








COMMENTARY

An ethical imperative: Safety and specialization as nursing priorities of WHO Global Initiative for Childhood Cancer

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Cancer is a leading cause of global childhood mortality from noncommunicable diseases, affecting approximately 300 000 children/adolescents (0-19 years old) annually.¹ Of these children/adolescents, approximately 89% live in low- and middle-income countries (LMIC) with an average 30% estimated survival rate, less than half the rate in high-income countries (HIC).² This inequality galvanized the launch of the World Health Organization (WHO) Global Initiative for Childhood Cancer in September 2018 to improve survival rates to 60% by 2030.³ WHO has designated 2020 as the Year of the Nurse and Midwife and highlights that nurses, together with midwives, constitute the largest group of health workers⁴; therefore, strengthening nursing is critical to meeting this target.

Although WHO initiatives for nursing have generally prioritized primary care,⁵ the Global Initiative for Childhood Cancer is aiming for highly specialized care in LMIC. To achieve the 2030 target, implementation and scale-up require recognizing the needs and capacities of

health professionals, including nurses. Nurses in LMIC are frequently exposed to occupational hazards due to work environments that lack the required resources for safe care, such as personal protective equipment (PPE) for handling chemotherapy.^{6,7} The absence of specialized education, coupled with frequent rotation of trained staff, leaves nurses ill-equipped to safely deliver care for children/adolescents with cancer.⁸ The Nurse Specialists of the Global Initiative for Childhood Cancer join public calls for all nurses (particularly those in resource-limited settings), to be provided with protection when managing hazardous drugs as well as oncology specialization training to ensure optimal nursing care.⁹⁻¹¹

It is an ethical imperative that nurses are strengthened and equipped with knowledge and skills required to care for this vulnerable population and provided a safe environment for doing so. Baseline standards for the provision of safe and effective nursing care in LMIC have been published by the Paediatric Oncology

Abbreviations: HIC, high-income countries; LMIC, low- and middle-income countries; PODC, Paediatric Oncology Developing Countries; PPE, personal protective equipment; SIOP, International Society of Paediatric Oncology; WHO, World Health Organization.

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TABLE 1 International Society of Paediatric Oncology (SIOP) Pediatric Oncology in Developing Countries (PODC) baseline nursing standards for paediatric oncology in low- and middle-income countries¹²

Baseline nursing standards	Description of what is needed
1. Inpatient staffing plans	<p>Nurse-to-patient ratios at different care levels:</p> <ul style="list-style-type: none"> • Oncology inpatient: 1 nurse to ≤ 5 patients • Bone marrow transplant: 1 nurse to ≤ 2 patients • Intensive care unit: 1 nurse to ≤ 2 patients <p>Dedicated staff (nonrotating) Acuity-based staffing plans</p>
2. Formalized orientation program	<p>≥ 2 weeks theory/clinical skills training Learning objectives Knowledge/skills validation ≥ 3 to 4 weeks clinical preceptorship</p>
3. Continuing education	≥ 10 hours/year/nurse
4. Multidisciplinary teamwork	Nurses included in patient rounds and diagnosis/treatment plan discussions with patients and families
5. Resources for safe care	<p>Hand hygiene supplies Chemotherapy PPE Chemotherapy prepared by pharmacist</p> <ul style="list-style-type: none"> • If chemo prepared by nurse, biosafety cabinet, and medical screening available
6. Evidence-based nursing policies	Inpatient and outpatient pediatric oncology nursing policies

Developing Countries (PODC) Nursing Working Group of the International Society for Paediatric Oncology (SIOP).¹² The standards provide a framework for promoting a positive practice environment for care delivery (Table 1) and have received widespread endorsement (<https://siop-online.org/baseline-nursing-standards/>).

