UFSM

REUFSM
REVISTA DE ENFERMAGEM DA UFSM

ISSN 2179-7692
OPEN ACCESS

Rev. Enferm. UFSM, v.15, e27, p.1-11, 2025 •
Submission: 07/03/2025 • Acceptance: 11/03/2025 • Publication: 11/25/2025

Experience report

Immunization Team Operations During the 2024 Floods: An Experience Report

Atuação da Equipe de Imunizações no período das enchentes de 2024: relato de experiência

Actuación del equipo de inmunizaciones durante las inundaciones de 2024: relato de la experiencia

Renata Lobatto Capponi[I], Ceura Beatriz de Souza Cunha[I], Augusto Badin Crippa[I], Daniela Warschauer[I]

[I] Secretaria Municipal de Saúde de Porto Alegre, Diretoria de Vigilância em Saúde, Porto Alegre, Rio Grande do Sul, Brazil

Abstract

Objective: To report the experience of the Immunization Team professionals from the municipality of Porto Alegre, Rio Grande do Sul, who worked during the climate crisis of May 2024. **Method:** Experience report based on the authors' professional activities during the floods. Vaccination data were extracted from printed spreadsheets, later catalogued and tabulated in Excel. **Results:** The extramural operations carried out in shelters and rescue/reconstruction sites resulted in 10,910 applications of immunobiological materials. In addition to the challenges faced by the disruption of daily life, the Immunization Team maintained routine practices and implemented the procedures defined in the Municipal Cold Chain Contingency Plan. **Conclusion:** Preserving routine practices and conducting targeted immunization campaigns were essential to prevent illness, hospitalizations, outbreaks, and deaths.
Descriptors: Vaccination; Immunization Programs; Floods; Rescue Work; Emergency Shelter

Resumo

Objetivo: relatar a experiência dos profissionais da Equipe de Imunizações do município de Porto Alegre, Rio Grande do Sul, que atuaram durante a crise climática de maio de 2024. **Método:** relato de experiência vivenciada pelos autores durante as enchentes ocorridas na região. Os dados relacionados à vacinação foram extraídos de planilhas impressas e, posteriormente, catalogados e tabulados em Excel. **Resultados:** as ações extramuros realizadas nos abrigos e nos locais de resgate/reconstrução resultaram em 10.910 aplicações de imunobiológicos. Além dos desafios enfrentados pela alteração do cotidiano, a Equipe de Imunizações manteve as atividades de rotina e colocou em prática as condutas definidas no Plano Municipal de Contingência da Rede de Frio. **Conclusão:** a manutenção das práticas habituais e a participação nas práticas de imunização foram primordiais para prevenir adoecimentos, hospitalizações, surtos e, até mesmo, óbitos.
Descritores: Vacinação; Programas de Imunização; Inundações; Trabalho de Resgate; Abrigo de Emergência

Resumen

Objetivo: relatar la experiencia de los profesionales del Equipo de Inmunizaciones del municipio de Porto Alegre, Rio Grande do Sul, que actuaron durante la crisis climática de mayo de 2024. **Método:** relato de la experiencia vivida por los autores durante las inundaciones ocurridas en la región. Los datos relacionados con la vacunación se extrajeron de hojas de cálculo impresas y, posteriormente, se catalogaron y tabularon en Excel. **Resultados:** las acciones extramuros realizadas en los refugios y en los lugares de rescate/reconstrucción dieron como resultado 10 910 aplicaciones de inmunobiológicos. Además de los desafíos enfrentados por el cambio en la vida cotidiana, el Equipo de Inmunizaciones mantuvo las actividades de rutina y puso en práctica las conductas definidas en el Plan Municipal de Contingencia de la Red de Frío. **Conclusión:** el mantenimiento de las prácticas habituales y la participación en las prácticas de inmunización fueron fundamentales para prevenir enfermedades, hospitalizaciones, brotes e incluso muertes.
Descriptores: Vacunación; Programas de Inmunización; Inundaciones; Trabajo de Rescate; Refugio de Emergência

Introduction

According to a study conducted by the Brazilian Alliance for Ocean Culture, climate-related disasters in Brazil increased 2.5 times between 2020 and 2023 compared to data collected in the 1990s. Between 1991 and 2023, 64,280 disasters were recorded, with an increasing annual average, jumping from 725 records in the 1990s to 4,077 between 2020 and 2023.[1]

