# 1. Survival and prognostic factors in pediatric patients with medulloblastoma treated at a national pediatric hospital in Peru: a retrospective cohort

Supervivencia y factores pronósticos en pacientes pediátricos con meduloblastoma atendidos en un hospital pediátrico nacional del Perú: una cohorte retrospectiva

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**REVISTA** 

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LINK TIPO DE CÁNCER ABSTRACTO

Objective: The objectives of this study were to determine the overall survival (OS) and event-free survival (EFS) rates of patients with medulloblastoma treated in a national pediatric hospital in Peru, as well as to identify demographic, clinical, imaging, postoperative, and histopathological characteristics and prognostic factors associated with OS and EFS. Methods: The authors conducted a retrospective study analyzing information from the medical records of children with a diagnosis of medulloblastoma who underwent surgical treatment at the Instituto Nacional de Salud del Niño-San Borja, a public hospital in Lima, Peru, from 2015 to 2020. Clinical-epidemiological variables, degree of disease extension, risk stratification, extent of resection, postoperative complications, status of oncological treatment received, histological subtype, and neurological sequelae were taken into account. The Kaplan-Meier method and Cox regression analysis were used to estimate OS, EFS, and prognostic factors. Results: Of the 57 children evaluated with complete medical records, only 22 children (38.6%) underwent complete oncological treatment. OS was 37% (95% CI 0.25-0.55) at 48 months. EFS was 44% (95% CI 0.31-0.61) at 23 months. High-risk stratification-meaning patients with  $\geq$  1.5 cm<sup>2</sup> of residual postoperative tumor, those younger than 3 years, those with disseminated disease (HR 9.69, 95% CI 1.40-67.0, p = 0.02), and those who underwent subtotal resection (HR 3.78, 95% CI 1.09-13.2, p = 0.04)-was negatively associated with OS. Failure to receive complete oncological treatment was negatively associated with OS (HR 20.0, 95% CI 4.84-82.6, p < 0.001) and EFS (HR 7.82, 95% CI 2.47-24.7, p < 0.001). Conclusions: OS and EFS of patients with medulloblastoma in the author's milieu are below those reported in developed countries. Incomplete treatment and treatment abandonment in the authors' cohort were also high compared with high-income country statistics. Failure to complete oncological treatment was the most important factor associated with poor prognosis, both in terms of OS and EFS. High-risk patients and subtotal resection were negatively associated with OS. Interventions are needed to promote the completion of adjuvant oncological therapy for medulloblastoma in the disadvantaged Peruvian population.

2. Effect of paediatric early warning systems (PEWS) implementation on clinical deterioration event mortality among children with cancer in resource-limited hospitals in Latin America: a prospective, multicentre cohort study

Efecto de la implementación de los sistemas de alerta temprana pediátrica (PEWS) en la mortalidad por eventos de deterioro clínico en niños con cáncer en hospitales de recursos limitados en América Latina: un estudio prospectivo de cohortes multicéntrico

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Background: Paediatric early warning systems (PEWS) aid in the early identification of clinical deterioration events in children admitted to hospital. We aimed to investigate the effect of PEWS implementation on mortality due to clinical deterioration in children with cancer in 32 resource-limited hospitals across Latin America. Methods: Proyecto Escala de Valoración de Alerta Temprana (Proyecto EVAT) is a quality improvement collaborative to implement PEWS in hospitals providing childhood cancer care. In this prospective, multicentre cohort study, centres joining Proyecto EVAT and completing PEWS implementation between April 1, 2017, and May 31, 2021, prospectively tracked clinical deterioration events and monthly inpatient-days in children admitted to hospital with cancer. De-identified registry data reported

