

Neonatal Resuscitation in Disaster Settings: Updating Curriculum for Non-Medical Global Workers



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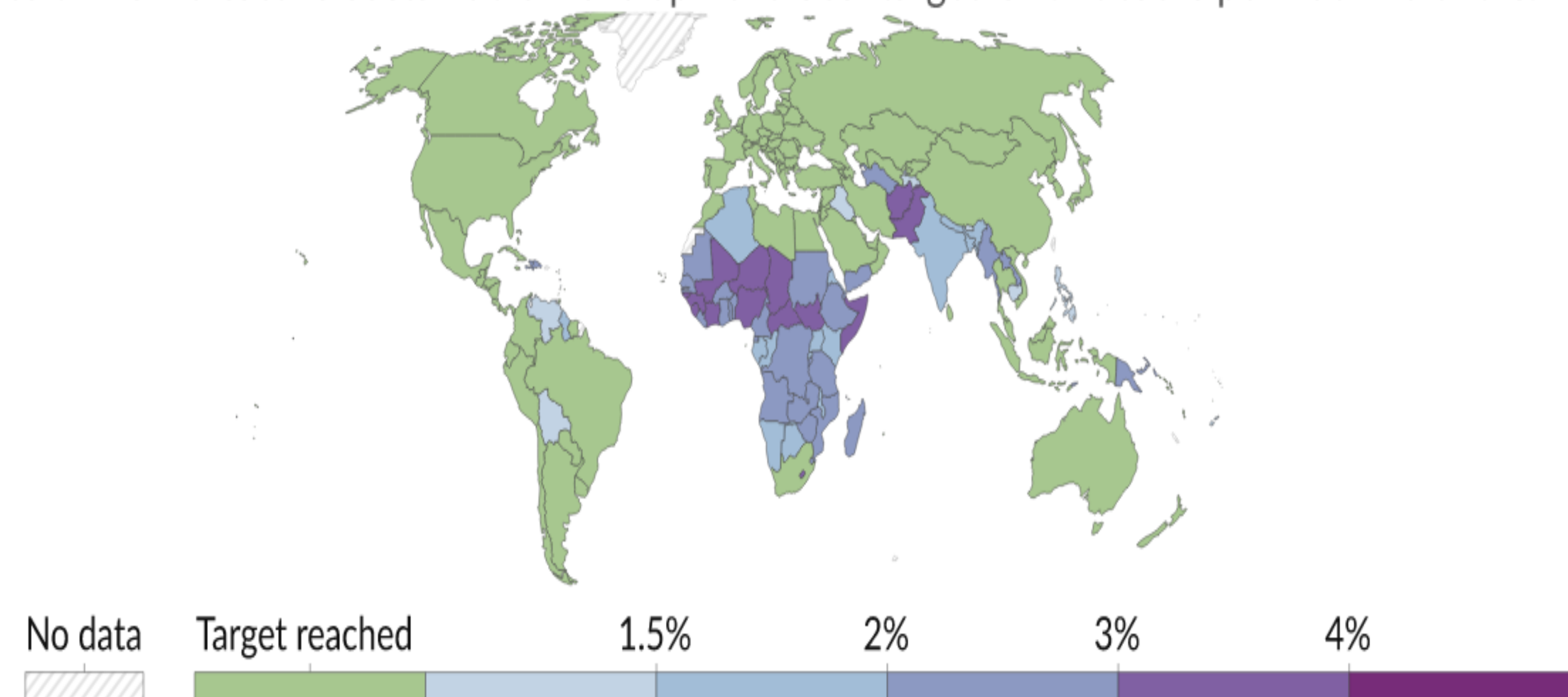
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Background

- 6,400 neonates die every day, adding up to 2.3 million per year. Of the 6.5 million children who died in 2021, nearly 70% were under the age of five years old. Of this group, 47% were within their first 28 days of life [1].
- Most neonatal deaths are preventable [2, 3] The top four etiologies include preterm birth, intrapartum complications, congenital abnormalities, and infections.
- Several effective interventions are straightforward and inexpensive and may include brief trainings, prenatal vaccines, Vitamin K prophylaxis, safe cord cutting, and birth kits [4, 5].