Among these disasters are floods and inundations, events known to cause significant social, economic, and environmental damage, depending on the area affected, the magnitude, and the vulnerability of the territory. Most often, these events are usually triggered by intense and concentrated rainfall, influenced by natural factors that include hydrometeorological characteristics, geographical conditions and spatiotemporal seasonality, as well as topography, soil characteristics, and terrain surface. [2]

Hydrological events impact the morbidity and mortality of the affected population, potentially resulting in a Public Health Emergency (PHE), a situation that demands rapid and coordinated responses, given the risk of disease spread and propagation. [2-3]

The State of Rio Grande do Sul has, over the last few years, been experiencing a scenario of damage caused by floods, with the biggest hydrological disaster in the country's history occurring in May 2024, which severely affected the capital, Porto Alegre, and the entire metropolitan region.

It is estimated that approximately 160,210 people from various neighborhoods of the city were affected, including Sarandi, Menino Deus, Farrapos, Humaitá, Cidade Baixa, Floresta, Ponta Grossa, Centro Histórico, São Geraldo, and Arquipélago regions. In total, 39,422 buildings, 45,970 businesses, and 160 educational institutions (including municipal, state, and private schools) were impacted.[4]

Regarding health services, 22 health units, four Family Clinics in the municipal network, and two hospitals were impacted.[4] As of February 2025, nine health units remained closed, with most providing care to the population in temporary facilities due to the need for structural renovations. Two health units, located on Ilha dos Marinheiros and Ilha do Pavão in the Arquipélago neighborhood, had their operation permanently discontinued.[4]

In addition to the damage related to physical structures and services, the devastation caused by the floods has a clear impact on the mental health of the population, as it immediately affects people who have lost loved ones, their homes, their routines, and their livelihoods. In these situations, there is a risk of increased cases of domestic violence and the consumption of alcohol and other substances. Mental suffering, coupled with respiratory illnesses facilitated by collective shelters, is the primary health concern.[5]

As the waters begin to recede, leaving behind trails of sewage and mud, new cases of leptospirosis emerge, along with an increase in acute diarrheal diseases and parasitic infections, tetanus, dengue fever, hepatitis A, and accidents involving venomous animals. These incidents add to the existing problems related to mental health, respiratory illnesses, and chronic diseases among the affected population. [5]

Thus, health can be affected in different ways by a natural disaster. Floods, in addition to the material damage and difficulties they cause, bring the risk of drowning, diseases transmitted through contact with contaminated water, communicable diseases exacerbated by overcrowding in shelters or by the rescue of victims and animals, likewise compromising the mental health of people directly or indirectly affected.[6]

In response to some of these risks, the Ministry of Health of Brazil recommended, in order to minimize the impact of vaccine-preventable diseases, prioritizing vaccination against influenza, COVID-19, tetanus, hepatitis A, and rabies for people in shelters and

for professionals, first responders, and volunteers involved in city rescue/reconstruction and health assistance.[7]

The implementation and execution of the National Immunization Program (PNI) in Porto Alegre are the responsibility of the Immunization Team (EI) of the Directorate of Health Surveillance (DVS). The team is composed of two units, which serve specific regions of the city: The South Zone Immunization Unit (NIZS), located at the headquarters of the Health Surveillance Directorate; and the North Zone Immunization Unit (NIZN), located at the IAPI Health Center. Both work with supply, distribution, monitoring, network training, and technical support, among other functions related to immunobiological and serums.[8]

During the flood period, the NIZS (South Zone Immunization Unit) and other teams from the Directorate of Health Surveillance had their work processes impacted by the intense rainfall, as the DVS building was flooded. Reorganizing to maintain operations proved to be a major challenge, as most health units under the NIZS's jurisdiction maintained full service to the population.

Thus, this work aims to report the experience of the professionals from the Immunization Team of the municipality of Porto Alegre, Rio Grande do Sul, who worked during the climate crisis of May 2024.