between April 17, 2017, and Nov 30, 2021, from all hospitals were included in analyses; children with limitations on escalation of care were excluded. The primary outcome was clinical deterioration event mortality. Incidence rate ratios (IRRs) were used to compare clinical deterioration event mortality before and after PEWS implementation; multivariable analyses assessed the correlation between deterioration event mortality and clinical characteristics. Findings: Between April 1, 2017, and May 31, 2021, 32 paediatric oncology centres from 11 countries in Latin America successfully implemented PEWS through Proyecto EVAT; these centres documented 2020 clinical deterioration events in 1651 patients over 556 400 inpatientdays. Overall clinical deterioration event mortality was 32.9% (664 of 2020 events). The median age of patients with clinical deterioration events was 8.5 years (IQR 3.9-13.2), and 1095 (54·2%) of 2020 clinical deterioration events were reported in male patients; data on race or ethnicity were not collected. Data were reported per centre for a median of 12 months (IQR) 10-13) before PEWS implementation and 18 months (16-18) after PEWS implementation. The mortality rate due to a clinical deterioration event was 1.33 events per 1000 patientdays before PEWS implementation and 1.09 events per 1000 patient-days after PEWS implementation (IRR 0.82 [95% CI 0.69-0.97]; p=0.021). In the multivariable analysis of centre characteristics, higher clinical deterioration event mortality rates before PEWS implementation (IRR 1.32 [95% CI 1.22-1.43]; p<0.0001), being a teaching hospital (1.18 [1.09-1.27]; p<0.0001), not having a separate paediatric haematologyoncology unit (1.38 [1.21-1.57]; p<0.0001), and having fewer PEWS omissions (0.95 [0.92-0.99]; p=0.0091) were associated with a greater reduction in clinical deterioration event mortality after PEWS implementation; no association was found with country income level (IRR 0.86 [95% CI 0.68-1.09]; p=0.22) or clinical deterioration event rates before PEWS implementation (1.04 [0.97-1.12]; p=0.29). Interpretation: PEWS implementation was associated with reduced clinical deterioration event mortality in paediatric patients with cancer across 32 resource-limited hospitals in Latin America. These data support the use of PEWS as an effective evidencebased intervention to reduce disparities in global survival for children with cancer.

# 3. Stages of change: Strategies to promote use of a Pediatric Early Warning System in resource-limited pediatric oncology centers

Etapas de cambio: Estrategias para promover el uso de un Sistema de Alerta Temprana Pediátrica en centros de oncología pediátrica de recursos limitados

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REVISTA

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Pediatría

Background: Pediatric Early Warning Systems (PEWS) assist early detection of clinical deterioration in hospitalized children with cancer. Relevant to successful PEWS implementation, the "stages of change" model characterizes stakeholder support for PEWS based on willingness and effort to adopt the new practice. Methods: At five resource-limited pediatric oncology centers in Latin America, semi-structured interviews were conducted with 71 hospital staff involved in PEWS implementation. Purposive sampling was used to select centers requiring variable time to complete PEWS implementation, with low-barrier centers (3-4 months) and high-barrier centers (10-11 months). Interviews were conducted in Spanish, professionally transcribed, and translated into English. Thematic content analysis explored "stage of change" with constant comparative analysis across stakeholder types and study sites. Results: Participants identified six interventions (training, incentives, participation, evidence, persuasion, and modeling) and two policies (environmental planning and mandates) as effective strategies used by implementation leaders to promote stakeholder progression through stages of change. Key approaches involved presentation of evidence demonstrating PEWS effectiveness, persuasion and incentives addressing specific stakeholder interests, enthusiastic individuals serving as models for others, and policies enforced by hospital directors facilitating habitual PEWS use. Effective engagement targeted hospital directors during early implementation phases to provide programmatic legitimacy for clinical staff. Conclusion: This study identifies strategies to promote adoption and maintained use of PEWS, highlighting the importance of tailoring implementation strategies to the motivations of each stakeholder type. These findings can guide efforts to implement PEWS and other evidence-based practices that improve childhood cancer outcomes in resource-limited hospitals.

