Abstract

**Introduction:** In June 2007 a CMS designated Rural Referral Center in North Carolina with 280 staffed beds initiated a high intensity critical care program. We present here the first five years of patient outcomes and financial information.

**Hypothesis:** The development of a critical care program staffed by intensivists would result in a favorable hospital return on investment and patient mortality.

**Methods:** An uncontrolled prospective observational study derived from billing data and outcome information from an APACHE IIB data base.

**Results:** In the first five years, 4,186 patients were admitted to the 12 bed ICU (71% occupancy) with an average APACHE IIB score of 19.41. The predicted ICU length of stay was 5.36 days, the actual ICU length of stay was 4.21 days. Using previously accepted estimates of cost, this 1.15 day reduction in ICU length of say equates to $7,697,180 in hospital savings. Program expenses included $279,000 for additional equipment and $4,310,419 to cover the shortfall between physician collections and expenses. With an ICU payer mix of 65% Medicare, 16% Medicaid, 12% Commercial insurance and 7% patient self pay the average charge per patient day was $290 and average reimbursement was $132 per patient day. ICU acuity has risen steadily since program inception with a mean monthly APACHE IIB score of 17.89 in July 2007 to 20.87 in July 2012. The incidence of respiratory failure requiring mechanical ventilation has been 45%. At the initiation of the program the Case Mix Index for the hospital was 0.9, after the first year this index rose to 1.4 and has maintained at that level. This increase is thought to be due to the increased acuity of ICU patients. This resulted in $3,000,000 in additional hospital revenue. The predicted mortality for these ICU patients was 32.83%, the actual mortality rate was 17.32%.

**Conclusions:** Five years after the initiation of a critical care program the hospital had a positive bottom line for the intensivist program of $6,386,761. The return on investment was 1 to 2.48. The estimated lives saved that were predicted by APACHE IIB to die was 649.
Introduction
• Published data is robust documenting improved patient outcomes in intensivist lead critical care programs.
• Financial outlay for initiation and maintenance of a high intensity critical care program are significant.
• Information as to actual financial outcomes are sparse.

Methods
• Actual ICU length of stay and mortality are compared with APACHE IIB database predictions.
• Hospital costs are based on Pronovost’s conservative estimate of $2,300 per ICU day and $800 per ward day (1).
• Physician billing, collections, salary, benefits, administrative costs and subsidy information were supplied by PCCA.
• 4,186 patients were admitted to this 12 bed ICU with a mean APACHE IIB score of 19.41, a mean ICU length of stay of 4.12 days and 17.32% mortality.
• Hospital expense for start up and maintenance of this high intensity critical care program over the first 5 years was $4,301,419.
• APACHE IIB predicted a mean ICU length of stay for these patients of 5.36 days and 32.83% mortality.
• Hospital savings from a less than expected ICU Length of stay was $7,697,180.
• An increase in the hospital case mix index occurred, attributable to the critical care program, resulting in $3,000,000 additional revenue.

Conclusions
• The initiation of a high intensity critical care program at this 280 bed community hospital resulted in a positive bottom line of $6,386,761 in the first 5 years, a 1 to 2.48 return on investment.
• A 15.5% less than expected mortality equates to 649 additional lives saved.

Reference
Results

To learn more about how The Intensivist Company can help improve your Critical Care services, contact us today at info@theintensivistcompany.com or call (800) 655-2656, ext. 317.