1 | SAFE WORKING ENVIRONMENT

Chemotherapy is a standard treatment required to cure most childhood cancers. Nurses, pharmacists, and physicians who prepare chemotherapy,^{13,14} as well as hospital support personnel (e.g., cleaners and waste management staff) and families who are exposed to chemotherapy and hazardous waste, face immediate and long-term health risks, including cancer, miscarriages, and infertility.^{15,16} Adverse effects from hazardous drug exposure are entirely preventable with proper use of PPE for chemotherapy administration and biosafety cabinets for preparation, especially in settings without closed system transfer devices for chemotherapy administration as mandated in many HIC.^{17,18}

Cost and supply chain challenges can be major barriers to reliable availability of essential devices and technology in LMIC.¹⁹ Nonetheless, the cost of securing PPE for safe handling of chemotherapy and hazardous drugs and materials is minimal in comparison with other costs of scaling up cancer treatment.²⁰ It is not ethically defensible to invest in contemporary pediatric cancer treatment while failing

to protect nurses and other health professionals from avoidable health risks in their work environments as recommended in numerous international guidelines.^{11,18} Given that PPE has been secured for infectious disease management (e.g., Ebola²¹) and other public health threats,^{22,23} obtaining these resources to deliver chemotherapy safely is surely achievable.

There has been a persistent failure in LMIC to ensure access to PPE for safe preparation, administration, and disposal of chemotherapy for nurses,⁸ pharmacists, and physicians.^{14,24} This includes chemotherapy-tested gloves, masks, protective eyewear and disposable impermeable gowns,¹¹ and at minimum, a level 2B biosafety cabinet with appropriate ventilation.²⁵ There is also a lack of appropriate training for health professionals in safe handling practices,^{26,27} although there are increasing efforts to address this.^{28,29}

2 | SPECIALIZED PEDIATRIC ONCOLOGY NURSES

Investing in health workforce specialized education and training is supported by WHO Education Guidelines.³⁰ Given the complexity of pediatric cancer diagnoses, treatment, and care, nurses require specialized education and clinical training to deliver safe, quality care and reduce risk for patient harm.^{10,31} Specialized nursing education in all settings where children/adolescents with cancer are cared for, including operating rooms and intensive care units, improves quality and outcomes while strengthening broader health services.³²

Many train-the-trainer programs in pediatric oncology nursing have been conducted since the 1990s. However, few of these programs have established sustained specialized nursing education in either an in-country school of nursing or a hospital clinical setting, although successful programs have been established in Pakistan, Egypt,¹⁰ Jordan,³³ Lebanon,³⁴ and Latin America.³⁵ Ultimately, successful specialized nursing education programs (from diagnosis through survivorship or palliative care) are those with local ownership and integration in officially recognized nursing education systems.

In too many countries, nurses are rotated between departments or for mandatory public health service,^{32,36} hindering achievement of increasing competence and expertise.¹² Pediatric oncology units require a dedicated nursing team with knowledge and experience in administering chemotherapy, monitoring side effects, managing oncology emergencies, and providing patient/family education. Developing this unique skill set is an inefficient investment unless arbitrary rotation of nurses is stopped, because knowledge and expertise is lost when nurses leave the unit. Nurse rotation also threatens retention and is a serious issue in LMIC³⁷ where nursing shortages are acute,^{38,39} specifically in pediatric oncology units.

3 | ETHICAL ARGUMENTATION FOR MORAL ACTION

Historically, clinician exposure to health risks has been inherent to communicable disease treatment and guiding ethical principles have

TABLE 2 Ethical values as arguments for moral actions in supporting health professionals in childhood cancer care, adapted from Kass et al.⁴⁰

Ethical values	Moral actions
Respect	It is imperative to acknowledge health professionals for their willingness to undertake emotionally distressing, highly advanced care, and potentially risky tasks. The role of the specialist nurse in the multidisciplinary childhood cancer care team needs to be acknowledged and respected.
Protect from harm	It is a duty to do no harm and to protect health professionals, as well as patients/families, from avoidable and preventable harm by providing nurses and pharmacists with adequate training and proper protective equipment.
Justice	Imposition of reciprocal employer obligations to protect employees from harm because health professionals accept heightened risks as part of their daily practice when handling hazardous drugs and when providing care for which they do not have proper training and education.

been articulated. Kass et al.⁴⁰ write about key ethical concepts for Ebola that are relevant for cancer care (Table 2).