# 4. Strengthening public health policies for childhood cancer: Peru's achievements through the WHO Global Initiative for Childhood Cancer

Fortalecimiento de las políticas de salud pública para el cáncer infantil: los logros del Perú a través de la Iniciativa Global contra el Cáncer Infantil de la OMS

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Pediatría

Objective: To report the progress in Peru, since June 2019, in the implementation of the World Health Organization Global Initiative for Childhood Cancer using the CureAll framework, which can be replicated in low- and middle-income countries. Methods: A mixed method was used of participatory and documentary evaluation. The participatory evaluation included stakeholders from various government institutions, nonprofit organizations, and international partners. The documentary aspect consisted of a review of data on the regulatory environment, national projects, and interventions implemented. The Ministry of Health engaged more than 150 participants to form working committees, which have developed policy and regulatory documents to strengthen care services. Results: Achievements include a decrease in the national treatment abandonment rate from 18.6% to 8.5%, the approval of the Childhood Cancer Law, improvements in the management of patients with febrile neutropenia, and a reduction in rates of events of clinical deterioration and mortality of hospitalized patients. The Cure All implementation framework allows local teams to implement specific strategies and monitor early outcomes in pediatric oncology. Conclusions: The results obtained reflect the teamwork, the leadership of the authorities, the technical support of professionals, and the support of involved organizations. Further actions will be needed to guarantee sustainability, and monitoring tools are needed to assure success in the planned activities.

## 5. Health literacy on quality of life for children with cancer: modules on pediatric palliative care

Alfabetización sanitaria sobre la calidad de vida de niños con cáncer: módulos sobre cuidados paliativos pediátricos

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TIPO DE CÁNCER ABSTRACTO

Pediatría

Objective: To describe the development of educational materials for parents and other caregivers of children with cancer, which utilized a culturally sensitive approach to reduce acceptance barriers to palliative care (PC). Methods: The Pan American Health Organization (PAHO), St. Jude Children's Research Hospital, and partners in Latin America and the Caribbean collaborated in a three-phase project, beginning with a needs assessment survey of caregivers of children with cancer in Peru. Based on this finding, an interdisciplinary team of pediatric PC experts developed educational content that was designed and validated by an international committee of PC and communication experts. Results: The collaboration resulted in the development of an eight-module series that introduces caregivers to key concepts of pediatric PC, including management of pain, quality of life, and end of life care. The series was designed to reduce caregiver stigma associated with PC through culturally sensitive education that addresses the low levels of health literacy among caregivers in Latin America and the Caribbean. In the 15 months since the launch, these modules have been distributed throughout Latin America and were downloaded 2 825 times. Conclusions: Educational materials and anticipatory guidance of PC were considered to be a priority for parents and other caregivers of children with cancer throughout Latin America. The materials developed through this project have been widely utilized and are available through the PAHO website and the Together by St. Jude™ online resource.

## 6. A multimodal strategy to improve health care for pediatric patients with cancer and fever in Peru

Una estrategia multimodal para mejorar la atención de salud de pacientes pediátricos con cáncer y fiebre en el Perú

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**TIPO DE CÁNCER** Pediatria

**ABSTRACTO** Objective: The DoTT (Decreasing Time to Therapy) project aimed

to minimize the interval between fever onset and medical interventions for children with febrile neutropenia. The objective of this study was to determine the effect of implementing the DoTT project on the hospital time to antibiotic (TTA) and patient time to arrival (PTA) at the hospital in children with febrile neutropenia admitted to the emergency department. Methods: The DoTT project was implemented at a Peruvian hospital and followed the World Health Organization (WHO) multimodal improvement strategy model. Components included creating a healthcare delivery bundle and antibiotic selection pathways, training users of the bundle and pathways, monitoring patient outcomes and obtaining user feedback, encouraging use of the new system, and promoting the integration of DoTT into the institutional culture. Emergency room providers were trained in the care delivery for children with cancer and fever and taught to use the bundle and pathways. DoTT was promoted via pamphlets and posters, with a view to institutionalizing the concept and disseminating it to other hospital services. Results: Admission data for 129 eligible patients in our registry were analyzed. The TTA and PTA were compared before and after the DoTT intervention. The median TTA was 146 minutes (interquartile range [IQR] 97-265 minutes) before the intervention in 99 patients, and 69 minutes (IQR 50-120 minutes) afterwards in 30 patients (p < 0.01). The median PTA was reduced from 1 483 minutes at baseline to 660 minutes after the intervention (p < 0.01). Conclusions: Applying the WHO multimodal improvement strategy model to the care of children with febrile neutropenia arriving at the hospital had a positive impact on the PTA and TTA, thus potentially increasing the survival of these patients.

