

Innovative Strategies for Adherence to Hand Hygiene and Infection Prevention in Outpatient Oncology

Estratégias Inovadoras para Adesão à Higienização das Mãos e Prevenção de Infecções na Oncologia Ambulatorial
Estrategias Innovadoras para Adhesión en Higiene de Manos y Prevención de Infecciones en Oncología Ambulatoria

RESUMO

Objetivo: relatar a experiência de Serviço de Oncologia Ambulatorial na implementação de estratégias inovadoras para aumentar adesão à higienização das mãos e prevenir infecções relacionadas à assistência à saúde. **Método:** coleta de dados descritivos das infusões realizadas, quantidade de inspeções de higiene das mãos, adesão às técnicas pelos profissionais, consumo de produtos para higienização e casos de infecções no ano de 2024. **Resultados:** foram realizadas 18.978 infusões e 1.187 inspeções da técnica de higienização, alcançando adesão média de 87%. Após a troca do enfermeiro responsável, diversas ações foram implementadas, como campanhas educativas, auditorias, uso de tecnologia para validação da prática e atividades lúdicas, e o consumo de solução alcoólica foi de 30ml/dia/paciente. Não foram registradas infecções de corrente sanguínea ou de cateter venoso central no período. **Conclusão:** intervenções estruturadas, educação continuada e monitoramento constante são fundamentais para reduzir infecções e garantir a segurança do paciente, especialmente em ambientes oncológicos ambulatoriais. **DESCRIPTORIOS:** Controle de Infecções; Higiene das mãos; Oncologia; Profissionais Controladores de Infecções; Assistência Ambulatorial

ABSTRACT

Objective: to report the experience of an Outpatient Oncology Service in implementing innovative strategies to increase hand hygiene adherence and prevent healthcare-associated infections. **Method:** descriptive data collection on infusions performed, number of hand hygiene inspections, adherence by professionals, product consumption, and infection cases in 2024. **Results:** 18,978 infusions and 1,187 hygiene inspections were conducted, with an average adherence of 87%. After a change in the lead nurse, several actions were implemented, such as educational campaigns, audits, technology use for practice validation, and playful activities. Alcohol-based solution consumption reached 30ml/day/patient. No bloodstream or central venous catheter infections were recorded. **Conclusion:** structured interventions, continuous education, and constant monitoring are essential to reduce infections and ensure patient safety, especially in outpatient oncology settings.

DESCRIPTORS: Infection Control; Hand Hygiene; Oncology; Infection Control Professionals; Ambulatory Care

RESUMEN

Objetivo: reportar la experiencia del Servicio de Oncología Ambulatoria en la implementación de estrategias innovadoras para aumentar la adhesión a la higiene de manos y prevenir infecciones asociadas a la atención sanitaria. **Método:** recopilación de datos descriptivos sobre infusiones realizadas, número de inspecciones de higiene de manos, adhesión de los profesionales, consumo de productos y casos de infecciones en 2024. **Resultados:** se realizaron 18.978 infusiones y 1.187 inspecciones, con una adhesión media del 87%. Tras el cambio del enfermero responsable, se implementaron varias acciones como campañas educativas, auditorías, uso de tecnología para validar la práctica y actividades lúdicas. El consumo de solución alcohólica fue de 30ml/día/paciente. No se registraron infecciones del torrente sanguíneo ni del catéter venoso central. **Conclusión:** las intervenciones estructuradas, la educación continua y el monitoreo constante son fundamentales para reducir infecciones y garantizar la seguridad del paciente, especialmente en entornos oncológicos ambulatorios.

DESCRIPTORIOS: Control de Infecciones; Higiene de Manos; Oncología; Profesionales de Control de Infecciones; Atención Ambulatoria

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INTRODUCTION

Healthcare-associated infections (HAIs) represent a serious global public health problem, with significant consequences for patients and healthcare systems¹. The prevalence of HAIs is estimated to be between 7% and 10% globally, reaching up to 15% in developing countries². These infections result in longer hospital stays, increased mortality, and high additional treatment costs, which can range from €8,500 to €34,000 per infection^{3,4}. In 2015, approximately 670,000 patients died due to multidrug resistance associated with healthcare⁵. In addition, HAIs are responsible for a significant number of disability-adjusted life years (DALYs), negatively impacting patients' quality of life⁵. Efforts to reduce the incidence include prevention and control interventions, such as hand hygiene and perioperative prophylaxis, although the implementation of these programs is still limited and heterogeneous in many countries⁶.