Method

The Experience Report is a form of knowledge production that documents academic and/or professional practice in one of the pillars of university education (teaching, research, extension). Its main characteristic is the description of the intervention, contributing to knowledge advancement and social transformation.[9]

Porto Alegre, the capital of the state of Rio Grande do Sul, has an estimated population of 1,332,845 inhabitants, a high Human Development Index (HDI) of 0.805, and a Gross Domestic Product (GDP) per capita of R$54,647.38.[10]

Regarding health services, the Primary Health Care (APS) is currently divided into four Coordination areas (North, South, East, and West), with 132 units comprising its vaccination service network. [11]

The Immunization Units serve the Coordination Offices as follows: The South Zone Immunization Unit covers the South, West, and part of the East (Partenon-Lomba do Pinheiro) Coordination Offices; and the North Zone Immunization Unit supports the North and East Coordination Offices (LENO).[8]

Vaccination data presented in this report were collected through printed spreadsheets to be filled out with information on each vaccinated individual and the immunobiological administered. This information was filled out by professionals responsible for the vaccination operation. The data were then catalogued, tabulated in Excel, and typed into the e-SUS PEC information system or the National Immunization Program Information System (SI-PNI). These systems are responsible for transmitting the nominal data of vaccinated individuals to the PNI and are used by APS and other services, respectively.

All doses of influenza, COVID-19, tetanus, hepatitis A, and rabies vaccines administered during extramural vaccination campaigns between May and June 2024 were counted. These doses were given to people in shelters located in the municipality and to first responders/volunteers working at rescue sites for people and animals and in the reconstruction of the city, including professionals working in the municipal departments of Water and Sewage (DMAE) and Housing (DEMHAB).

Information on main pathologies post-flood in the municipality was extracted from analyses by the Transmissible Disease Surveillance Team (EVDT) of the DVS and used for the discussion and evaluation of the results.

The study used only secondary data extracted from spreadsheets and therefore did not require evaluation by the Ethics and Research Committee, in accordance with Resolution 510 of 2016 from the National Health Council of Brazil. This resolution establishes that studies with databases whose information is aggregated, without the possibility of individual identification, will not be registered or evaluated.[12]

Results and discussion

Due to the DVS building flooding and the impossibility of its access, the NIZS was closed for approximately one week. During this period, healthcare professionals carried out their activities at the NIZN, causing difficulties regarding physical space for storing

immunobiological materials and resulting in longer travel times and delivery times to their referral services, which were located on the other side of the municipality.

It is worth highlighting that during the month of May, two new vaccines were incorporated into the PNI schedule. These were the Moderna® vaccine against COVID-19 and the Qdenga® vaccine against dengue fever, requiring specific training for the units and the production of technical materials to meet this need. These training sessions included online meetings, technical notes, and recordings that were subsequently stored and made available to professionals working in APS.

In addition to routine activities, the team of professionals was involved in organizing operations as described in the Municipal Cold Chain Contingency Plan, vaccinating first responders and volunteers, as well as supporting extramural vaccination in shelters.

The Municipal Cold Chain Contingency Plan was discussed and produced in January 2024. The document provided the basis for the transfer of immunobiological materials and scientific chambers from the affected health services, including the NIZS, an essential action to reduce technical and material losses.

The actions of rescuers carrying out rescues of both people and animals generated extra demand, mainly for tetanus and rabies vaccinations. Professionals from the Immunization Team and other sectors of the Health Surveillance Directorate worked at the main rescue points, offering daily vaccinations for approximately two weeks in May. Workers from DMAE (Municipal Department of Water and Sewage) and the Housing (DEMHAB) departments, who were directly involved in the city's reconstruction, were also immunized.

The immunization of people housed in shelters was carried out by the APS, in conjunction with the Immunization Team, through the formulation of a technical note, the supply of immunobiological materials, and technical support. The COVID-19 vaccine was offered to all shelter residents over six months of age, and the hepatitis A vaccine was indicated only for pregnant women.[7]

Table 1 describes the number of vaccine doses administered in these operations.

Table 1 – Vaccine doses administered (n=10,910) in operations carried out during the floods. Porto Alegre - RS, Brazil, 2024[13]

Vaccines	Shelters n(%)	Rescue locations and workers n(%)
Anti-rabies	0 (0)	611 (20.60)
COVID-19	310 (3.90)	0 (0)
Diphtheria and Tetanus	1,058 (13.31)	1,375 (46.34)
Hepatitis A	4 (0.05)	0 (0)
Influenza	6,571 (82.72)	981 (33.06)
Total number of doses administered	7,943 (72.80)	2,967 (27.20)

Considering the analyses by the Transmissible Diseases Team regarding notifications of hepatitis A cases, 24 cases were reported in the second four-month period, a number lower than that found in the first four-month period of 2024 (51 cases).[13]

During this period, the Transmissible Diseases Team introduced a *Google Forms* spreadsheet for reporting suspected cases of hepatitis A, increasing the sensitivity of epidemiological surveillance in the context of public health emergencies caused by floods, since infection occurs mainly through waterborne transmission and contaminated food.