# 7. Real-World Outcomes of Adolescents and Young Adults with Diffuse Large B-Cell Lymphoma: A Multicenter Retrospective Cohort Study

Resultados en el mundo real de adolescentes y adultos jóvenes con linfoma difuso de células B grandes: un estudio de cohorte retrospectivo multicéntrico

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REVISTA

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LINK TIPO DE CÁNCER ABSTRACTO

Pediatría

Purpose: Patients with diffuse large B-cell lymphoma (DLBCL) are typically treated with rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP). However, a standard of care for managing adolescents and young adults (AYAs) with DLBCL is lacking. We examine treatment approaches and outcomes of this population. Methods: We included 90 AYAs (15-39 years) diagnosed with DLBCL between 2008 and 2018 in three tertiary centers in Peru. Overall response rates (ORR) were available for all patients. Overall survival (OS) and progressionfree survival (PFS) rates were estimated using the Kaplan-Meier method. Results: The median age at diagnosis was 33 years, 57% were males, 57% had good performance (Lansky/Karnofsky ≥90), and 61% were diagnosed with earlystage disease (Ann Arbor stages I-II). R-CHOP (n = 69, 77%) was the most frequently used first-line regimen, with an ORR of 91%. With a median follow-up of 83 months, the 5-year OS and PFS among all patients were 79% and 67%, respectively. Among the patients who received R-CHOP, the 5-year OS and PFS were 77% and 66%, respectively. Of the 29 (32%) patients with relapsed/refractory (R/R) disease, 83% received second-line treatment and only 14% underwent consolidation therapy with autologous transplantation. The 3-year OS for R/R DLBCL was 36%. Conclusion: Our data show that AYAs with DLBCL who received conventional therapy had comparable outcomes to those observed in studies conducted among the adult population. However, the prognosis for AYAs with R/R disease was dismal, indicating the unmet need for developing and increasing access to novel treatment modalities in AYAs.

### 8. Standards for psychosocial care in pediatric cancer: adapted proposal for Latin **American and Caribbean countries**

Estándares de atención psicosocial en cáncer pediátrico: propuesta adaptada para países de América Latina y el Caribe

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#### TIPO DE CÁNCER

Pediatría

### **ABSTRACTO**

Objective: To highlight the objectives, achievements, challenges, and next steps for the World Health Organization's Global Initiative for Childhood Cancer (GICC) framework, a project designed to improve psychosocial care (PSC) in pediatric cancer centers across Latin America and the Caribbean (LAC). Methods: The project was launched in Peru, the first GICC focal country, in November 2020. The diagnosis phase included a survey and a semistructured interview with health professionals to assess PSC practices in institutions, and a needs assessment survey for caregivers. In the second phase, a strategic plan was developed to address the identified needs, including the adaptation of PSC standards, the establishment of multicenter working groups, the expansion of the proposal, and the development of materials. Results: The study found that PSC was not being adequately provided in accordance with international standards. Six adapted standards were proposed and validated, and more than 50 regional health professionals participated in online activities to support the project. The implementation process is currently ongoing, with the establishment of five multidisciplinary working groups, one regional committee, and the production of 16 technical outputs. Conclusion: This project represents a substantial step forward to improve PSC for pediatric patients with cancer and their families in LAC countries. The establishment of working groups and evidence-based interventions strengthen the proposal and its implementation. Development of health policies that include PSC according to standards is needed to achieve sustainable results in the quality of life of children with cancer and their families.