Children/adolescents suffering from cancer in LMIC have the right to curative treatment. However, it would be ethically questionable to scale up diagnosis and treatment of childhood cancer as part of the WHO Global Initiative for Childhood Cancer in LMIC, if the ability of nurses and other health professionals to deliver such services safely is ignored. Access to PPE for safe handling of chemotherapy and the appropriate education and skills to deliver safe pediatric cancer care are *sine qua non*. WHO Global Initiative for Childhood Cancer has a crucial role in improving global access to appropriate childhood cancer care; we argue it is an ethical imperative to ensure (a) adequate protective equipment for all those handling hazardous drugs and (b) that specialized pediatric oncology nursing education and nonrotation of nurses is officially recognized, prioritized, and locally integrated worldwide.

There has been a strong focus on standards of accountability for health care in LMIC,^{9,41} but historically, a lack of prioritization, or even neglect, of protective measures for nurses and others has been evident. We must promote standards, identify incentives, and provide a solid rationale to institutions and governments to prioritize access to PPE for all those handling hazardous drugs, and, in parallel, advance specialized nursing roles and education to develop proficiency in pediatric oncology nursing care and optimize patient outcomes.⁴²

4 | IMPLICATIONS

The Nurse Specialists of WHO Global Initiative for Childhood Cancer urge WHO Member States and facilities delivering cancer treatment to prioritize safe nursing work environments and specialized education to improve overall population health. Health policy makers and hospital administrators can improve nurse recruitment and retention by creating a positive practice environment ensuring nurse occupational health and safety.⁴³ Promoting such environments through safe

chemotherapy handling, specialized education, and nonrotation of nurses in WHO Member States is essential to improve the safety and outcomes of children/adolescents with cancer globally.

CONFLICTS OF INTEREST

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REFERENCES

1. Steliarova-Foucher E, Colombet M, Ries LAG, et al. International incidence of childhood cancer, 2001–10: a population-based registry study. *Lancet Oncol*. 2017;18(6):719–731.
2. Lam CG, Howard SC, Bouffet E, Pritchard-Jones K. Science and health for all children with cancer. *Science*. 2019;363(6432):1182–1186.
3. World Health Organization. Global initiative for childhood cancer. 2019; <https://www.who.int/cancer/childhood-cancer/en/>. Accessed 23 May, 2019.
4. World Health Organization. Executive board designates 2020 as the “Year of the Nurse and Midwife.” *Health Workforce* 2019; <https://www.who.int/hrh/news/2019/2020year-of-nurses/en/>. Accessed November 15, 2019.
5. World Health Organization. Global strategic directions for strengthening nursing and midwifery 2016–2020. 2016; https://www.who.int/hrh/nursing_midwifery/global-strategic-midwifery2016-2020.pdf. Accessed May 27, 2019.
6. Muller-Ramirez C, Squibb K, McDiarmid M. Measuring extent of surface contamination produced by the handling of antineoplastic drugs in low- to middle-income country oncology health care settings. *Arch Environ Occup Health*. 2017;72(5):289–298.
7. Nwagbo SE, Ilesanmi RE, Ohaeri BM, Oluwatosin AO. Knowledge of chemotherapy and occupational safety measures among nurses in oncology units. *JCS*. 2017;14(3):131.
8. Morrissey L, Lurvey M, Sullivan C, et al. Disparities in the delivery of pediatric oncology nursing care by country income classification: international survey results. *Pediatr Blood Cancer*. 2019;66(6):e27663.