A different situation was detected in the municipality of Encantado in Rio Grande do Sul, which recorded a 300% increase in the incidence of hepatitis A in the three months following the flood events that occurred between 2012 and 2014.[14]

Notifications and confirmations of severe acute respiratory syndrome (SARS) caused by influenza and COVID-19 decreased. However, considering all final classifications, in the second four-month period of 2024, the flood period, there were more cases of SARS compared to the first four-month period.

Regarding SARS due to COVID-19, there was a decrease: 143 cases in the first four-month period and 15 in the second four-month period, which may be a result of

underreporting due to difficulty accessing health services. No cases of tetanus or human rabies were recorded among residents of Porto Alegre.[13]

However, 86 cases of Leptospirosis were confirmed starting in Epidemiological Week 18, the beginning of the flood season. Up to July 6th, 2,111 suspected cases of the disease were reported. Of these, 86 were confirmed. Four deaths were confirmed, all male, aged 43, 50, 56, and 67.[15]

One limitation of this study, regarding the experience of the Immunization Team, is that no similar reports were found for comparison purposes. This highlights the importance of describing this scenario and the actions taken, as well as evaluating the results. Another limiting factor would be the possibility of different conclusions based on the applicability of the methodology to other groups, considering the specificities of the population, region, and conditions involved in the study.

Regarding the limitations in reporting diseases investigated during the flood period, it is believed that there may have been underreporting. This could be a result of compromised health service infrastructure, which hindered access to services for the population affected by the floods.

It was found that the development and dissemination of a Municipal Cold Chain Contingency Plan, months before the floods that occurred in May 2024, helped to meet the need for a new organization of workflows and, consequently, avoid losses of immunobiological materials due to failure in the cold chain operations.

The spikes in post-flood disease cases, particularly leptospirosis, demonstrate the crucial need for public health surveillance and preventive strategies to mitigate the spread of infections. Among these preventive actions, the vaccination activities that were carried out stand out.

Although it cannot be measured, the preservation of routine tasks such as storage, distribution, and training, combined with outreach activities, certainly contributed to the observed context of few new cases of hepatitis A, absence of cases of human rabies and tetanus, and a decrease in hospitalizations resulting from COVID-19 and influenza infections.

Conclusion

Maintaining routine service operations and addressing new demands arising from the floods has become a challenge for the Immunization Team. Disasters resulting from climate change tend to become increasingly common, making an immediate response that fully meets the needs of the population essential. Therefore, the Contingency Plan must always be up-to-date and disseminated throughout the network, providing the necessary knowledge for the professionals involved in the services.

Vaccination efforts were carried out in shelters, public streets, rescue centers, and municipal departments (DMAE and DEMHAB). These actions followed the best practice guidelines defined by regulatory bodies, ensuring adequate immunization and complying with the guidelines of the Brazilian Ministry of Health and the Directorate of Health Surveillance. The vaccines prioritized for administration during the state of emergency were: influenza, COVID-19, diphtheria and tetanus, rabies, and hepatitis A.

Evaluating the results of the activities carried out, it can be seen that they were essential in preventing cases of illness, hospitalizations, outbreaks, and even deaths.

References

1. Christofoletti RA, Martinez AS, Pardal A, Takahashi CK, Martins IM, Bumbeer J, et al. 2024: o ano mais quente da história. In: Aliança Brasileira pela Cultura Oceânica. Brasil em transformação: o impacto da crise climática. Santos (SP): UNIFESP; 2025.

2. Ministério da Saúde (Brasil). Plano de contingência para emergência em saúde pública por inundação: 2ª ed. Brasília (DF): Ministério da Saúde, 2019.

3. Prefeitura Municipal de Porto Alegre. Plano de contingência de enfrentamento a chuvas intensas. Porto Alegre; 2024.

4. Secretaria Municipal de Meio Ambiente, Urbanismo e Sustentabilidade. Impacto das cheias de maio de 2024 em Porto Alegre/RS [Internet]. Porto Alegre: Prefeitura Municipal de Porto Alegre; 2024 [acesso em 2024 dez 30]. Disponível em: http://prefeitura.poa.br/inundacoes.

5. Rizzoto MLF, Costa AM, Lobato LVC. Crise climática e os novos desafios para os sistemas de saúde: o caso das enchentes no Rio Grande do Sul/Brasil. Saúde Debate. 2024;48(141). doi: 10.1590/2358-28982024141EDP.

