

Editorial comment on Malkin and Keane (2010)

Herbert F. Voigt · Shankar M. Krishnan

Received: 29 March 2010 / Accepted: 31 March 2010 / Published online: 27 May 2010
© International Federation for Medical and Biological Engineering 2010

Abstract Malkin and Keane (Med Biol Eng Comput, 2010) take an innovative approach to determine if unused, broken medical and laboratory equipment could be repaired by volunteers with limited resources. Their positive results led them to suggest that resource-poor countries might benefit from an on-the-job educational program for local high school graduates. The program would train biomedical technician assistants (BTAs) who would repair medical devices and instrumentation and return them to service. This is a program worth pursuing in resource-poor countries.

Keywords Biomedical technician assistants (BTAs) · Resource-poor countries · Global health-care · Biomedical instrumentation and devices

A July 2009 World Bank classification of national economies list those countries with annual per capita incomes of \$975 or less as “low income” and annual per capita incomes between \$976 and \$3,855 as “lower middle income” (<http://siteresources.worldbank.org/DATATESTISTICS/Resources/CLASS.XLS>). These are sometimes referred to as resource-poor countries or settings. Of the 210 countries listed in the World Bank table, 98 (47%) are classified as

resource poor. Malkin and Keane [2] take an innovative approach to determine if unused, broken medical and laboratory equipment could be repaired by volunteers with limited resources. Their positive results led them to suggest that resource-poor countries might benefit from an on-the-job educational program for local high school graduates. The program would train biomedical technician assistants (BTAs) who would repair medical devices and instrumentation and return them to service.

Extensive use of medical and laboratory equipment to aid in diagnosis and therapy is increasing steadily in the global healthcare setting. The status of medical and laboratory devices in the healthcare facilities of resource-poor countries are below acceptable levels. This problem contributes to inadequate health care delivery. Non-availability of trained biomedical/clinical engineers and biomedical equipment technicians is the main cause for this situation. The work done by Malkin and Keane [2] reflects a difficult task and a serious effort to alleviate the problem of training technical support personnel in a short period. The proposed approach is based on analysis of maintenance data obtained from 60 hospitals in 11 resource-poor countries. The efforts in biomedical equipment repair training by Malkin, International Aid [3], Engineering World Health [1], and similar organizations as well as including summer student volunteers are commendable. In catastrophic situations caused by earthquakes, Tsunamis, floods, etc., availability of persons with training and experience as proposed by the authors will be helpful in providing assistance in maintenance of rather simple, low-tech medical and laboratory equipment. In hospitals and clinics with insufficient numbers of qualified biomedical/clinical engineers and/or technicians, the proposed BTAs could play an important role in keeping a subset of non-complex clinical equipment safe and functional, thus facilitating the healthcare delivery

Herbert F. Voigt—President, International Federation for Medical and Biological Engineering (IFMBE)
Shankar M. Krishnan—Treasurer, IFMBE

H. F. Voigt (✉)
Boston University, Boston, MA, USA
e-mail: hfv@bu.edu

S. M. Krishnan
Wentworth Institute of Technology, Boston, MA, USA

needs. Realizing that diagnostic and therapeutic techniques and devices are making steady progressive leaps implementing available advance technologies, it is only a matter of time when the complexity of medical and laboratory equipment will increase across the globe. The leaders in the biomedical/clinical engineering and health care fields must look for timely solutions for the upkeep of medical and laboratory equipment and related training at different levels as well as allocation of required and realistic resources.

References

1. Engineering World Health, "EWH BMET Training Program," Engineering World Health (2009) [Online] Available <http://www.ewh.org/index.php/programs/BMET>
2. Malkin R, Keane A (2010) Evidence-based approach to the maintenance of laboratory and medical equipment in resource poor settings. *Med Biol Eng Comput*
3. Teninty B (2006) International Aid's Medical Equipment Training Program: enabling health-focused relief and development. *IEEE Eng Med Biol Mag* 25:23–24