9. Cazap E, Magrath I, Kingham TP, Elzawawy A. Structural barriers to diagnosis and treatment of cancer in low- and middle-income countries: the urgent need for scaling up. *J Clin Oncol*. 2016;34(1):14-19.
10. So WK, Cummings GG, de Calvo LEA, et al. Enhancement of oncology nursing education in low-and middle-income countries: challenges and strategies. *J Cancer Policy*. 2016;8:10-16.
11. World Health Organization. Pan American Health Organization (PAHO). Safe handling of hazardous chemotherapy drugs in limited-resource settings. 2013; <http://iris.paho.org/xmlui/handle/123456789/28554>. Accessed May 24, 2019.
12. Day S, Challinor J, Hollis R, Abramovitz L, Hanaratri Y, Punjwani R. Paediatric Oncology nursing care in low-and middle-income countries: a need for baseline standards. *Cancer Control*. 2015;2015:111-116.
13. Halbert J, Khaing AA. Overview of pediatric oncology and hematology in Myanmar. *South Asian J Cancer*. 2014;3(1):78-82.
14. Nwachukwu CR, Mudasiru O, Million L, et al. Evaluating barriers and opportunities in delivering high-quality oncology care in a resource-limited setting using a comprehensive needs assessment tool. *J Glob Oncol*. 2018;4:1-9.
15. Liao H, Bi L, Wei J, Song X. Evaluation of apoptosis induced by exposure to antineoplastic drugs in peripheral blood lymphocytes of nurses. *Mol Med Rep*. 2017;16(6):8103-8109.
16. Tompa A, Biro A, Jakab M. Genotoxic monitoring of nurses handling cytotoxic drugs. *Asia Pac J Oncol Nurs*. 2016;3(4):365-369.
17. Chen HC, Lu ZY, Lee SH. Nurses' experiences in safe handling of chemotherapeutic agents: the Taiwan case. *Cancer Nurs*. 2016;39(5):E29-38.
18. Oncology Nursing Society (ONS). Toolkit for safe handling of hazardous drugs for nurses in oncology. 2018; https://www.ons.org/sites/default/files/2018-06/ONS_Safe_Handling_Toolkit_0.pdf. Accessed October 28, 2019.
19. Stenberg K, Hanssen O, Edejer TT-T, et al. Financing transformative health systems towards achievement of the health sustainable development goals: a model for projected resource needs in 67 low-income and middle-income countries. *Lancet Glob Health*. 2017;5(9):e875-e887.
20. Chavez NK, <800>Hazardous drugs: Navigating the new requirements for handling hazardous drugs in the community oncology setting. 2017. <https://www.mgma.com/MGMA/media/files/fellowship%20papers/Navigating-the-New-Requirements-for-Handling-Hazardous-Drugs-in-the-Community-Oncology-Setting-fellowship-paper.pdf?ext=.pdf>. Accessed November 13, 2019.
21. World Health Organization Ethiopia. Ethiopia strengthens preparedness for Ebola. <https://www.afro.who.int/news/ethiopia-strengthens-preparedness-ebola>. Accessed May 24, 2019.
22. Balajee SA, Pasi OG, Etoundi AGM, et al. Sustainable model for public health emergency operations centers for global settings. *Emerg Infect Dis*. 2017;23(Suppl 1):S190.
23. Patel A, D'Alessandro MM, Ireland KJ, Burel WG, Wencil EB, Rasmussen SA. Personal protective equipment supply chain: lessons learned from recent public health emergency responses. *Health Secur*. 2017;15(3):244-252.
24. Bayraktar-Ekincioglu A, Korubük G, Demirkan K. An evaluation of chemotherapy drug preparation process in hospitals in Turkey—A pilot study. *J Oncol Pharm Pract*. 2018;24(8):563-573.
25. Easty AC, Coakley N, Cheng R, et al. Safe handling of cytotoxics: guideline recommendations. *Curr Oncol*. 2015;22(1):e27-37.