SARI prevention strategies are essential to ensure patient safety and the quality of health services. Hand hygiene is considered the most effective and simplest measure to reduce pathogen transmission - essential at all times of patient contact⁷. The World Health Organization (WHO) recommends a multimodal approach that includes hand hygiene, rational use of antimicrobials, implementation of infection control programs, continuing education of healthcare professionals, and use of advanced prevention technologies⁸. The "5 Moments for Hand Hygiene" defined by the WHO are: before touching the patient, before performing aseptic procedures, after risk of exposure to body fluids, after touching the patient and after touching surfaces near the patient. These practices aim to protect both patients and healthcare professionals, prevent-

ing the spread of microorganisms and ensuring a safe environment. Adherence to these practices, combined with an institutional commitment to education and innovation, can lead to a significant reduction in HAIs and an overall improvement in the quality of healthcare⁹.

In this sense, Hospital Infection Control Committees (HICC) play a crucial role in the prevention and control of infections in hospital settings. These are committees composed of multidisciplinary teams responsible for developing, implementing, and evaluating hospital infection control programs (HICP). Among their main duties are: epidemiological surveillance of infections, implementation of technical and operational standards and routines, continuous training of healthcare professionals and promotion of the rational use of antimicrobials and germicides.

Despite the name, there are working groups with the same purposes—to ensure infection prevention—in outpatient centers, for which there is still a scarcity of data published in the literature. Therefore, this article aims to share the experience and innovative strategies for increasing adherence to hand hygiene and preventing healthcare-associated infections in outpatient oncology services.

METHOD

This is a case report from the Outpatient Chemotherapy Center at Unimed Campinas (in the interior of São Paulo), which has 26 chairs and two long-stay beds. The team consists of an infectious disease physician, a nurse from the Healthcare-Associated Infection Control Committee (CCIRAS), and other healthcare professionals.

Descriptive data were collected on the number of infusions performed, the number of hand hygiene inspections performed by CCIRAS, adher-

ence to the correct hygiene technique by service professionals, consumption of hand hygiene products, and cases of infections in 2024. During this period, there was a change in the CCIRAS nurse in July, who implemented educational campaigns and actions, which were described.

RESULTS

The outpatient clinic performed 18,978 infusions in 2024. During this period, 1,187 observations of hand hygiene techniques were made by CCIRAS, with an average of 87% adherence to the recommended techniques by the team.

Between January and August, adherence varied between 87% and 93% (Graph 1). Starting in July 2024, there was a change in the CCIRAS nurse responsible for management, who implemented a series of improvement actions, described below:

- Application of the alcohol tolerability questionnaire;
- Self-assessment of the hand hygiene program;
- Symbolic letter of support from senior management to engage employees in hand hygiene;
- Change of brand of alcohol-based solution and training with brand specialist to apply the concept of hand hygiene to employees;
- Audit of hand hygiene infrastructure, dispensers, faucets, and sinks;
- Changes to posters and reminders for employees about hand hygiene compliance;
- Production of badges showing the 5 moments for hand hygiene and the 6 international patient safety goals;
- Updating of the hand hygiene program, with specific goals for increasing adherence and appropriate recommendations for glove

use;

- Training of the new hand hygiene team;
- Validation of hand hygiene practices using ultraviolet light and Hand Scan (a scanner that reads hand hygiene using artificial intelligence);
- Fun activities and special events (e.g., Hero Day and Carni-

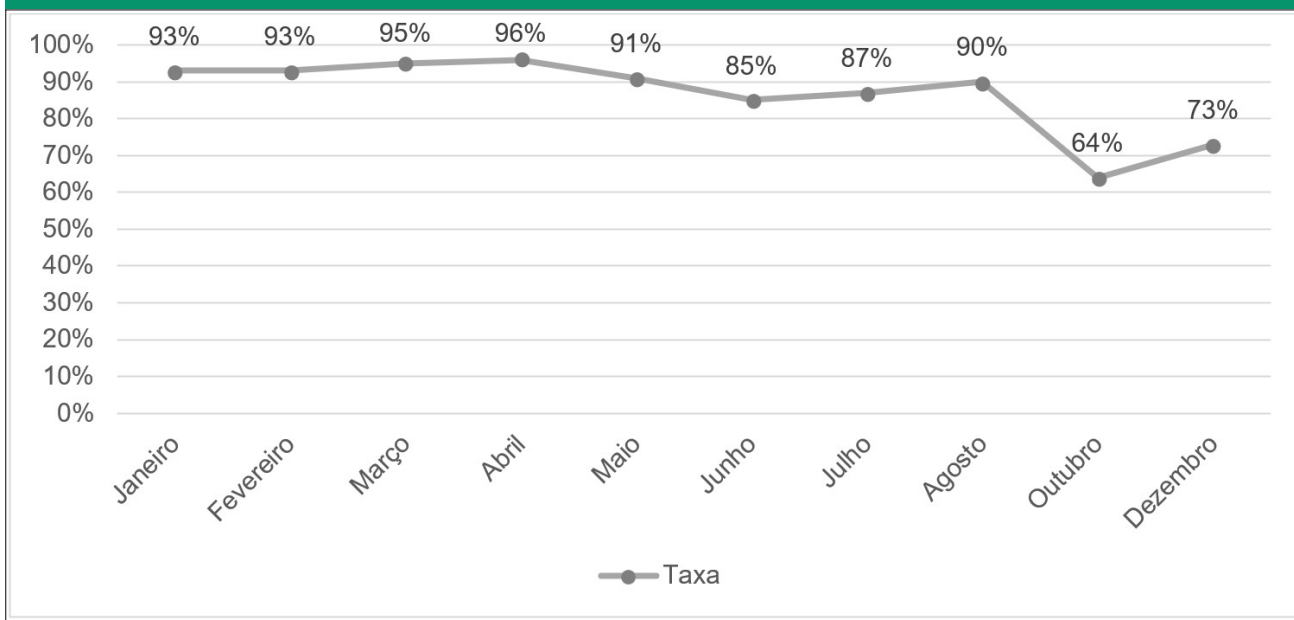
val);

