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PAEDIATRIC PATHOLOGY IN AFRICA: CURRENT AND FUTURE POTENTIALS

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The discipline of paediatric pathology that is recognised as a sub-discipline of histopathology or anatomical pathology has no officially recognised status on the African continent. Red Cross War Memorial Children's Hospital in Cape Town, that opened in July 1956, is still the only comprehensive children's hospital on the continent, south of Cairo, and it has a semi-independent but downgraded laboratory service. Among the five continents, Africa has the highest per capita birth rate and the highest proportion of its total population being classified as children – whatever age limit is used to define a child. The facilities for practising laboratory medicine are probably the worst in the world (1). The scourges of tropical infectious disease, particularly malaria, schistosomiasis, trypanosomiasis and other parasitic infestations made Africa inhospitable to European and Arabian explorers. As a consequence exposure to the wheel with the consequent technology emanating from this as well as written text and formal education are relatively recent phenomena in Africa, south of the Sahara Desert. Formal education and technology came with Christian missionaries and were also a by-product of colonialism where the establishment of universities facilitated progression to political independence.

At present, Africa has an estimated total population of 750 million compared with 300 million in Canada and the USA combined. It is composed of 53 independent countries (2) with 181 universities beyond South Africa's borders. Eighty-three of these have health science faculties that train basic medical practitioners. Postgraduate training of medical specialists is a very recent phenomenon in most African countries (3). The disciplines within the laboratory medicine group of specialities are seen as an expensive luxury and are generally given a low priority rating in planning and budget allocations. In more than 50% of Africa, the training of pathologists is undertaken on other continents while specific postgraduate training and certification in paediatric pathology occurs at only one hospital in one country. When the International Paediatric Pathology Association was first formulated between the years 1976 – 1978, it was the vision of co-founder, Dr John Emery, that every medical school throughout the world should have at least one trained and certified paediatric and perinatal pathologist on their staff. Without such expertise it was felt that basic medical training and the monitoring of childhood and perinatal disease would be compromised. In terms of this goal, Africa has the greatest need for assisted advancement and encouragement. Where and how do we start to grapple with this issue?

North Africa is dominated by Arabic language and culture. Laboratory medicine is influenced by Islamic religious codes. This means that very few autopsies are undertaken. However, there is an increasing desire by the medical

fraternity to enhance their standards of practice and to secure the necessary skills found in western countries. Colleagues that I have interacted with from this region have all been pleasant and co-operative and seem to want greater interaction.

Francophone Africa is largely dependent upon generous support from France, and the French Division of the International Academy of Pathology. The latter has been actively involved in advancing educational activities in Algeria at the initiative of Dr Christian Nezelof while West Africa and Equatorial Africa are subject to a multipronged thrust by a number of French institutions. However, these will require a continuous long-term commitment to achieve sustainable delivery of laboratory healthcare facilities for children. Any French-speaking North American paediatric pathologist who may wish to be involved in such activity can obtain guidance from: Dr Michele Pellegrin de Villeneuve at Centre Hospitalier InterCommunal, Sve d' Anatomie et Cytologie Pathologiques, BP 1330, 65013 Tarbes, France (Fax No +335 62 51 53 37), Email: mpellegrin@ch-tarbes-vic.fr.

Participation in the annual congress of the French-speaking Central African Division of the International Academy of Pathology would also be an appropriate starting point.

In respect to **Anglophone Africa**, undergraduate training is based upon the British system while postgraduate specialisation also occurs through the universities rather than colleges or boards of pathology. It is very unfortunate that these training schemes are still locked into the system that pertained when Makerere University was first established in Uganda about 50 years ago. Pathologists are trained in all of histopathology, cytology, medical biochemistry, bacteriology, virology, parasitology, immunology, haematology, blood transfusion and forensic pathology over a three-year period. They have to prepare a research type dissertation and upon successful completion of examinations, are licensed to practice in all of these branches of laboratory medicine. In reality, examination failures cause many candidates to take four or more years to complete the course. After which, those who wish to pursue an academic career generally seek additional monospeciality training and qualification in South Africa or a western country. There are, however, very limited resources to do so. In this respect, the University of Cape Town has, in recent years, offered a 'one year' full-time or a 'two-year' part-time training programme in paediatric pathology to such previously qualified general pathologists. Thus far, there have been no students from beyond South Africa's borders.

How can members of this Society and colleagues in other industrialised countries facilitate meaningful change to the current situation?

1. There is the potential to offer scholarships for travel, subsistence and training in your laboratories. Such action has a down side difficulty in respect to the selection of suitable candidates based on merit and commitment; your providing sophisticated training that is inappropriate for local African needs and the subsequent temptation by such candidates to emigrate to the more affluent western world.

