



## Knowledge, attitude and practice on advanced cardiac life support (ACLS) among the general duty medical officers in Bhutan

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### ABSTRACT

Advanced cardiac life support (ACLS) is one of the important lifesaving procedures administered by emergency medical professionals. International guidelines and literature recommends periodic training of health personnel on ACLS. In Bhutan, the General Duty Medical Officers (GDMO) are often the first line doctors to attend to the critically sick patients including those with cardiac arrest.

**Keywords:** Advanced cardiac life support; KAP.

### INTRODUCTION

Globally, cardiovascular diseases are the leading cause of cardiac arrest and death. Approximately 17.3 million deaths per year are attributed to cardiovascular diseases<sup>1</sup>. The number is expected to grow to more than 23.6 million by 2030<sup>1</sup>. According to the Annual Health Bulletin 2017, Bhutan had an approximate 3.4% mortality due to ischemic heart disease<sup>2</sup>. About 357,000 people experienced out-of-hospital cardiac arrest in the United States in 2015 and roughly about 209,000 people are treated for in hospital cardiac arrest every year<sup>1</sup>. Cardiac arrest is a complex and lethal condition that poses a substantial public health burden with widespread incidence and severe impact on human health and wellbeing. Nonetheless, timely Advanced Cardiac Life Support (ACLS) by Health Care Providers (HCP) immediately following cardiac arrest can reduce morbidity and save lives.

ACLS is an integrated team-based response utilizing treatment strategies and algorithms to optimize survival of patients with cardiac events<sup>3</sup>. The ACLS training constitutes knowledge and skills to resuscitate critically sick patients. The American Heart Association (AHA), European Resuscitation Council (ERC) and other resuscitation guideline recommends all HCP be trained in Basic Life Support (BLS) and ACLS<sup>4,5</sup> with recertification every two years. A study done by Sanchez Garcia et al showed that outcome of a cardiac arrest patients was proportional to training received by the health personnel. Another study has shown that ACLS certification course increases the likelihood of improving resuscitation skills<sup>7</sup>. Many studies showed that it is of utmost importance that all HCP should be

aware of these important skills, especially those stationed outside tertiary health facilities<sup>6,8,9</sup> and should have a certified course<sup>10</sup>.

### Current scenario

Bhutan is a small land locked country, spanning 38,394 Km<sup>2</sup>, with a population of 677,343 bordering China and India. The country is mountainous with difficult terrain and transportation. Ambulance services are available through emergency medical services (EMS) toll free number 112 and air ambulance with Bhutan Emergency Aero-medical Retrieval (BEAR) Team. Bhutan does not have medical colleges for undergraduate medical course, so our doctors get trained in the neighboring countries of India, Sri Lanka, Nepal, Thailand and Bangladesh. After the completion of medical college, doctors are posted to regional referral hospitals, district hospitals and grade I Basic Health Units (BHU). There are twenty districts in Bhutan with 31 hospitals and 23 grade I BHUs. A minimum of one General Duty Medical Officers (GDMO) is posted in the grade I BHUs and other aforementioned hospitals.

According to the Annual Health Bulletin 2017, Bhutan has 299 doctors (MBBS & Specialists) out of which many were undergoing studies outside the country<sup>2</sup>. Often, GDMOs are the first line doctors to attend to patients in cardiac arrest and initiate resuscitation until they get help from their consultants. Developing countries like Bhutan do not have standardized ACLS training or refresher training courses. ACLS/BLS trainings are not routinely conducted and are not one of the mandatory training requirements by Bhutan Medical and Health Council (BMHC).

### Knowledge, attitude and practices regarding ACLS

An interview conducted among 60 doctors, which included a mix of doctors working at regional referral hospitals, district hospitals and grade I BHUs, revealed that 86.67% had “good” knowledge

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on ACLS. Of this cohort, 23 had received prior ACLS training. Of the interviewed doctors, 53.00% had “good” attitude towards ACLS. Majority (85%) agreed that ACLS is a crucial training for all HCPs. The need for ACLS as a standard certified training requirement was agreed upon by 56.7%.

Among the 60 doctors interviewed, 25.00% reported “good” practice skills regarding ACLS. Majority reported the ability to create a tight seal during bag mask ventilation and the ability to open the airway of unconscious patients (94.7% and 84% respectively). Approximately 57% could perform high quality CPR. Only 16% had performed trans-cutaneous pacing for unstable complete heart block. The doctors who had received prior training in ACLS had better practice skills. Similarly, doctors working at the regional referral hospitals had better practice.

## Way forward

Knowledge and attitude regarding ACLS is good among doctors in Bhutan. However, practice skills in ACLS are lacking. While skills certainly need improvement, there is also always room for improvement with regards to knowledge and attitude.

One of the methods aimed at improving practice skills is the conduct of periodic training for doctors. There is a positive association between prior ACLS training and practice skills of doctors<sup>11</sup>. Students who had previous simulation training demonstrated immense superiority in ACLS knowledge and skills retention within 120 days of previous training compared to those who didn't get previous training<sup>12</sup>. With the increasing burden of cardiovascular diseases in the country, ACLS trainings provided to the GDMOs with timely refresher courses will result in better practice skills which in turn will lead to better patient care and outcomes.

There is also an urgent need to initiate surveillance of cardiac arrest in Bhutan so that an assessment of the major underlying causes can be made and management guidelines drawn up accordingly. Increasing public awareness of cardiac arrest and the use of public health interventions such as CPR and use of an Automated External Defibrillator (AED) when available, needs an urgent focus.

## CONCLUSIONS

A mandatory ACLS training with timely recertification for all relevant healthcare providers is strongly recommended. There is also an urgent need to initiate surveillance of cardiac arrest and improve public awareness on public health interventions such as CPR.

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