

EVALUATION OF THE UNIVERSAL ANAESTHESIA MACHINE IN THREE HOSPITALS IN KENYA: KENYATTA NATIONAL HOSPITAL LEVEL 6, THIKA DISTRICT HOSPITAL LEVEL 5 AND KIAMBU DISTRICT HOSPITAL LEVEL 4

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Introduction

The provision of anaesthesia in many resource limited countries is compromised by lack of appropriately designed anaesthesia equipment. Modern complex anaesthesia machines are unsuitable for use in areas with challenging environmental conditions with unreliable supply of compressed gases and electricity. The Universal Anaesthesia Machine (UAM) is a hybrid continuous flow/draw-over anaesthesia machine designed to function in any environment without reliable sources of compressed gases or electricity manufactured by Gradian Health Systems at Oxford Engineering Services Medical Limited in 2010. (1,2).

Preliminary results of 95 patients in an ongoing study is presented.

Objective

To validate the UAM for use in Kenya through determination of its efficiency, versatility, and cost effectiveness in both referral and district hospitals.

Methodology

A non randomized, observational, prospective and multicentre study. General Anaesthesia using UAM in adults and children was employed for emergency and elective procedures – and also the volume of Halothane used per patient was measured at the end of each procedure.

Results

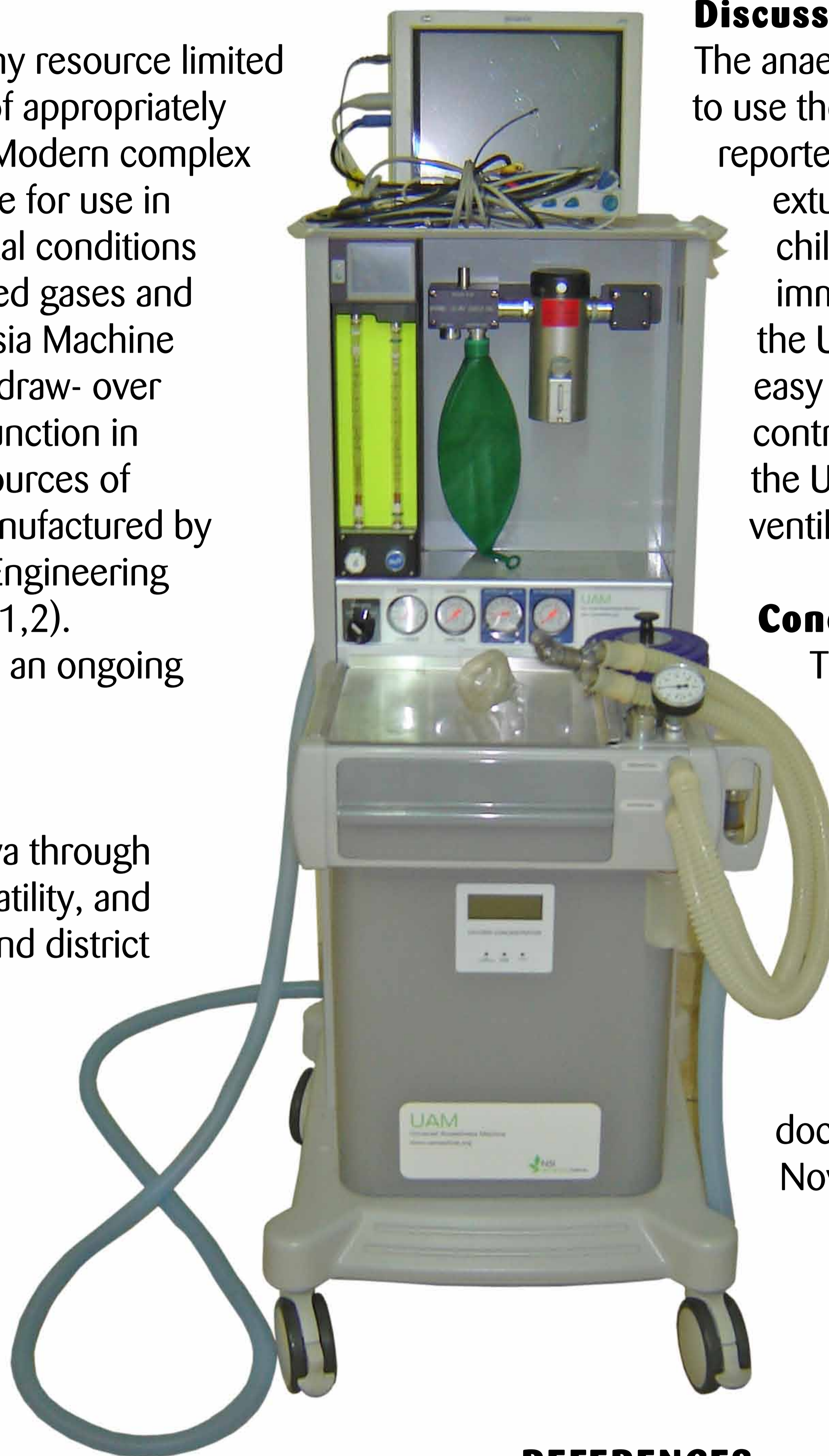
Presented are results of 95 patients in an ongoing study of 800 patients expected to be completed by end of 2013. Of these patients 21 were children aged 2 months to 15 years. Most procedures were emergency lasting between 10 minutes to 2 hours. The most common procedure in adults was caesarean section and adenoidectomy in children in these series. Other procedures included were thyroidectomy, mastectomy, gastrectomy, Hermiorrhaphy, Hysterectomy and Orchidopexy. Most anaesthesia providers used oxygen and halothane in the gas mixture and a few used nitrous oxide. The Ayre's T Piece was used in a few paediatric patients. Volume of Halothane used ranged between 4mls – 50 mls.

Discussion

The anaesthesia providers had a one day training to use the UAM. There was no adverse event reported in the use of the UAM. One accidental extubation occurred intra-operatively in a child undergoing adenoidectomy who was immediately reintubated. All the users rated the UAM as reliable and safe to use. It was easy to use during spontaneous, assisted and controlled ventilation. The limitation of use of the UAM is related to its lack of an attached ventilator.

Conclusions

The UAM was found to be safe, and versatile in Kenya as indicated by other studies (3,4). It was however noted that it is difficult to ventilate obese patients manually with the bellows as experienced with a 160 kg patient undergoing repair of epigastric hernia. The challenges encountered during this study included a late start due to delay in ethical approval and doctors and nurses strike in Kenya during November and December in 2012.



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