2. There is the potential for our members to participate in pathology congresses in Africa to meet the local people and to interact with them (both learning and teaching) on their own soil. In this respect, the Association of Pathologists from East, Central and Southern Africa (APECSA) that was formed under the guidance of Professors Roger Cotton and Michael Hutt in 1987 has biennial meetings (whenever outside sponsorship can be secured). In July 2000, a few members of this Society participated in such a congress in Zimbabwe. The next congress is scheduled for later this year in Mombassa, Kenya. A problem for many is the political volatility within Africa where there is an abundance of despotic and autocratic rulers who retain power and influence through violence and intimidation. It should nevertheless be appreciated that the press generally overstates the negative aspects of events in Africa and that the presence of visitors from the industrialised west is appreciated and valued.
3. There is the potential to actively collaborate in teaching and research at medical schools and/or pathology laboratories. In this respect I have secured contacts and information about centres that would welcome such visitors in Uganda, Kenya, Tanzania, Zimbabwe, Malawi, Mauritius and Nigeria, with additional possibilities in Ethiopia, Libya and Zambia. It would be particularly helpful to combine such activity with attendance and participation in a biennial APECSA or annual South African pathology congress.
4. There is the future potential of twinning institutions or departments of particular institutions. The concept of twinned institutions has its attraction as a realistic solution to the ever-widening economic gap between industrialised western countries and non-industrialised Africa. In Africa, all the parameters for evaluating situational differences in respect to personal income, facilities in educational institutions and hospital budgets worsen year by year. In my opinion, the only realistic solution will eventually be to go through the process of developing collaboration, providing assistance and gaining trust before making a formal arrangement of exchanging staff and equipment to reverse the progressive downward spiral that is occurring throughout the continent. Our history has shown that monetary handouts all too often do not reach the coal-face of need in appropriate proportions.

In the meantime, I offer as a challenge to those of you who have or are about to complete your working careers, the example set by an admired Canadian who is probably not known to the younger generation of paediatric pathologists. This is the example of Professor Donald W Penner, who is a past president of the Canadian Association of Pathologists and had been secretary-treasurer for 25 years. Don and his wife, Helen, spent a decade working as lecturer and hospital pathologist at Nairobi University and Kenyatta National Hospital. Don and Helen would still be in Kenya were it not for their frailty and failing health. Long after both reached the age of 80 years, they returned to Winnipeg and are now confined to a home for the aged (4). Don and Helen were not known to be especially religious but their commitment to freely work among the disadvantaged Kenyans on a meagre pension is to me an example of humanitarian service that is now rarely seen among current academics. I have been privileged to know Don and Helen for the past ten years

and wish that the world produced more pathologists of such dedication and commitment.

The question arises as to where one can start to establish a relationship? Places that have indicated a particular interest in hosting visitors for professional interaction, that I am aware of, are as follows:

Nigeria in West Africa has a population in excess of 120 million, with an average annual per capita income that is less than US \$400. Ibadan is its largest city and is where Prof. Olufemi Ogunbiyi is happy to welcome visitors at Ibadan University College Hospital. Zaria is situated in central Nigeria, where Dr. AH Rafindadi at Ahmadu Bello University Teaching Hospital would also welcome visitors as would Dr. Barnabas M Mandong at Josi University. In Nigeria, pathologists are generally unidisciplinary. Paediatric pathology constitutes about a third of the workload and perinatal work another quarter or third. They would love to have collaborators in teaching, research and routine diagnostic work. Reasonably priced accommodation is available at local hotels and within University Hospital guesthouses. Their e-mail addresses are: oogunbiyi@hotmail.com, rafmumin@yahoo.co.uk and Mandongb@unijos.edu.ng.

In East Africa there are opportunities in Kenya, Uganda and in Tanzania.

Kenya has two Medical Schools servicing a population of more than 32 million. The faculty at Nairobi University trains multidisciplinary pathologists, whereas lecturing staff confine their practice to a single discipline. Parasitology and immunology are particularly strong departments. In histopathology, paediatric material constitutes about 15% of the total and perinatal another 10%. They would now love to have short-term collaborators in teaching research and in routine diagnostic work. No salaried posts are currently available for long term appointments but can be negotiated when a need arises. Information is available from Prof Aggrey Nyong'o at e-mail: lab@nbihosp.org.

Uganda has a well-known long established Medical College (Makarere) in its capital city of Kampala. It serves a population in excess of 21 million and currently has vacancies for 6 senior teaching posts that includes two professors. The university does have guesthouse accommodation but prior arrangements have to be made well in advance of arrival. Both short-term and long-term visits for a wide spectrum of collaboration would be welcomed. Information is available from Dr. Michael Odida at e-mail: cancer.reg@softhome.net.

Tanzania has a population of over 31 million with medical school training being offered in Dar es Salaam and the inland town of Moshi near Mount Kilimanjaro. Dr. Emmael Moshi of Kilimanjaro Christian Medical Centre, Private Bag Moshi, Tanzania (Fax Number: +225 55 54381), would welcome long-term visitors for a broad spectrum of collaborative activities. Her institution offers both guesthouse and hospital room accommodation at reasonable rates. Prof. Ephata Kaaya of Muhimbili University College's Anatomical Pathology Department in the capital city of Dar es Salaam indicates that paediatric pathology constitutes about 15% of the workload while perinatal work is another 5%. He would welcome both

short and long term visitors and there are several staff vacancies for pathologists. He is contactable by e-mail at ekaaya@muchs.ac.tz and Fax No. +255 22 215 1350.

