Update in
Anaesthesia

BRIEF COMMUNICATION

Anaesthesia training: where and how it is conducted in French-speaking sub-Saharan Africa?

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SUMMARY
This survey used a questionnaire to index the different training schools, evaluate the various courses available and to evaluate the impact on the numbers of anaesthetists in French-speaking sub-Saharan Africa. Six centres training physician anaesthetists (Bénin, Ivory Coast, Senegal, Cameroon, Rwanda and Democratic Republic of Congo - DRC) and 11 schools for nurse anaesthetists (Bénin, Burkina Faso, Ivory Coast, Cameroon, Gabon, Congo, Mali, Senegal, Togo, Rwanda and DRC) were identified. Whereas the entry requirements for the schools training doctors were similar, those for the nurse training schools were disparate and the impact of available training on the number of anaesthetists within a country was striking. Coordinating the different training programs, increasing the intake capacity of the different schools and facilitating movement of trainers across French-speaking Africa will hopefully promote improvements in both anaesthesia training and recruitment. This will require the support of national and international organisations.

INTRODUCTION
The progress seen in anaesthesia over the last few decades has largely occurred due to improved knowledge in pathophysiology and pharmacology, linked to an increase in the number of trained, qualified anaesthetists. With this growth, anaesthesia has become safer in developed countries with anaesthetic related deaths a low as 0.001% (1 in 100,000).[1] In contrast, in developing countries, anaesthesia still carries huge risks,[2] with a perioperative mortality rate in the range of 2.2 to 2.7%; ten times higher than in France in 1980 (0.2%).[3] There are many contributing causes for this situation in developing countries, but the impact of factors related to the numbers and training of staff is significant. Due partly to reforms in Europe and also the prohibitive cost of a prolonged period of training in Western countries, the training of anaesthetists in their home countries has become an urgent priority. Where and how do healthcare staff train in anaesthesia in French-speaking sub-Saharan Africa? What is the impact of these training schools on the numbers and distribution of anaesthetists in this region?

METHODOLOGY
This was a prospective questionnaire-based study, run over 4 months (Nov 2001 to Feb 2002) in the 17 French-speaking countries south of the Sahara: Bénin, Burkina Faso, Cameroon, Ivory Coast, Congo, Gabon, Guinea, Mali, Mauritania, Madagascar, Niger, Central African Republic, Democratic Republic of Congo, Rwanda, Senegal, Chad and Togo.

The data was collected by a questionnaire which was either sent to the heads of the training departments by email, or completed during a direct interview at the SARANF (Society of Anaesthesia of French-speaking Africa) Congress, held in Cotonou, Bénin in 2001. In Cotonou, Abidjan (Ivory Coast), Yaoundé (Cameroon), Lomé (Togo) and Libreville (Gabon) we made on-site enquiries in the different training centres. For each training programme we collected data on entry requirements, the course, the number of diplomas issued and the number of trained anaesthetists.

RESULTS

Training centres for physician anaesthetists
Six medical facilities train physician anaesthetists:

Physician Anaesthetists:
[1]Centre Hospitalier Universitaire de Lomé-Tokoin, Togo
[2]Hôpital Universitaire de la Mère et de l'Enfant Lagune (HOMEL), Bénin
[3]Hôpital Gynéco-Obstétrique et Pédiatrique de Yaoundé (HGOPY), Cameroon
[4]Centre Hospitalier Universitaire Pédiatrique Charles De Gaulle, Burkina Faso
[5]Institut Supérieur des Techniques Médicales, Democratic Republic of Congo (DRC)
[6]Kigali Health Institute, Rwanda
[7]Institut Cardiologique d'Abidjan, Ivory Coast

Dakar in Senegal, Abidjan in Ivory Coast, Cotonou in Bénin, Yaoundé in Cameroon, Kinshasa in DRC and Kigali in Rwanda (Table 1). The entry requirements for all 6 schools were identical; possession a medical degree from your country of origin and pass an entry test to the school of anaesthesia. However, the nature of the different training programmes themselves varied between schools. The training departments train doctors of a variety of nationalities. For example in Cotonou (Bénin) in 2007, there were 27 students of 7 different nationalities (5 Togolese, 4 from Burkina Faso, 2 Nigerians, 1 from Chad, 1 from Guinea, 1 from DRC and 13 from Bénin).

