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FMPOS



Report of the Training in Clinical Research for Transfusion Services in Africa - CIRIS 2024

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Background and justification

Transfusion safety and the prevention of viral infections remain major problems for public health in Africa. Indeed, the prevalence and incidence rates of blood-borne viruses (HIV and hepatitis B and C viruses) are significantly higher in Africa than in other parts of the world. Approaches to prevention are not well developed and limited resources prevent the adoption of long-term strategies. In addition, knowledge on the modes of transmission of these viruses remains limited, particularly in West and Central Africa.

Capacity building and especially training of staff enable blood banks and health systems to implement prevention tools, including surveillance, risk factor research, quality control and assessment of risk factors. The capacity to conduct clinical research is a fundamental element of improving blood safety. It allows trainees to develop research projects nationally and internationally, but also to use the knowledge to improve laboratory practices and better manage their blood banks or hospitals.

A clinical research course on prevention of blood-borne viral infections was provided for 12 years (from 2007 to 2018) at the Institut Pasteur in Paris in collaboration with the University of California San Francisco and Vitalant Research Institute (UCSF/VRI) in San Francisco and the National Institute of Blood Transfusion (INTS) in Paris. After completing the training program, most trainees applied their new skills at their blood banks and



hospitals to conduct locally-relevant clinical research. In addition, alumni from the course formed the Francophone Africa Transfusion Research Network to allow collaborative research across francophone Africa. The group has published more than 30 articles, with topics including: organization of blood banks, medical selection of blood donors, residual risk of HIV infection, assessment of viral screening algorithms and quality improvement (Tagny et al, 2013). Some of the best trainees also took advantage of other research training opportunities (Murphy & al, 2009, Tagny & al, 2013). These activities have also promoted a research orientation among transfusion medicine and infectious disease professionals in francophone Africa. However the Institut Pasteur course was discontinued after 2018 and there was a perceived need to offer the course closer to its African audience to satisfy the ongoing demand for research training of blood bank professionals. The first francophone course in Africa was conducted in Yaoundé, Cameroon in 2019 with a successful training of 6 international students and 15 local students. After a gap due to the COVID-19 pandemic, we have now restarted the training.

Objective of the course

The overarching objective of this second course is to improve the research capacity of a new cohort of clinical and epidemiological researchers in the field of transfusion medicine. We did this by presenting an update on the prevention of transfusion-transmissible infections and by training participants to develop and carry out clinical research protocols in the prevention of transfusion-transmitted infections (TTI), recruitment of safe blood donor candidates and quality management.

Approach

The course was hosted and sponsored by the Faculty of Medicine, Pharmacy and Odontostomatology (FMPOS) of the University of Cheikh Anta Diop in Dakar, Senegal (UCAD). We chose a hybrid approach including three online lecture sessions from March 29 to April 11, 2024 and an in-person workshop at UCAD April 15-29 2024. The workshop portion included a combination of didactic lectures and workshop sessions during which trainees each wrote their own short clinical research protocols with close mentoring by faculty.



This course was oriented to young professionals wishing to conduct clinical research, including those working in blood transfusion, surgeons, anesthesiologists and other transfusion clinicians and public health specialists. Participants were selected according to their level of scientific / medical education, previous research experience and writing ability. For each candidate two letters of recommendation were requested, including one from the head of the department of the institution who confirmed his or her support for the candidate's research career. A letter of motivation from the candidate included his or her preliminary ideas for a research question. We selected 12 full-time participants from 7 French-speaking countries. The faculty came from the USA, France, Cameroon and the UCAD (Table1). The course budget included funding for travel and accommodation expenses of the professors and trainees.

The theoretical content included: 1) background information on blood-borne infections; 2) the methodology of clinical and epidemiological research; and 3) workshops during which each trainee wrote their own clinical research protocol addressing research questions consistent with their professional interests and those of their organization. The protocol writing training followed chapter by chapter, a textbook written by Hulley et al. entitled "*Designing Clinical Research*" which explains the key elements of clinical research (Hulley & al, 4th edition, 2013). Although it includes elements of epidemiological and biostatistical theory, its approach is practical and "cross-cutting" - leading from theory to practice.

