

Comparison of In-Line versus Conventional Independent Continuous Renal Replacement Therapy in Extracorporeal Membrane Oxygenation Patients

Nicole Stansbury

Taryn Samet MD

Tim S. Misselbeck MD

Lehigh Valley Health Network, Timothy_S.Misselbeck@lvhn.org

James K. Wu MD

Lehigh Valley Health Network, james.wu@lvhn.org

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Comparison of In-Line versus Conventional Independent Continuous Renal Replacement Therapy in Extracorporeal Membrane Oxygenation Patients

Nicole Stansbury¹, Taryn Samet¹, Rita Pechulis, MD², James Burke, MD³, Timothy Misselbeck, MD¹, James Wu, MD¹
 Division of Cardiothoracic Surgery¹, Division of Pulmonary and Critical Care Medicine², Division of Cardiology³
 Lehigh Valley Health Network Allentown, Pennsylvania

BACKGROUND

Extracorporeal Membrane Oxygenation (ECMO) is a treatment that provides support for critically ill patients experiencing pulmonary or cardiopulmonary failure. These patients are at high risk of developing acute kidney injury and often require additional treatment. Continuous renal replacement therapy (CRRT) provides constant management of renal functions and can be administered either in-line with ECMO or independently.

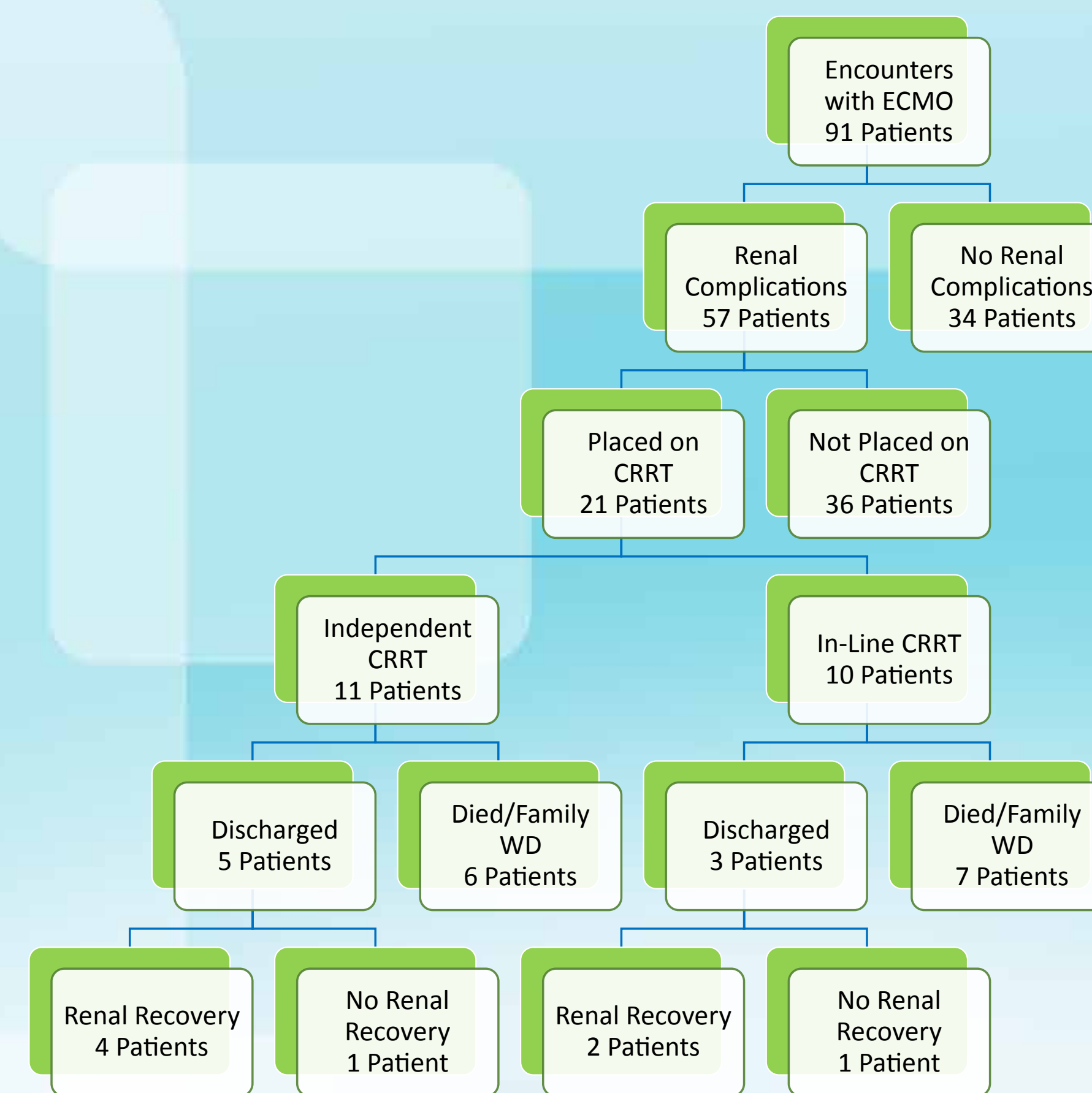
OBJECTIVE

This study seeks to determine if using the in-line CRRT technique provides comparable results to those using the conventional independent access.

METHODS

We evaluated ECMO patients from our in-house database for the years 2015 and 2016 at the Lehigh Valley Health Network who developed renal failure and required renal replacement therapy. We compared in-line vs. conventional independent access (IC) techniques.

