

physicians to non-physician clinicians, allows for greater availability of anesthetic care. Nurse anesthetists comprise a significant portion of this cadre. Yet an updated overview of where this group practices, their training programs, and their scope of practice is lacking. We conducted a systematic literature review to provide this and to consolidate information needed for countries considering task shifting to increase their anesthetic capacity.

Methods: We conducted a systematic literature review following PRISMA guidelines. PubMed, Embase, The Cochrane Library, CINAHL, WHOLIS, and five regional databases were searched for journal articles published between Jan 1, 1995, and May 14, 2015, screened for anesthetic care provision by nurse anesthetists. Article references and online resources were also searched. The extracted data included nurse anesthetist training program duration and physician supervision. This data was compared across regions and World Bank income groups.

Findings: Data on the presence of nurse anesthetists was obtained for 142 countries. Of these, 113 countries were found to practice task shifting to nurse anesthetists. Nurse anesthesia was documented in all major regions of the world. Training duration ranged from 0 to 3.5 years of post-nursing school training in anesthesia. For countries where data on supervision was available, unsupervised nurse anesthetist practice was identified in 17% (3/18) of high-income countries, 47% of upper-middle-income countries (7/15), 60% of lower-middle-income countries (9/15), and 100% of low-income countries (15/15).

Interpretation: Nurse anesthetists are widely utilized providers of anesthetic care across all income categories and all major geographic regions. Their training duration varies significantly. High-income settings provide increased supervision compared to low- and middle-income settings. Future studies focused on health outcomes may provide the basis for consolidated models of anesthetic task shifting to address the surgical workforce crisis.

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Developing human capital in clinical research: Impact on reducing transfusion-transmitted HIV and hepatitis virus infections in Africa

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Program Purpose: Clinical and epidemiologic research is an important contributor to the prevention of transfusion transmitted HIV and hepatitis virus infections. However in low and middle income countries, such research has been limited by a lack of trained researchers. Long-term training in Europe or the USA is impractical due to high cost and long absence from primary job responsibilities. We designed a novel program of clinical research training in low- and middle-income countries.

Methods: Blood transfusion professionals who wish to pursue clinical research are recruited for 2-week short courses. Morning lectures teach the principles of clinical research in concert with a practical textbook (Hulley SB et al. *Designing Clinical Research*, 4th ed.). Each trainee develops their own research question into a 6-page research protocol during afternoon workshops. After the course, many trainees accomplish their projects with assistance from a minigrant program and ongoing mentorship by course professors. Selected trainees are invited for 6-week internships in San Francisco to analyze data and write manuscripts.

Outcome and Evaluation: From 2004–2015, a total of 236 trainees have participated in 21 courses. Fifteen trainees have participated in subsequent 6-week internships in San Francisco, 26 mini-grants have been awarded and at least 80 publications have been co-authored by course alumni. Transfusion research networks have been developed in both Brazil and South Africa (funded by the NHLBI REDS-III International Program) and francophone Africa (coordinated by the French INTS). Outcomes include estimations of HIV incidence and residual risk with current testing, studies of behavioral risk factors for HIV and hepatitis virus acquisition and quality assessment of viral testing done by blood bank laboratories.

Going Forward: A curriculum in clinical and epidemiological research has produced new human capital in transfusion safety research. We are now focused on obtaining stable funding to allow advanced mentoring and training using a hybrid approach of in-country short courses, medium term internships in the USA and Master's degree training in South Africa.

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Near-peer teaching for sustainable capacity building of basic life support training in Haiti: Feasibility of a training the trainers model

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Design and Methodology: In 2013, Medical Students for Haiti (MS4H) developed a 'near-peer' teaching module for Université Quisqueya in Port-au-Prince, Haiti. Each year, American medical students and emergency medicine residents, certified as Basic Life Support (BLS) instructors, train and certify Haitian medical students in BLS. The program was designed to complement medical education at Université Quisqueya where BLS is not taught to students. This year a "Training the Trainers" model, designed to enhance long-term, sustainable capacity-building, was introduced where Haitian students certified in previous years were trained to be BLS instructors. As a pilot program, MS4H trained six of these students, who then trained 12 Haitian students new to BLS.