Training centres for nurse anaesthetists

There are 11 training centres: Burkina Faso, Mali, Senegal, Togo, Bénin, Cameroun, Central African Republic, Ivory Coast, Gabon, DRC and Rwanda. The class sizes for each intake and syllabus varied from one institution to another, as did the admission criteria. For example in Dakar and Lomé state registered nurses with 2 or 3 years experience are accepted for entry, as well as school leavers after their baccalaureat examination. There are reforms in place at the moment to try to incorporate the nurse anaesthetist training with the LMD (Licence Master Doctorat) system and to produce a uniform system across French-speaking Africa.

Impact on the numbers of practicing anaesthetists within each country

In 2008 the four countries in West Africa who train physician anaesthetists (Senegal, Ivory Coast, Bénin and Cameroon) have 105 doctors for a population of 52,963,000 - 1 physician anaesthetist for half a million population. This disparity is even greater in Central Africa where the two countries that train physician anaesthetists (Rwanda and DRC) have only 26 doctors for a population of 66,587,000 - 1 physician anaesthetist for 2.5 million population.

There are currently 956 nurse anaesthetists in the 7 West African countries with a training institution. With a total population of 87,464,000, this computes to one nurse anaesthetist for just less than 100,000 people. In the French-speaking Central African countries where there are training institutions there are 704 nurse anaesthetists for a population of 72,009,000 (Tables 1 and 2).

DISCUSSION

While the number of anaesthetists in countries with training institutions is low, it is potentially catastrophic in the other sub-Saharan French-speaking countries. For example, in Chad in 2007 there was one physician anaesthetist and 22 nurse anaesthetists for a population of 8,582,000. In Guinea Conakry there 3 physician anaesthetists and 40 nurse anaesthetists for a population of 7,909,000.[4] This dearth of qualified personnel is a prime contributing factor to the unacceptably high incidence of perioperative death. The numbers of qualified anaesthetists has gradually increased since 1999, especially in the countries with training institutions and this, along with the establishment of two new training schools in Bénin and Rwanda, has provided a starting point towards resolving this problem.

In addition to these significant improvements further changes are needed:

- Increasing the intake capacity of the different training institutions,
- Promoting high quality training facilitated by increasing conformity between the different courses,

Table 1. *Training of physician anaesthetists - characteristics of training schools since 2002 and numbers of physician anaesthetists in 2008*

Country	Date school opened	Number qualified since 2002	Length of training	Total number 2008 (practising anaesthetists)	Population ** (x 1000 inhabitants)
Bénin	1996	3	4 years	16	8439
Cameroun	1987	9	4 years	28	16322
Sénégal	1995	20	4 years	25	10048
Ivory Coast	1983	82	3 years*	36	18154
DRC	1968	4	4 years	17	57549
Rwanda	2002	-	4 years	9	9038
Total	-	118	-	131	119550

* The length of training has been extended to 4 years

** Source: http://www.afro.who.int/home/countryprofiles.html

Table 2. *Training of nurse anaesthetists - characteristics of training schools since 2002 and number of nurse anaesthetsists in 2008*

Country	Date school opened	Number qualified since 2002	Length of training	Total number in 2008 (practising nurse anaesthetists	Population (x 1000 inhabitants)
Burkina-Faso	1983	96	2 years	116	13228
Cameroun	1994	95	2 years	170**	16322
Sénégal	-	100	2 years	112	11658
Ivory Coast	1972	199	2 years	232	18154
Togo	1989	74	3 years	89	6145
Mali	1991	47	2 years	57	13518
Bénin*	2002	-	3 years	180	8439
CAR	1995	36	2 years	46	4038
Gabon	1982	61	2 years	81	1384
Rwanda	1999	42	2 years	157***	9038
DRC	1970	350	3 years	420	57549
Total	-	1100	-	1660	159473

* Bénin now has 180 nurse anaesthetists of which 63 were trained in-country since the school opened in 2002-2003. The majority of the remainder were trained in Togo and Ivory Coast.

** 25 trained 'on the job'.

*** Only 3 didn't have their training in-country.

- Encouraging the movement of trainers across the region, which will be enhanced by the coordination of national policies in the training of anaesthetists.

Health ministries have an essential role in ensuring these changes occur, particularly for the latter point. It is our duty to draw the readers' attention to the appalling maternal mortality rates in developing countries, to which anaesthesia contributes.[6] In the future we will need as many qualified anaesthetists as obstetricians.

Politicians must devise a focused plan that promotes the integration and development of professional physician anaesthetists, which will prevent their emigration to other countries where they may be treated as second class practitioners.

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