Outcomes and comments

This training included lectures and reading on research methodology including study design, defining a research question, formation of bibliography, introduction to statistics, data collection and analysis and research ethics. With intensive mentoring, each trainee wrote one section of his/her protocol during each afternoon writing session. Reading assignments from the textbook prepared the trainee for the conferences on the following day.

Of the 12 selected trainees, one participant from Senegal did not attend the in-person workshop due to a scheduling conflict. At the end of the course, all of the remaining 11 trainees had finished a 6-page protocol which was then subjected to peer review by their colleagues as part of the final oral examination. Among others, protocol topics included:



- Motivators and deterrents to repeat blood donation
- A randomized trial of skin disinfection protocols to reduce the risk of bacterial contamination
- Risks factors for hepatitis C virus infection in prospective donors
- A regional assessment of the sensitivity and specificity of TTI screening algorithms
- Effect of HIV infection on the frequency of blood transfusion in sickle cell disease patients
- Indications for blood transfusion in a neonatal care unit
- Impact of clinical status on the efficacy of platelet concentrate transfusion

Assessment of trainee performance was done on the basis of three factors: i) quality of the finished protocol (50%); ii) quality of the peer review of their colleague's protocol (25%); and iii) participation during class discussions (25%). All participants evaluated the lectures, workshops and overall training content using an evaluation form. The main comments from the trainees were 1) to provide the textbook in French (90% of participants), 2) to increase the time dedicated to one-on-one mentorship (80%) 3) to increase the time for each participant's independent work (75%). This feedback will be taken into account when planning future courses.

All participants will be invited to join the Francophone African Transfusion Research Network. The professors have agreed to continue mentoring of trainees after the course as they finalize and implement their protocols and, eventually, analyze their results. Based upon past experience with similar courses we expect that several of the research protocols developed will be implemented, data collected and manuscript submitted for publication. Finally, there was a good collaboration and communication with the Dean of the FMPOS, UCAD.

In conclusion, we are happy to report the successful implementation of a second Francophone Africa research training course in transfusion medicine. Based on the success of this edition, we hope to continue this course in future years for the benefit of transfusion medicine professionals in the region.



Table 1: Number and country of successful participants in the CIRIS research training course in Dakar, Senegal

Participants	Country	Number	Names
Faculty	USA	1	Prof Edward Murphy, MD, MPH
	Cameroon	1	Prof Claude Tayou Tagny, MD, MS, MSc
	France	1	Dr Syria Laperche, MD, PhD
	Senegal	2	Prof Saliou Diop, MD, MSc Prof Adama Faye, MD, MPH, PhD
Full-time participants (8 hours per day)	Benin	1	
	Cameroon	2	
	Guinee	1	
	Mali	1	
Conferences and practicals	Senegal	5	
	Tunisia	1	
Total		11	



Acknowledgement

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- Association pour la Recherche en Transfusion (France);
- The International Society for Blood Transfusion (The Netherlands);

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- The University of California San Francisco;
- The Safe Blood for Africa Foundation;
- The FMPOS, UCAD; and
- The Etablissement Français du Sang, Paris (France).

We also acknowledge our deceased colleagues Dr. Steven Hulley of UCSF who developed the original course from which the current course was developed and Prof. Jean Jacques Lefrere who helped to organize the French language version at Institut Pasteur.

References

1. Murphy EL, McFarland W, Lefrère JJ. Teaching transfusion medicine research methods in the developing world. *Transfusion*. 2009 Aug; 49(8):1532-4
2. Tagny CT, Murphy EL, Lefrère JJ; Francophone Africa Blood Transfusion Research Network. The Francophone Africa Blood Transfusion Research Network: a five-year report (2007-2012). *Transfus Med*. 2013 Dec; 23(6):442-4.
3. Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. *Designing Clinical Research*. 4th Edition. Lippincott Williams & Wilkins, 2013, 378 pp.



Pictures

First day, April 14th, 2024



Third day, April 16th, 2024



Last day, November 11th, 2019

