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**Title:** Difficult to wean patients after cardiac and thoracic surgery: Outcome results of a regional weaning center

Dr. Guido 26768 Vagheggini guidovagheggini@libero.it MD <sup>1,2</sup>, Dr. Eugenia 26769 Panait eugeniavlad@tiscali.it MD <sup>1,2</sup>, Dr. Adriano 26770 Di Paco dipaco69@gmail.com MD <sup>1</sup>, Dr. Stefano 26771 Mazzoleni s.mazzoleni@sssup.it <sup>2</sup>, Dr. Fabio 26772 Guarracino f.guarracino@ao-pisa.toscana.it MD <sup>3</sup>, Dr. Anna 26783 Zito annazito@msn.com MD <sup>1</sup>, Dr. Fabrizio 26787 Mezzasalma fabrmezza@virgilio.it MD <sup>1</sup>, Dr. Michela 26789 Digiorgio midigiorgio@alice.it MD <sup>1</sup>, Dr. Dewi 26808 Makhabah dewi.makhabah@gmail.com MD <sup>2</sup> and Prof. Nicolino 26815 Ambrosino nico.ambrosino@gmail.com MD <sup>1</sup>. <sup>1</sup> Weaning and Pulmonary Rehabilitation Unit, Auxilium Vitae Rehabilitation Centre, Volterra, Pisa, Italy, 56048 ; <sup>2</sup> Rehabilitation Bioengineering Laboratory, Scuola Superiore Sant'Anna and Auxilium Vitae Rehabilitation Centre, Volterra, Pisa, Italy, 56048 and <sup>3</sup> Intensive Care Unit - Cardiothoracic Department, University Hospital, Pisa, Italy, 56100 .

**Body:** To evaluate the outcomes of a cohort of prolonged weaning patients after thoracic and cardiac surgery, treated in a specialized weaning centre, we retrospectively analyzed characteristics and outcome of patients consecutively admitted to our regional Weaning Center (WC) since December 2007 to August 2012 (56 months). Among overall 585 patients (337 males, age  $70.7\pm11.7$ yrs, range 18.8-93.9yrs), 35 patients (17 males; age  $73.0\pm10.1$ yrs, range 43.4-86.2yrs) after isolated (valve replacement or myocardial revascularization) or combined (both) surgery were also admitted. Twelve patients had undergone emergency surgery; ICU Length of stay had been  $56.5\pm32.0$  days. Apache II score at WC admission was  $13.5\pm5.8$ ; SAPS score  $35.9\pm8.6$ , Charlson score  $6.8\pm2.7$ , PaO2/FiO2 242.2 $\pm88.1$ . The weaning success rate was 65.7% (23 patients), 20 of them being decannulated. Two patients were transferred to ICU for complications, and 6 patients (17.1%) needed prolonged invasive mechanical ventilation at discharge from WC. The WC length of stay was  $26.8\pm11.3$  days, the overall mortality rate was 11.4% (4/35). Lower weaning rate (7/16 vs. 16/19; p=0.03) and a tendence to higher mortality (3/16 vs. 1/19; p= n.s.) were observed in combined surgery group. Survival at 6 months is shown in Figure 1.

These results suggest the usefulness of dedicated weaning centers for difficult-to wean patients undergone cardiac surgery.