**Introduction:** The traditional medical curriculum has consisted of basic science and clinical science years that address essential, but disparate, needs in medical education. Academic physicians strive to develop new treatments for disease by applying basic science advances to clinical problems. Resuscitation of cardiac arrest, as taught by Advanced Cardiac Life Support (ACLS), is a specific example of translating basic science evidence into clinical practice. The University of Pittsburgh medical curriculum requires that each fourth year medical student select one of seven courses, known as Integrated Life Science Selectives (ILS), that aim to illustrate how basic science is applied to clinical medicine. We developed a new ILS for medical students that would provide first-hand application of all steps in this translation.

**Methods:** A one-month elective for fourth year medical students was offered for the first time in the spring of 2004. The Science of Resuscitation ILS course consists of several components. At the beginning, students were certified in ACLS using a standard curriculum. Four days a week, students participated in a journal-club style small group session, where each day, each student presented an original research paper to the group. Papers were on the same clinical topic each day, and ranged from bench research to clinical trials. Moderators answered questions and modeled paper presentations. One day per week, students attended one of the following: a large-animal laboratory studying cardiovascular physiology, a small-animal laboratory studying brain ischemia, or the electrophysiology cardiology service. Throughout the course, manikin-based simulators were used to illustrate aspects of resuscitation practice. Students presented their own reviews of a clinical question at the end of the course.

**Results:** This new elective course filled all available student slots for the period offered. Based upon their readings, students developed their own guidelines for acute resuscitation and post-resuscitation management of adult cardiac arrest, and critiqued ACLS guidelines. During mock resuscitations in a patient simulator, students made significant changes in their prioritization and performance of core activities over the month. Students made cogent evidence-based assessments of a clinical question at the end of each class.

**Conclusions:** The Science of Resuscitation ILS course integrating basic laboratory, literature review, and simulation provides a new mechanism to teach evidence-based medical practice to students.