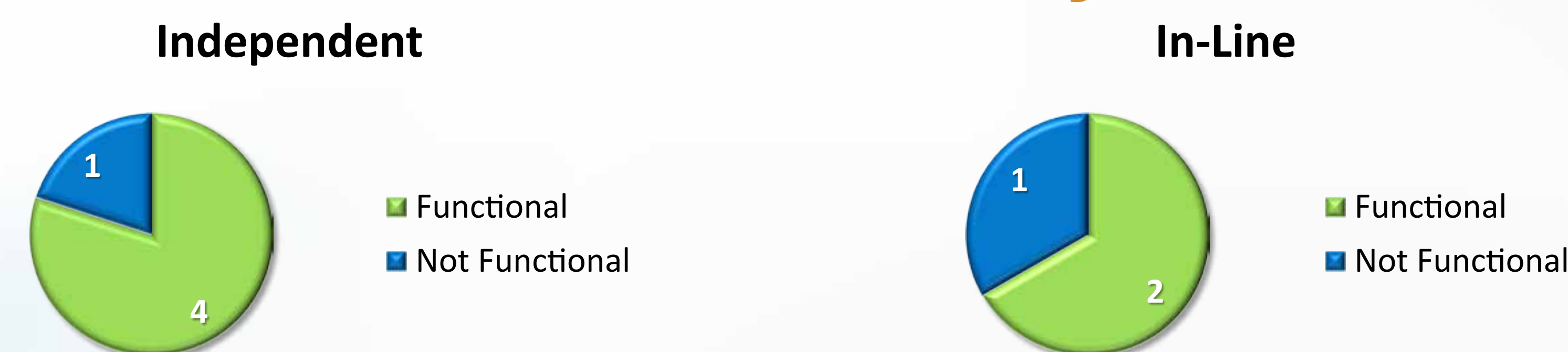
OUTCOMES



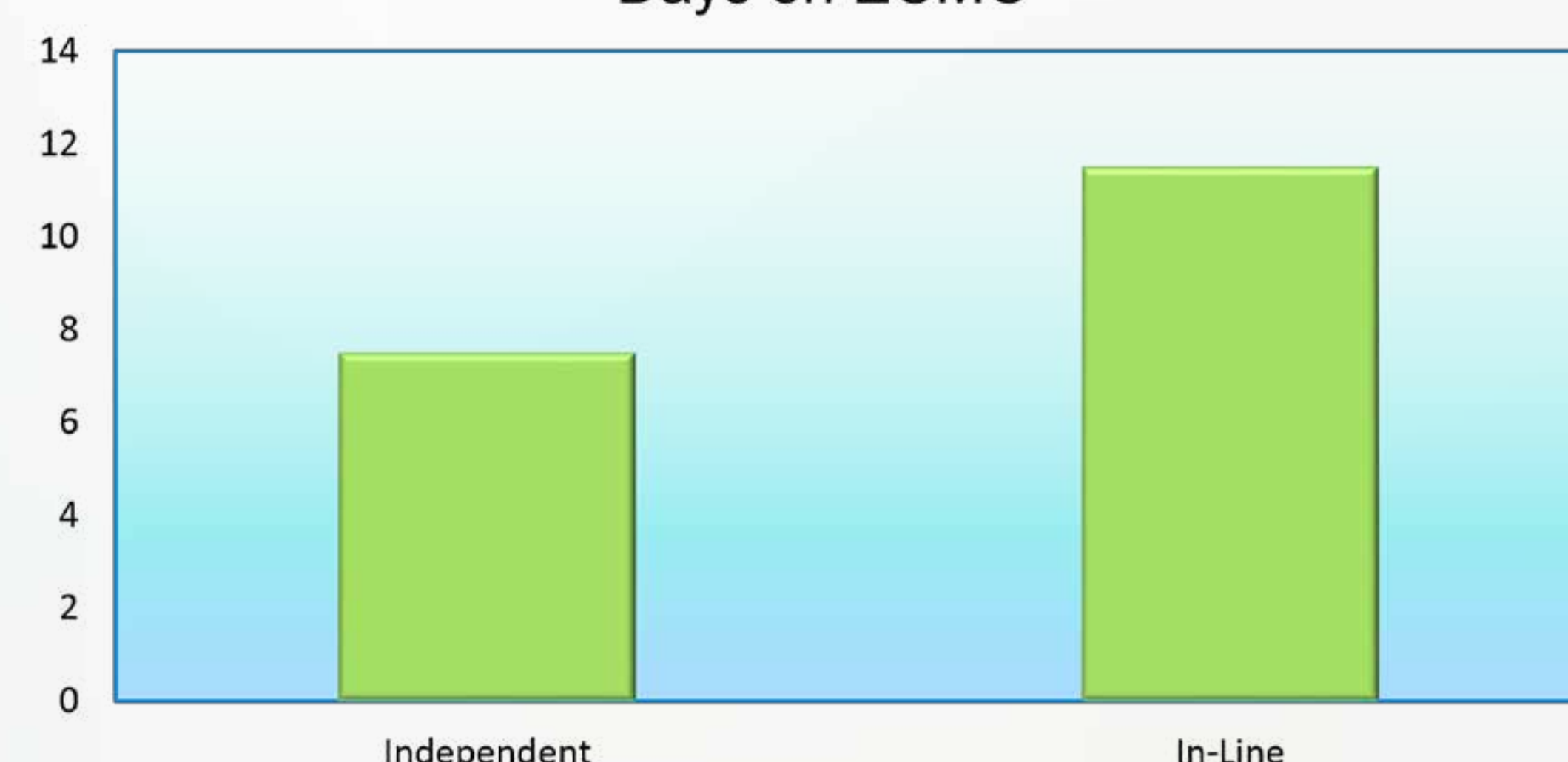
Discharge Rates



Renal Recovery



Days on ECMO



RESULTS

- Out of a total 91 patients, there were 57 patients with renal complications, and 21 patients required CRRT.
- CRRT was deployed with IC in 11 cases with a discharge rate of 45.5%, and in-line with the ECMO circuit in 10 cases with a discharge rate of 30%.
- Of the patients that survived, 2 out of 3 patients that underwent CRRT in-line with ECMO regained renal function and 4 out of 5 of the IC patients regained function.
- Patients that underwent CRRT independently spent an average of 7.5 days on ECMO, and patients that underwent CRRT in line with ECMO spent an average of 11.5 days on it.

CONCLUSIONS

Patients who required CRRT with in-line technique often were sicker and had more central access issues. This was reflected in the lower discharge rate and increased time on ECMO. The complications were not a direct result of the in-line technique, but were most likely due to various prior comorbidities. The patients that were discharged regained proper renal function. Therefore, the in-line technique was comparable to the conventional independent access.

References:

1. Brogan TV, Thiagarajan RR, Rycus PT, et al. Extracorporeal membrane oxygenation in adults with severe respiratory failure: a multi-center database. *Intensive Care Med.* 2009; 35(12):2105-2114.
2. Mayo Clinic Staff. "Acute Kidney Failure." *Mayo Clinic.* N.p., 5 June 2015. Web. 7 July 2016.
3. Pannu, Neesh, and RT Noel Gibney. "Renal Replacement Therapy in the Intensive Care Unit." *National Center for Biotechnology Information.* Dove Medical Press, June 2005. Web. 7 July 2016
4. Rodriguez-Cruz, Edwin, MD, Henry Walters, MD, and Sanjeev Aggarwal, MD. "Extracorporeal Membrane Oxygenation." *Medscape.* N.p., 16 Sept. 2015. Web. 11 July 2016.
5. Thiagarjan, Ravi R., MD, and Cindy S. Barrett, MD. "ECMO - Indications and Outcomes." *Society of Critical Care Medicine.* N.p., 2 Apr. 2011. Web. 11 July 2016.