- Educational content: gamification (Kahoot) and distance learning (EAD);
- Microbiological analysis of material collected from employees' hands, causing greater impact;
- Continuous feedback on hand hygiene compliance;
- Presentation of results with

practical contenta to increase adherence - 2024.

- Application of bundles every two months;
- Creation of a specific hand hygiene logo for printed materials given to patients and used in institutional campaigns;
- Continuous monitoring through bundles and indicators.

Chart 1 - Percentage of hand hygiene practices achieved by professionals



Source: own elaboration

After the arrival of the new reference professional and the above actions, the hand hygiene audit began to be carried out every two months (direct observation in one month and action in the following month). During this period, compliance was 64% in October and 73% in December.

In 2024, the Oncology Service consumed 148,000 liters of liquid soap and 256,346 liters of alcohol-based hand sanitizer (30ml/patient/day). During the survey period, no cases of bloodstream infections or long-term central venous catheter infections were identified.

DISCUSSION

Adherence to hand hygiene among healthcare professionals is a crucial factor in the prevention of HAIs. In the present study, the average was 87% for the period studied, which is above the global average recommended by the WHO (59%)¹¹. Similarly, in a retrospective observational study, nursing professionals at an outpatient cancer center conducted 7,213 direct inspections of other healthcare professionals over 10 quarters – adherence ranged from 84% to 96%¹². On the other hand, an observational study conducted in intensive care units in Brazilian hospitals revealed that the rate of ad-

herence to the techniques is considerably low - an average of only 23.98% in the opportunities observed¹³.

A drop in adherence was observed in October, and there were no indicators in September and November. Due to the change of CCIRAS nurse in July, one of the changes was the bimonthly frequency of observations. In addition, the new professional evaluated all parameters and identified important areas for improvement in practices and policies related to hand hygiene inspection. In fact, when reviewing the history, he found that there were no records of the technical criteria evaluated before his arrival. Even after the initial decline, the implementation

of clear criteria for evaluation and a series of educational actions resulted in a subsequent increase in adherence after a short period of time.

Regarding the consumption of alcohol-based solutions for the prevention of HAIs, the WHO recommends the use of 20 ml/patient/day by professionals¹⁴. In the present study, the indicators were 50% higher. In addition, it was also found that the service has superior performance compared to other health services in Brazil: a report by ANVISA (2022) showed that only 32.6% of 5,602 adult ICUs evaluated had consumption above 20 ml/patient/day in 2019¹⁵.

In the context of oncology, it is common to have immunosuppressed patients, who are more susceptible to infections compared to the general

population. In addition to this factor, it should also be noted that cancer treatment is commonly administered through a central venous catheter—extremely useful and less uncomfortable for the patient; however, it poses a greater risk for infections (specifically, Catheter-Related Bloodstream Infection—CRBI).

All actions reported by the Outpatient Oncology Service had a significant impact, with no cases of ICSAC in 12 months – a performance superior to the findings of the literature review, which identified ICASC rates in adults with cancer between 0.02 and 3/1,000 catheter days and suggested that continuing education, training of healthcare professionals, audit of bundle implementation, and engagement of patients and caregivers are the keys

to long-term ICSAC prevention¹⁶.

CONCLUSION

The implementation of structured hand hygiene strategies, such as innovative campaigns and audits, resulted in professional adherence above global averages and the absence of CAHS in the oncology service, demonstrating that the combination of education, monitoring, and engagement is essential to consolidate a culture of patient safety, despite the limitations of single-center analysis.