9. Development and Implementation of Educational Material by Nurses for Parents/Caregivers of Children With Cancer: A Peruvian National Study

Desarrollo e implementación de material educativo por parte de enfermeras para padres/cuidadores de niños con cáncer: un estudio nacional peruano

INVESTIGADORES

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Pediatría

Background: Education for parents and caregivers of children with cancer is one of the fundamental roles of nurses to avoid complications, provide quality care, promote adherence to treatment and maintain basic standards of care. This study aimed to design educational material for parents and caregivers of children with cancer in Peru on general information about childhood cancer and its care. Method: Within the framework of the WHO Global Initiative for Childhood Cancer in Peru, a multicenter working group was convened by the Peruvian Ministry of Health. A comprehensive needs assessment of parents and caregivers of children with cancer was performed through a survey in June and July 2020. The survey was conducted online (via Google Forms) and in person at nine hospitals to examine the preferred method of delivery and content of information. Results: Based on the findings from the parent needs assessment, a national nursing working group developed Spanish-language audiovisual materials (i.e., diagnosis and treatment videos for nurses to educate parents and caregivers). A total of 365 parents and caregivers were included. Most respondents (56.9%) were parents of children receiving treatment. Main topics were childhood cancer overview and side effects (85%), food and nutrition (75%), and palliative care (67%); most (70.9%) preferred information through talks and videos (64.7%). Twenty-three videos were developed with support by the Pan American Health Organization and the Ministry of Health. Discussion: Assessing

the educational needs of parents and caregivers of children with cancer provides a starting point in the design of targeted strategies.

### 10. Retrospective analysis of outcomes for pediatric acute lymphoblastic leukemia in **South American centers**

Análisis retrospectivo de resultados de leucemia linfoblástica aguda pediátrica en centros sudamericanos

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**REVISTA** 

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TIPO DE CÁNCER ABSTRACTO

Pediatría

Introduction: Acute lymphoblastic Leukemia (ALL) is the most common pediatric malignancy. While the survival rate for childhood ALL exceeds 90% in high-income countries, the estimated survival in low-and middle-income countries ranges from 22-79%, depending on the region and local resources. Methods: This study retrospectively reviewed demographic, biological, and clinical parameters of children under 18 years of age with newly diagnosed ALL presenting between 2013-2017 across five pediatric centers in 4 countries in South America. Survival analyses were estimated using the Kaplan-Meier method. Results: Across the five centers, 752 patients were analyzed (Bolivia [N=9], Ecuador [N=221], Paraguay [N=197], Peru [N=325]) and 92.1% (n=690) patients were diagnosed with B-cell and 7.5% (n= 56) with T-cell ALL. The median age was 5.5 years old (IQR 7.29). At diagnosis, 47.8% of patients were categorized as standard and 51.9% as high risk per their institutional regimen. Advanced diagnostics availability varied between modalities. MRD was evaluated in 69.1% of patients; molecular testing was available for ETV6-RUNX, BCR-ABL1, TCF3-PBX1, and KMT2A-rearranged ALL in 75-81% of patients; however, karyotyping and evaluation for iAMP21 were only performed in 42-61% of patients. Central nervous system (CNS) involvement was evaluated at diagnosis in 57.3% (n=429) patients; of these, 93.7% (n=402) were CNS 1, 1.6% (n=7) were CNS 2, 0.7% (n=11) were CNS3, 1.9% (n=8) had cranial nerve palsy, and 2.1% (n=9) results unavailable. Chemotherapy delays >2 weeks were reported in 56.0% (n=421) patients during treatment. Delays were attributed to infection in 63.2% (n=265), drug-related toxicities in 47.3% (n=198), and resource constraints, including lack of bed availability in 23.2% (n=97) of patients. The 3-year Abandonment-sensitive EFS and OS were 61.0±1.9% and 67.2±1.8%, respectively. The 3-year EFS and OS were 71.0±1.8% and 79.6±1.7%, respectively. Discussion: This work reveals opportunities to improve survival, including addressing severe infections, treatment interruptions, and modifications due to drug shortages. In 2018, healthcare professionals across South America established the Pediatric Oncology Latin America (POLA) group in collaboration with St. Jude Children's Research Hospital. POLA collaborators developed an evidence-based, consensus-derived, adapted treatment guideline, informed by preliminary results of this evaluation, to serve as the new standard of care for pediatric ALL in participating institutions.