Neonatal mortality rate, 2021

The estimated rate of neonates who die before 28 days of age, per 100 live births in a given year. This indicator's Sustainable Development Goal target is 1.2 deaths per 100 live births.



Data source: United Nations Inter-agency Group for Child Mortality Estimation (2023)
[OurWorldInData.org/child-mortality](https://ourworldindata.org/child-mortality) | CC BY

The Global Health and Disasters Course

- The University of Colorado School of Public Health in conjunction with the Anschutz Medical Campus offers the “Global Health and Disasters” course every October.
- Focus is primarily on pediatric health topics in the setting of low resource settings, including malnutrition, diarrheal illness, hazardous exposures, coordinating disaster response., etc. One chapter focuses exclusively on neonatal resuscitation.
- Primary audience is graduate students at CU and abroad (formerly 13 countries were represented). Some students are medically trained but the course is designed to be able to be followed by non-healthcare professionals.
- The most recent update to the course manual and materials was in 2012, with outdated information and difficult to follow instructions.

Project Description

- The team assembled for “Module 7: Care of the Newborn” included neonatologists, pediatricians, and medical students at Children’s Hospital Colorado and Mama Lucy Kibaki Hospital and Pumwani Maternity and Referral Hospital in Nairobi.
- The methods utilized included:
 - Literature review which was included into a now expanded introduction, with updated data.
 - Modeled to some extent off the World Health Organization’s Essential Newborn Care and their Helping Babies Breathe curriculum.
 - More practical content, including step by step instructions for routine care directly after birth linked to data on evidence-based practices.
 - Simple, easy to follow interventions for neonates who are struggling to breathe upon delivery, with recommendations for when to seek advanced care that non-medical students will be able to follow.
 - Brief introduction to breastfeeding and care during the first hour of life, expanded from the original manual’s scope.

Next Steps

- Entire course manual completed in fall 2024. It has now undergone a final proofread from Springer publishing with a plan for book to be released in 2025.
- New content will be implemented in upcoming October 2025 “Global Health and Disasters” course both at CU School of Medicine and internationally.
- Data from student feedback and results from post module 7 quizzes will be utilized to evaluate efficacy of material as well as readability and usefulness to individual relief work goals.

References

1. United Nations Inter-agency Group for Child Mortality Estimation (UN IGME). Levels & Trends in Child Mortality: Report 2022, Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation, (2023). <https://childmortality.org/wp-content/uploads/2023/01/UN-IGME-Child-Mortality-Report-2022.pdf>
2. Perin J, Mulick A, Yeung D, Villavicencio F, Lopez G, Strong KL, Prieto-Merino D, Cousens S, Black RE, Liu L. Global, regional, and national causes of under-5 mortality in 2000-19: an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet Child & Adolescent Health* 6, 2 (2022) Pages 106-115. [https://doi.org/10.1016/S2352-4642\(21\)00311-4](https://doi.org/10.1016/S2352-4642(21)00311-4)
3. Kreutz IM, Santos IS. Contextual, maternal, and infant factors in preventable infant deaths: a statewide ecological and cross-sectional study in Rio Grande do SUL, Brazil. *BMC Public Health* 23, 87 (2023). <https://doi.org/10.1186/s12889-022-14913-z>
4. Lama TP, Munos MK, Katz J, Khatry SK, LeClerq SC, Mullany LC. Assessment of facility health and health worker readiness to provide quality antenatal, intrapartum and postpartum care in rural Southern Nepal. *BMC Health Services Research* 20, 16 (2020) <https://doi.org/10.1186/s12913-019-4871-x>
5. Parmigiani S, Bevilacqua G. 2022. Can we reduce worldwide neonatal mortality? *Acta Biomed.* 93(5):e2022294. doi:10.23750/abm.v93i5.13225.