26. El-Mahdi AF. *Adverse Events Associated with Chemotherapy in a Cancer Centre in a Developing Country* [Doctoral dissertation]. London: King's College London; 2017.
27. International Society of Oncology Pharmacy Practitioners. ISOPP's Standards of Practice 4.1. Education on cytotoxic risks and safe handling. <https://www.isopp.org/education-resources/standards-practice>. Accessed May 24, 2019.
28. Downey-Wall K, Hilary K, Katabalo D, Masalu N, Schroeder K. Impact of pharmacist participation on chemotherapy administration outcomes in a low-resource setting. *J Glob Oncol*. 2018;4:20s-20s.
29. Mulatsih S, Dwiprahasto I, Sutaryo. Implementation of medication safety practice in childhood acute lymphoblastic leukemia treatment. *Asian Pac J Cancer Prev*. 2018;19(5):1251.
30. World Health Organization. Transforming and scaling up health professionals' education and training: WHO Education Guidelines 2013; https://www.who.int/hrh/resources/transf_scaling_hpet/en/. Accessed 19 Dec, 2019.
31. Bialous SA. Vision of professional development of oncology nursing in the world. *Asia Pac J Oncol Nurs*. 2016;3(1):25-27.
32. Abebe L, Bender A, Pittini R. Building the case for nurses' continuous professional development in Ethiopia: a qualitative study of the Sick Kids-Ethiopia Paediatrics Perioperative Nursing Training Program. *Ethiop J Health Sci*. 2018;28(5):607-614.
33. Al-Qudimat MR, Day S, Almomani T, Odeh D, Qaddoumi I. Clinical nurse coordinators: a new generation of highly specialized oncology nursing in Jordan. *J Pediatr Hematol Oncol*. 2009;31(1):38-41.
34. Children's Cancer Center Lebanon. Medical team: nurses. 2019. <https://cccl.org.lb/p/18/Medical-Team>. Accessed May 31, 2019.
35. Day SW, Segovia L, Viveros P, Alqudimat MR, Rivera GK. The Latin American Center for Pediatric Oncology Nursing Education: development, implementation, and accomplishments. *Cancer Nurs*. 2013;36(5):340-345.
36. Ayalew F, Kols A, Kim YM, et al. Factors affecting turnover intention among nurses in Ethiopia. *World Health Popul*. 2015;16(2):62-74.
37. Drennan VM, Ross F. Global nurse shortages – the facts, the impact and action for change. *Br Med Bull*. 2019;130:25-37.
38. Nizar H, Chagani P. Analysis of health care delivery system in Pakistan and Singapore. *Int J Nurs Educ*. 2016;8(2):21-26.
39. Rawal LB, Joarder T, Islam SM, Uddin A, Ahmed SM. Developing effective policy strategies to retain health workers in rural Bangladesh: a policy analysis. *Hum Resour Health*. 2015;13:36.
40. Kass N, Kahn J, Buckland A, Paul A, Ethics guidance for the public health containment of serious infectious disease outbreaks in low-income settings: lessons from Ebola. 2019. https://bioethics.jhu.edu/wp-content/uploads/2019/03/Ethics20Guidance20for20Public20Health20Containment20Lessons20from20Ebola_April2019.pdf. Accessed Dec 19, 2019.
41. Lodenstein E, Dieleman M, Gerretsen B, Broerse JE. Health provider responsiveness to social accountability initiatives in low- and middle-income countries: a realist review. *Health Policy Plan*. 2017;32(1):125-140.
42. LeBaron VT, Palat G, Sinha S, et al. Recommendations to support nurses and improve the delivery of oncology and palliative care in India. *Indian J Palliat Care*. 2017;23(2):188-198.
43. International Council of Nurses. Position statement occupational health and safety for nurses. https://www.icn.ch/sites/default/files/inline-files/ICN_PS_Occupational_health_and_safety.pdf. Accessed May 26, 2019.

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