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**Effectiveness of Internal Quality Control program for blood gas analyzer to  
improve critical-care at the Medical Intensive Care Unit, Lady Ridgeway  
Hospital for Children**

**Background:**

The blood-gas analyzer (BGA) is the most important Point-of-care-Device in medical intensive-care unit(MICU) for analyzing biochemical and haematological parameters at 'bed-side' within seconds. However, poor quality of assays compromises its accuracy, thus the success of **PoCT** requires skilled and knowledgeable device-operators on quality assurance. It is an ISO requirement too (ISO 22870:2006).

**Objective:**

The objective was to develop an Internal Quality Control (IQC) programme for BGA and assess its effectiveness at the MICU of Lady Ridgeway Hospital for Children.

**Method:**

A quasi-experimental study was conducted among all MICU nurses working as device-operators (N=33). An IQC training program was designed for nurses as the intervention that provided knowledge on QC (quality assurance,calibration) and skills in sample analysis, IQC data interpretation and trouble-shooting through demonstrations. Before and 1month after the intervention, their knowledge was assessed using a self-administered-questionnaire on

general knowledge and interpretation on IQC. Effect of the intervention was assessed using paired t-test on scores obtained for knowledge (range:15-50) and interpretation (range:0-38).

### **Results:**

Following the intervention, mean knowledge score on IQC of nurses improved significantly from 27.9 (SD=7.8) to 39.5 (SD=6.4) (mean difference=11.6; SD=10.7;  $p<0.001$ ). Mean scores obtained on demonstrating skills also improved significantly from 3.8 (SD=4.1) to 27.5 (SD=6.5) (mean difference=23.7; SD=7.9;  $p<0.001$ ).

### **Conclusion:**

The IQC training was effective in improving blood gas analysis by non-laboratory trained personnel and therefore, is recommended for ICU staff in Sri Lanka. Its long-term effect however needs further assessment.

**Key words:** quality control, blood-gas analysis, Point-of-Care system

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### **Authors:**

Dr. Hendawitharana H.W.N.P.<sup>1</sup>, Dr. Srilal de Silva<sup>2</sup>, Dr. Nalin Kithulwatte<sup>3</sup>,  
Dr. Eresha Jasinge<sup>4</sup>, Dr. Carukshi Arambepola<sup>5</sup>, Dr. Vithegi Kesavan<sup>6</sup>

### **Affiliations:**

1. Registrar in Chemical pathology, Medical Research Institute, Colombo 08
2. Consultant Paediatrician, Medical Intensive Care Unit, Lady Ridgeway Hospital for Children, Colombo 08
3. Consultant Intensivist, Medical Intensive Care Unit, Lady Ridgeway Hospital for Children, Colombo 08

4. Consultant Chemical Pathologist, Lady Ridgeway Hospital for Children, Colombo 08
5. Consultant Community Physician, Dept. of Community Medicine, Faculty of Medicine, University of Colombo, Colombo 08
6. Consultant Chemical Pathologist, Teaching hospital, Jaffna