6. Sociedade Brasileira de Infectologia. Orientação Conjunta da Sociedade Brasileira de Infectologia, Sociedade Gaúcha de Infectologia, Associação Brasileira dos Profissionais em Controle de Infecção e Epidemiologia Hospitalar, Associação Gaúcha de Profissionais em Controle de Infecção Hospitalar e Sociedade Brasileira para Qualidade do Cuidado e Segurança do Paciente no Contexto das Enchentes no Rio Grande do Sul [Internet]. Brasil: ABIH; 2024 [acesso em 2025 nov 06]. Disponível em: https://abih.org.br/news-abih/orientacao-conjunta-das-sociedades-no-contexto-das-enchentes-no-rio-grande-do-sul/1303.

7. Ministério da Saúde (Brasil). Nota Técnica Conjunta nº 59/2024-DPNI/SVSA/MS: orientações sobre as ações de vacinação no Estado do Rio Grande do Sul, durante o período da calamidade decorrente das enchentes/inundações. SEI/MS 0040744983. Brasília (DF): Ministério da Saúde; 2024 maio 16; p. 1-5.

8. Secretaria Municipal de Saúde (Porto Alegre, RS). Plano Municipal de Contingência para Rede de Frio. Porto Alegre; 2024.

9. Mussi RF, Flores FF, Almeida CB. Pressupostos para a elaboração de relato de experiência como conhecimento científico. Práxis Educ. 2021;17(48):60-77. doi: 10.22481/praxisedu.v17i48.9010.

10. Instituto Brasileiro de Geografia e Estatística (IBGE). Cidades e Estados: Porto Alegre: IBGE; 2022 [acesso em 2025 mar 01]. Disponível em: https://www.ibge.gov.br/cidades-e-estados/rs/porto-alegre.html.

11. Secretaria Municipal de Saúde de Porto Alegre (SMS). Plano Municipal de Saúde 2022-2025. Porto Alegre: SMS; 2021.

12. BRASIL. Ministério da Saúde. Conselho Nacional de Saúde. Resolução nº 510, de 7 de abril de 2016. Trata sobre as diretrizes e normas regulamentadoras de pesquisa em ciências humanas e sociais. Diário Oficial da União: seção 1, p. 44-46, 24 maio 2016.

13. Secretaria Municipal de Saúde de Porto Alegre (SMS). II Relatório detalhado do quadrimestre anterior - 2024. Porto Alegre: SMS; 2024.

14. Silveira PO, Guasselli LA, Oliveira GG, Nascimento VF. Relação entre casos de Hepatite A e áreas de inundação, município de Encantado, Rio Grande do Sul, Brasil. Ciênc Saúde Colet. 2021;26(2):721-8. doi: 10.1590/1413-81232020261.30592018.

15. Coelho P. Porto Alegre registra 86 casos de leptospirose decorrentes da enchente [Internet]. Porto Alegre: Secretaria Municipal de Saúde de Porto Alegre [editor]; 2024 jul. 12 [acesso em 2025 mar 27]. Disponível em: https://prefeitura.poa.br/sms/noticias/porto-alegre-registra-86-casos-de-leptospirose-decorrentes-da-enchente

Authorship contribution

1 – Renata Lobatto Capponi
Corresponding author
Nurse, Specialist – renata_enfufrgs@yahoo.com.br
Research conception and/or development and/or manuscript writing; Review and approval of the final version

2 – Ceura Beatriz de Souza Cunha
Pharmacist, Master's degree – ceura.cunha@portoalegre.rs.gov.br
Research conception and/or development and/or manuscript writing; Review and approval of the final version

3 – Augusto Badin Crippa
Nurse, Specialist – augustocrippa@yahoo.com.br
Review and approval of the final version

4 – Daniela Warschauer
Nursing student – daniela.warschauer@portoalegre.rs.gov.br
Review and approval of the final version

Editor in Chief: Cristiane Cardoso de Paula
Scientific Editor: Eliane Tatsch Neves

How to cite this article

Capponi RL, Cunha CBS, Crippa AB, Warschauer D. Immunization Team Operations During the 2024 Floods: An Experience Report. Rev. Enferm. UFSM. 2025 [Access at: Year Month Day]; vol.15, e27:1-11. DOI: https://doi.org/10.5902/2179769292728