher in the male population, in patients co-infected with COVID-19 and patients diagnosed with chronic noncommunicable diseases (NCD). The use of invasive devices, prolonged hospital stay and other factors such as age, associated comorbidities were predictors of mortality among patients, as well as risk factors for the development of infection by KCP.

RESUMO

The threat posed by KPC-producing bacteria is evident, addressing issues related to resistance to carbapenems and the clinical challenges associated with these infections in Brazil and worldwide, making it necessary coordinated actions involving everything from public and private health services to public health authorities.

Bringing it to the reality of nursing, it is observed that this professional has a crucial role in preventing HAIs, by being directly in contact with the patient, in addition to the multidisciplinary team, we can identify improvements in practices and protocols for the provision of nursing care in ICU, aiming to reduce the incidence of infections. This may include evaluating hand hygiene techniques, proper handling of technology in ICUs, safe medication handling practices, and other procedures. It also enables the implementation, development, and evaluation of preventive and therapeutic interventions.

Therefore, expanding knowledge about HAIs in ICUs strengthens the care provided by nursing, and advances practices in the SUS, improving the quality of Patient Safety protocols, reducing adverse events, and optimizing the use of health resources. In addition to expanding views on Public Policies in this immersion of HAIs and Permanent Education for the multidisciplinary team.

Introdução: As Infecções Relacionadas à Assistência à Saúde são agravos adquiridos após a admissão do paciente na unidade hospitalar e que se manifestam durante a internação ou após a alta. **Objetivo:** Analisar o panorama das infecções relacionadas à saúde em pacientes internados em unidades de terapia intensiva. **Delineamento:** Estudo transversal, retrospectivo, com coleta no banco de dados da Comissão de Controle de Infecção Hospitalar em um hospital público no período de julho a dezembro de 2022. Foram calculadas as razões de chance, brutas e ajustadas, mediante regressões logísticas. O estudo seguiu os preceitos éticos e legais da resolução 466/2012. **Resultados:** Houve predominância do sexo masculino e da faixa etária acima de 60 anos. Os principais agravos clínicos foram a coinfecção por COVID-19 e a coinfecção por HIV. Com relação às condições prévias, destacou-se a Hipertensão Arterial Sistêmica. Ao analisar os agentes etiológicos, a presença da *Klebsiella pneumoniae* mostrou uma associação marginalmente significativa com um aumento nas chances de óbito. **Implicações:** O uso de dispositivos invasivos, tempo de internação prolongado e outros fatores como idade, comorbidades associadas, foram preditores de mortalidade entre os pacientes, assim como fatores de risco para o desenvolvimento de infecção por *Klebsiella Pneumoniae Carbapenemase*.

DESCRITORES
Infecção Hospitalar; Segurança do Paciente; Controle de Infecções; Unidades de Terapia Intensiva.

RESUMEN
Introducción: Las Infecciones Asociadas a la Atención de Salud son enfermedades adquiridas después del ingreso del paciente a la unidad hospitalaria y que se manifiestan durante la hospitalización o después del alta. **Objetivo:** Analizar el panorama de las infecciones relacionadas con la salud en pacientes ingresados en unidades de cuidados intensivos. **Delineación**: Estudio retrospectivo transversal, recopilado de la base de datos de la Comisión de Control de Infecciones Hospitalarias en un hospital público de julio a diciembre de 2022. Se calcularon los odds ratios brutos y ajustados mediante regresiones logísticas. El estudio siguió los preceptos éticos y legales de la resolución 466/2012. **Resultados:** Hubo predominio del sexo masculino y de mayores de 60 años. Los principales problemas clínicos fueron la coinfección por COVID-19 y la coinfección por VIH. Respecto a las afecciones previas destacó la Hipertensión Arterial Sistémica. Al analizar los agentes etiológicos, la presencia de Klebsiella pneumoniae mostró una asociación marginalmente significativa con un aumento en las posibilidades de muerte. **Implicaciones:** El uso de dispositivos invasivos, la estancia hospitalaria prolongada y otros factores como la edad, comorbilidades asociadas, fueron predictores de mortalidad entre los pacientes, así como factores de riesgo para el desarrollo de infección por Klebsiella Pneumoniae Carbapenemasas.

DESCRIPTORES
Infección Hospitalaria; Seguridad del Paciente; Control de Infecciones; Unidades de Cuidados Intensivos.

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COLLABORATIONS

MVNG and SMAC: substantial contributions to project design, data acquisition, analysis and interpretation of results, and writing of the manuscript. IPR, GMB and ACBS: substantial contributions to the analysis and interpretation of results and critical review of the manuscript. FLC, ACGL, FVSDA: substantial contributions to the critical review of the manuscript. **All authors agree and are responsible for the content of this version of the manuscript to be published.**

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AVAILABILITY OF DATA

The original data are the responsibility of the corresponding author (SMAC) and are available upon request.

CONFLICTS OF INTEREST

There are no conflicts of interest to declare.