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World Pneumonia Day 2023: Reducing the impact of pneumonia in the Americas
Día Mundial de la Neumonía 2023: Reducir el impacto de la neumonía en las Américas

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Pneumonia is considered as the leading cause of death due to infectious diseases across all ages globally¹. According to the Global Burdening of Disease Report, 2.5 million people from around the world died from pneumonia in 2019². Both children aged less than 5 years and older adults comprised the most vulnerable population².

In the World Health Organization (WHO) region of the Americas 323,000 people died from pneumonia in 2019². This include 20,699 children aged less than 5 years and 226,723 adults aged 70 years and older². Despite that, pneumonia mortality of children aged less than 5 years decreased from 105,031 deaths in 1990 to 20,696 deaths in 2019¹. The factors that contributed to this decline in pneumonia mortality in children was related to improvements made in childhood waste, air pollution, poor sanitation. These risk factors are well known for death due to pneumonia. Also, the availability of antibiotic therapy and implementation of vaccination contributed to these results¹. In contrast, the mortality of adults aged 70 years and older has remained unchanged for the past 20 years. In 1990, there was a reported 116,070 adults aged 70 years who died from pneumonia. In 2019, the reported number was 226,723 deaths. The main reason for this was an across-the-board increase in the aging population, number of people with multiple chronic clinical conditions, and frail people.

The highest pneumonia mortality rates in the Americas in 2019 were among people aged 70 and older. Indeed, 291.87 of 100,000 people died in this age group and the pneumonia mortality rates for children aged less than 5 years was reported to be 28.11². Over 80% of all pneumonia deaths in the Americas occurs in ten countries: Brazil (88,600 deaths), USA (81,900 deaths), Argentina (36,300 deaths), Mexico (22,600 deaths), Peru (18,200 deaths), Guatemala (9,900 deaths), Canada (9,125 deaths), Colombia (7,900 deaths), Bolivia (6,600 deaths) and Haiti (6,300 deaths). The five countries with the higher number

of deaths related to pneumonia in children were Brazil (4,900 deaths), Haiti (3,200 deaths), Guatemala (2,400 deaths), Mexico (2,700 deaths) and Bolivia (1,600 deaths)².

Importantly, a 2019 cross-country systematic analysis about the burden of antimicrobial resistance in the Americas showed that an estimated 569,000 deaths associated with bacterial antimicrobial resistance (AMR) and 141,000 deaths attributable to bacterial AMR among the 35 countries in the WHO Region of the Americas. The highest mortality burden associated with antimicrobial resistance in the region was related to lower respiratory tract and chest infections, with a total number of 189,000 deaths³. In the report, *Streptococcus pneumoniae* (pneumococcus), the leading pneumonia-related pathogen, was included among the five bacterial pathogens that caused each one more than 50,000 AMR-associated deaths in the Americas in 2019. The deaths related to pneumococcus were 56,500 (45,800–70,200)³. It is vital to provide integrated, good-quality health services to ensure all people can access high-impact interventions that prevent, diagnose and treat pneumonia while reducing the number of people dying from this treatable and preventable disease.

The COVID-19 pandemic has highlighted the impact of pneumonia on the world⁴. Advancements in research and development can lead to the development of new vaccines, more effective treatments, and improved diagnostics for pneumonia. However, it was not more evident than that in the Americas: there were more than 193 million infections and more than 2.9 million deaths⁵. The disproportionally effect of the COVID-19 pandemic in this regions have had a profound impact in their population^{6,7}.

Early diagnosis and treatment of pneumonia especially in vulnerable populations is critical in minimizing the harm caused by this disease⁸. Community awareness⁹ and engagement, education, access to medical oxygen and antibiotics and reinforced inclusion

of community health workers can contribute to ensuring good-quality services and saving lives^{10,11}. In recent years, mobile health (mHealth)¹² and telehealth solutions¹³ have provided platforms for early symptom reporting, patient monitoring, and education on preventive measures.