In Central Africa there are distinct opportunities in both Malawi and Zimbabwe and also probably in Zambia.

Malawi has a relatively new medical school that trains undergraduates for a population of 10 million. Paediatric pathology constitutes approximately a quarter of the material being received but placentas and perinatal work are hardly ever attended to. At present there are vacancies for a professor and a senior lecturer and the university offers guesthouse accommodation. Dr. Charles Dzamalala may be contacted for further information at e-mail cpdzama@yahoo.com or fax +265 674 700.

Zimbabwe has very much occupied the headlines of news pertaining to Africa for the past few years. Before the onset of the current problems, it had a population of approximately 12 to 14 million with an established medical school in Harare where postgraduate training in pathology is provided. Dr. Rudo Makunike, the chairperson in histopathology, has had UK training in paediatric pathology. The paediatric and perinatal workload constitutes about 20% of the total of surgically resected specimens and 10% of autopsies. A severely depressed economy currently makes it impossible to employ new staff but collaborative visitations would be most welcome. Dr Makunike can be contacted by e-mail at

histopathology@zimwebinternet.com or histopath@med-sch.uz.zw

and at Fax No. +263 04 703857

Mauritius is a vacational island state of just over a million people in the Indian Ocean. It has a Government Laboratory Service without frozen section or immunohistochemical facilities. There is no medical library or any up to date reference books and consequently our standards cannot be met (5,6). Paediatric specimens constitute about 10% of the workload while perinatal specimens are very rare. The local histopathologists, Drs. MI Isaack and P Oogarah, would welcome short-term visitors to collaborate in research and diagnostic work. They are contactable by e-mail at chlabo@intnet.mu or phone +(230) 424 5848.

Ethiopia, at the Horn of Africa has a population of about 60 million. They have recently come through a prolonged period of conflict and once had a good children's hospital. There is an active pathology department at their solitary medical school in Addis Ababa. Dr. Wondwossen Ergete is Head of Department and may be contacted at healthnet.ethopia@eth.healthnet.org.

With the exception of the island of Mauritius, the average annual per capita income of these eight Anglophone countries ranges from US \$100 (Ethiopia) to US \$400 (Nigeria) with Mauritius being in excess of US \$3000. By way of contrast, **South Africa** has a population of about 43 million with an average annual per capita income of US \$2900. It has eight medical schools, a College of Pathologists and one comprehensive children's hospital. All medical schools are involved in collaborative activities with colleagues in wealthier countries. However, reduced funding for healthcare and the lure of better salaries in more industrialised countries

together with the AIDS pandemic, results in progressive lowering of standards and commitment.

The spectrum of pathology that is encountered among children, neonates and fetuses in Africa differs from those seen in western countries. I suggest that this difference should serve as an incentive to young newly trained members to spend time in Africa to widen their experience and enhance their skills before settling into a comfortable career. The adjustments that will need to be made will largely revolve around having to cope with large numbers while only having rudimentary and unreliable resources and infrastructure. In respect to the spectrum of disease that will be encountered, the most noticeable difference will be: a very high incidence of AIDS and HIV related opportunistic infections; severe tuberculosis; malaria; schistosomiasis; viral hepatitis; gastro-enteritis; vitamin and protein-energy malnutrition; parasitic infestations of the bloodstream and of the gastrointestinal tract; osteomyelitis; hermaphroditism and intersex; Kaposi sarcoma and advanced stage childhood neoplasia, including Burkitt Lymphoma, Hodgkin's Disease and HTLV lymphoma. Severe measles still occurs in places where the cold-chain for vaccine preservation is broken. In such regions, diphtheria, disseminated herpes simplex virus infection and meningococcaemia are prevalent but not regularly recognised. Molecular techniques would be of much benefit (7). It is hoped that skilled and resourceful collaborators will be able to assist in resolving very many unanswered questions pertaining to these conditions. Examples of questions that need solution are:

Why is Ewing Sarcoma and PNET uncommon in American blacks but frequent in Africa's blacks (8)?

What is the real pathogenesis of marasmus and kwashiorkor when some children in a given household get kwashiorkor and others marasmus?

Are Africa's herbalists facilitating a relatively low death rate from malaria among tribalized Africans?

Why is meningococcal infection more often lethal among well-nourished children than among poorly nourished children?

These are some of the challenges that Africa offers you. I hope and trust that, as a consequence of the events of September of last year and our determination to eliminate politically inspired terrorism, we will also collectively identify, examine and resolve the factors that foster abject poverty and disenchantment with our wealthy western civilisation.

I thank you for your attention and will be happy to welcome collaborative visitors to my continent.

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