This report may drive future, more robust studies in this outpatient setting, in addition to potential application and results in the healthcare practice of similar services.

References

- Oliveira RD de, Bustamante PFO, Besen BAMP. Infecções relacionadas à assistência à saúde no Brasil: precisamos de mais do que colaboração. *Rev Bras Ter Intensiva*. 2022;34:313-5. doi:10.5935/0103-507X.2022editorial-pt.
- Allegranzi B, Bagheri Nejad S, Combescure C, Graafmans W, Attar H, Donaldson L, Pittet D. Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. *Lancet*. 2011;377(9761):228-41. doi:10.1016/S0140-6736(10)61458-4.
- OECD. Health at a Glance: Europe 2018. OECD; 2018. Acesso em: 17 de abril de 2025. Disponível em: https://www.oecd.org/en/publications/health-at-a-glance-europe-2018_health_glance_eur-2018-en.html.
- Forrester JD, Maggio PM, Tennakoon L. Cost of Health Care-Associated Infections in the United States. *J Patient Saf*. 2022;18(2):e477-9. doi:10.1097/PTS.0000000000000845.
- Cassini A, Högberg LD, Plachouras D, Quattrocchi A, Hoxha A, Simonsen GS, Colomb-Cotinat M, Kretzschmar ME, et al. Attributable deaths and disability-adjusted life-years caused by infections with antibiotic-resistant bacteria in the EU and the European Economic Area in 2015: a population-level modelling analysis. *Lancet Infect Dis*. 2019;19(1):56-66. doi:10.1016/S1473-3099(18)30605-4.
- Padoveze MC, Fortaleza CMCB. Infecções relacionadas à assistência à saúde: desafios para a saúde pública no Brasil. *Rev Saúde Pública*. 2014;48:995-1001. doi:10.1590/S0034-8910.2014048004825.
- Allegranzi B, Pittet D. Role of hand hygiene in health-care-associated infection prevention. *J Hosp Infect*. 2009;73(4):305-15. doi:10.1016/j.jhin.2009.04.019.
- Organização Mundial da Saúde (OMS). Cinco momentos para a higiene de mãos. Acesso em: 17 de abril de 2025. Disponível em: <https://www.who.int/es/publications/m/item/five-moments-for-hand-hygiene>.
- ANVISA. Programa nacional de prevenção e controle de infecções relacionadas à assistência à saúde. Agência Nacional de Vigilância Sanitária; 2021. Acesso em: 20 de maio de 2025. Disponível em: https://www.gov.br/anvisa/pt-br/centraisdeconteudo/publicacoes/servicosdesaude/publicacoes/pnpciras_2021_2025.pdf.
- Ministério da Saúde. Portaria nº 2.616, de 12 de maio de 1998. Diário Oficial da União, 13 de maio de 1998. Acesso em: 22 de abril de 2025. Disponível em: https://bvsm.sau.gov.br/bvsm/saudelegis/gm/1998/prt2616_12_05_1998.html.
- Organização Mundial da Saúde (OMS). Hand hygiene. Acesso em: 25 de abril de 2025. Disponível em: <https://www.who.int/teams/integrated-health-services/infection-prevention-control/hand-hygiene>.
- Bow EJ, Bourrier V, Phillips D, Winski G, Williams M, Kostiuik N, McLeod J. Hand Hygiene Compliance at a Canadian provincial cancer centre - the complementary roles of nurse auditor-driven and patient auditor-driven audit processes and impact upon practice in ambulatory cancer care. *Am J Infect Control*. 2021;49(5):571-5. doi:10.1016/j.ajic.2020.10.012.
- Valim MD, Reis GF, Santos B da S, Goulart L de S, Bortolini J, Cardoso JDC. Adesão à técnica de higiene das mãos: estudo observacional. *Acta Paul Enferm*. 2024;37:eAPE001262. doi:10.37689/acta-ape/2024A00001262.
- Organização Mundial da Saúde (OMS). WHO guidelines on hand hygiene in health care. Organização Mundial da Saúde; 2009. Acesso em: 5 de maio de 2025. Disponível em: <https://www.who.int/publications/item/9789241597906>.
- ANVISA. Relatório Nacional de Análise do Consumo de Preparação Alcoólica Para Higiene das Mãos em Unidades de Terapia Intensiva de Serviços de Saúde do Brasil (2013 a 2019). Brasília, DF: Ministério da Saúde; 2022.
- Ariza-Heredia EJ, Chemaly RF. Update on infection control practices in cancer hospitals. *CA Cancer J Clin*. 2018;68(5):340-55. doi:10.3322/caac.21462.