Factors related to the risk of death in children include wasting, low birth weight, household air pollution, non-exclusive breastfeeding, short gestation, non-handwashing facilities and outdoor air pollution. Good nutrition is essential for strengthening the immune system, thus reducing susceptibility to infections like pneumonia¹³. Increased air pollution due to climate change has been linked to the prevalence of respiratory diseases, including pneumonia¹⁴. In the elderly, smoking, low temperature, outdoor air pollution, secondhand smoke and non-handwashing facilities are factors related to pneumonia mortality¹. Despite the existence of low-cost and effective interventions, almost all these factors are related to poverty. Preventing pneumonia is crucial and should be based on key interventions such as access to pneumonia-fighting vaccines across the whole population¹⁵. Guaranteeing adequate water, hygiene and sanitation in all communities, improving health information systems, leveraging information and communication technologies, and addressing environmental factors, like improving air quality and access to affordable, reliable, sustainable and modern energy, can also make a difference.

References

1. JustActions. The Missing Piece: Why the global pandemic is an inflection point for pneumonia control. Published online 2021. Accessed October 11, 2023. <http://stopppneumonia.org/the-missing-piece-why-the-global-pandemic-is-an-inflection-point-for-pneumonia-control/>

2. GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2020;396(10258):1204-1222. doi:10.1016/S0140-6736(20)30925-9
3. Antimicrobial Resistance Collaborators. The burden of antimicrobial resistance in the Americas in 2019: a cross-country systematic analysis. *Lancet Reg Health Am*. 2023;25:100561. doi:10.1016/j.lana.2023.100561
4. Witzenth M, Kuebler WM. Pneumonia in the face of COVID-19. *Am J Physiol Lung Cell Mol Physiol*. 2020;319(5):L863-L866. doi:10.1152/ajplung.00447.2020
5. WHO Coronavirus (COVID-19) Dashboard. Accessed April 19, 2021. <https://covid19.who.int>
6. Economic Commission for Latin America and the Caribbean (ECLAC). The sociodemographic impacts of the COVID-19 pandemic in Latin America and the Caribbean. (LC/CRPD.4/3), Santiago, 2022. Published online June 13, 2022. Accessed October 11, 2023. <https://hdl.handle.net/11362/47923>
7. Bank W. Actuemos ya para Proteger el Capital Humano de Nuestros Niños: Los Costos y la Respuesta ante el Impacto de la Pandemia de COVID-19 en el Sector Educativo de América Latina y el Caribe. Published online March 17, 2021. Accessed October 11, 2023. <http://hdl.handle.net/10986/35276>
8. Kallander K, Burgess DH, Qazi SA. Early identification and treatment of pneumonia: a call to action. *Lancet Glob Health*. 2015;4(1):e12-e13. doi:10.1016/S2214-109X(15)00272-7

9. Cillóniz C, Greenslade L, Dominedò C, Garcia-Vidal C. Promoting the use of social networks in pneumonia. *Pneumonia (Nathan)*. 2020;12:3. doi:10.1186/s41479-020-00066-3
10. Sheikh M, Ahmad H, Ibrahim R, Nisar I, Jehan F. Pulse oximetry: why oxygen saturation is still not a part of standard pediatric guidelines in low-and-middle-income countries (LMICs). *Pneumonia (Nathan)*. 2023;15:3. doi:10.1186/s41479-023-00108-6
11. World Health Organization. Increasing access to medical oxygen. Published online 2023. https://apps.who.int/gb/ebwha/pdf_files/EB152/B152_CONF4-en.pdf
12. Adanur S, Cilloniz C. Mobile health applications in managing pneumonia. *Digital Medicine*, 2022; 2(1): 45-49.
13. Curioso WH, Coronel-Chucos LG, Henríquez-Suarez M. Integrating Telehealth for Strengthening Health Systems in the Context of the COVID-19 Pandemic: A Perspective from Peru. *Int J Environ Res Public Health*. 2023;20(11):5980. doi:10.3390/ijerph20115980.
14. Scrimshaw NS. Historical concepts of interactions, synergism and antagonism between nutrition and infection. *The Journal of nutrition*, 2003; 133(1): 316S-321S.
15. Liu Y, Pan J, Zhang H, Shi C, Li G, Peng Z. The Effects of Air Pollution and Meteorological Factors on Measles Cases in Lanzhou, China. *Environmental Science and Pollution Research*, 2019; 26(15): 15593-15603.
16. Cilloniz C, Pericas JM, Curioso WH. Interventions to improve outcomes in community-acquired pneumonia. *Expert Rev Anti Infect Ther*. 2023 Sep 14:1-16. doi:10.1080/14787210.2023.2257392.