

Understanding CPR and the person who is morbidly obese

Increasing numbers of individuals who are morbidly obese, along with longevity among this patient population have raised a number of clinical questions such as: What is the best approach to provide cardiopulmonary resuscitation among individuals who possess a high degree of adiposity, irrespective of BMI?

The specific challenges as expressed in the literature are as follows:

1. What is the absorption of emergency drugs and therefore appropriate dosages?
2. Is a policy in place for IV access?
3. What is the depth of compressions necessary to circulate blood volume and medications?
4. What is the best way to maximize ventilations?
5. Is it possible to place a backboard; are provisions in place to apply the backboard?
6. Is a policy in place to intubate in the presence of $MMP \geq 3$ or neck circumference ≥ 16 ?
7. Is a critical bed available and what is the plan for transfer?
8. What is the risk of pre-oxygenation in the presence of chronic hypercapnia?
9. What is the weight limit of a bed frame holding the patient and any caregivers who find it necessary to use the frame as a platform?

The value of an interdisciplinary team to address the facility-specific challenges is essential. For example, a pharmacist who understands drug absorption and adiposity serves to provide the team with suggested doses of medications provided in a CP emergency.

Intravenous access can be difficult and delays can occur. This precludes use of IV drugs in a timely manner. An anesthesiologist or IV access team member will understand resources that facilitate placement of IV access in the face of difficulty.

Literature suggests compressions should be deep enough to circulate blood volume as evidenced by peripheral pulse (not likely in the presence of excess fatty tissue.) Some suggest a depth of 2 – 3 inches. This can be exhausting for caregivers and pose ergonomic threats.

Providing sufficient ventilation to raise the chest as with any patient irrespective of size is essential. Keep in mind, the lungs are not larger. In fact, the lungs may have less capacity because fatty tissue displaces pulmonary tissue and volume with fatty tissue.

Backboard placement is nearly impossible in a timely and safe manner. Some facilities choose to place larger individual on an air support surface when admitted. In this case, if compressions are necessary the surface can be deflated and the patient will be resting on an inch or so of foam and then the metal bedframe. Consider a procedure to protect workers from attempting backboard placement.

Intubation performed on an individual who has extensive fatty tissue around the neck and mouth is extremely difficult. Trauma at the time of intubation can cause further swelling of the region. Sample procedures for intubation and the obese person are available through professional anesthesia organizations. Policies, equipment and training are essential.

The critical care team must feel confident in either transferring the person to a higher level of care or creating a Universal Care room where the patient can be provided critical care without a transfer.

My opinion is that we fool ourselves if we believe CPR in the person who is obese can be performed safely and effectively by simply providing deeper compressions or more ventilatory volume (which is actually thought to be contraindicated.) In order to provide an ergonomically safe environment and to maximize the patients' chance at survival it is essential to have a plan in place to address both rapid response and Code Blue.

More Reading

Camden (Gallagher) S. Obesity: An Emerging Concern for Patients and Nurses. *OJIN: The Online Journal of Issues in Nursing*. 2009; 14, (1). Manuscript 1. Access at: <http://oijn.nursingworld.org/MainMenuCategories/ANAMarketing/ANAPublications/OJIN/TableofContents/Vol142009/No1Jan09/Obesity-An-Emerging-Concern.html>

Gil E, Na S J, Ryu J-A, et al, Association of Body Mass Index with Clinical Outcomes for In-Hospital Cardiac Arrest Adult Patients Following Extracorporeal Cardiopulmonary Resuscitation. *PLOS One*. 2017. Access at: <https://doi.org/10.1371/journal.pone.0176143>

Shahreyar M, Dang G, Bashir MW, et al. Outcomes of In-Hospital Cardiopulmonary Resuscitation in Morbidly Obese Patients. *JACC: Clinical Electrophysiology*. 2016. DOI:10.1016/j.jacep.2016.08.011