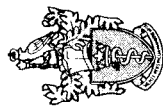


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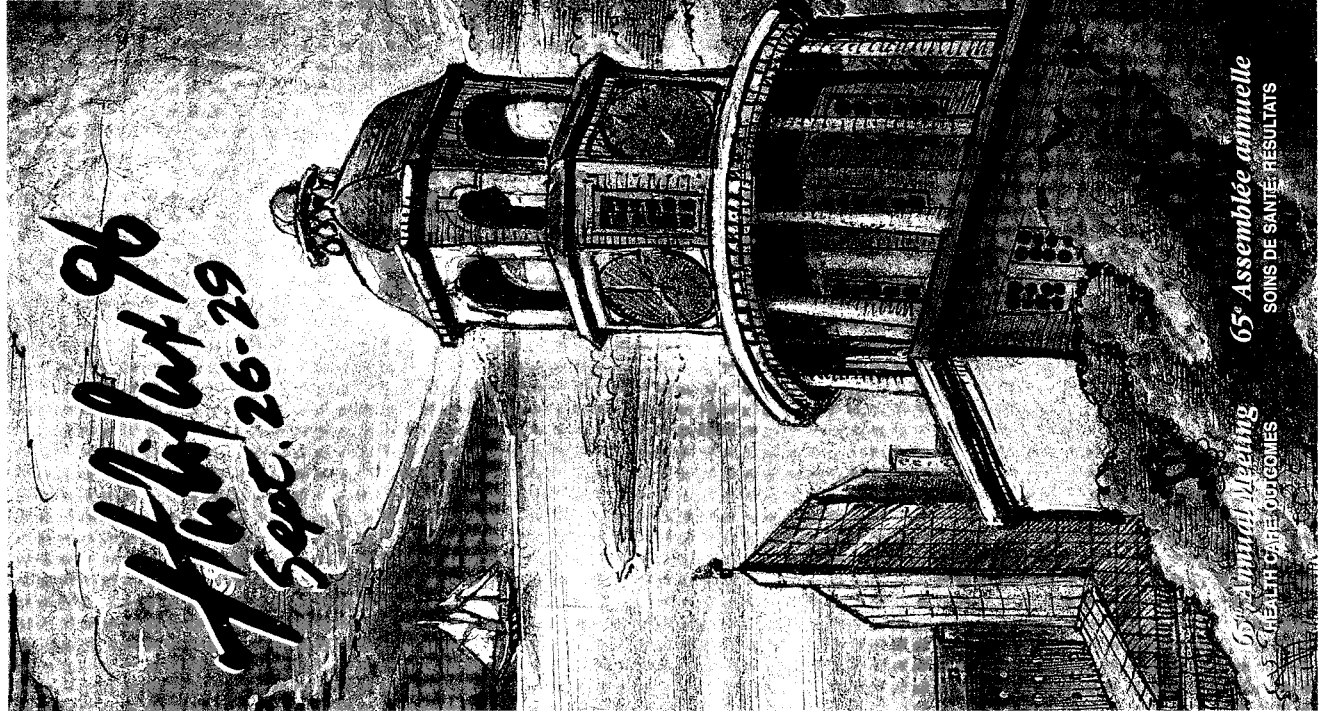
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Relationship Between Apache II Score and Combined Laboratory And Pharmacy Costs in ICU Survivors and Nonsurvivors

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Abstract

We attempted to identify and describe the relationship between resource consumption and patient acuity for ICU survivors and nonsurvivors. Selective information with respect to APACHE II scores, ICU survival and cumulative frequency and cost of 115 laboratory or imaging investigations and 85 pharmaceuticals were obtained from a prospectively maintained computerized database (Critical Care Manager 2.2) for 7,154 consecutive ICU admissions to a 10 bed medical and a 10 bed surgical ICU in a single institution over a 6 year period. Data with ranges are mean \pm SEM.

APACHE	ICU SURVIVORS		ICU NON-SURVIVORS	
	Number	Cost(\$)	Number	Cost(\$)
1-10	998	405 \pm 32	5	2295 \pm 1278
11-20	3506	668 \pm 21	179	2772 \pm 179
21-30	1316	1197 \pm 43	426	1584 \pm 91
31-40	209	1400 \pm 123	346	1038 \pm 119
over 40	15	927 \pm 274	154	646 \pm 61

Average costs were greatest in patients who defied their APACHE II predictions: those with low scores who died and those with high scores who survived. Most costs are expended in admissions with midrange APACHE scores (21 - 30), and in those who do not behave as predicted. It appears unlikely that prediction of mortality would be an important component of cost containment efforts.

Objective

To describe the relationship between resource expenditure and acuity for adult intensive care patients.

Method

Population Setting: 7600 consecutive admissions to a 10 bed adult medical and a 10 bed adult surgical intensive care unit in a single tertiary care hospital over a 6 year period.

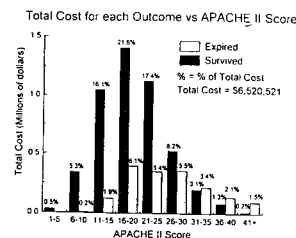
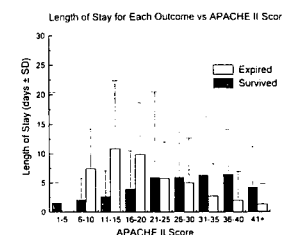
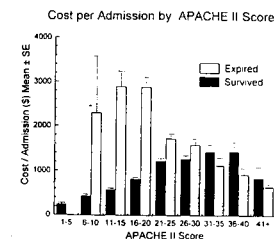
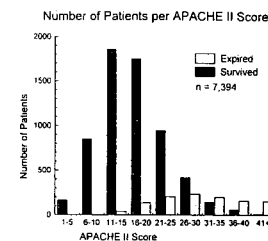
Data Collection

The following data were obtained for each admission:

- Demographic and diagnostic information as well as ICU survival.
- Worst APACHE II score in the first 24 hours of admission.
- Cumulative sum and cost of each of 115 laboratory or imaging investigations.
- Cumulative dose and cost of 85 pharmaceuticals.

Diagnostic Characteristics and Resource Expenditure for Patients Predicted to Survive by APACHE II Score who Expired

Diagnosis	N	%	Cost (\$)	%	Days	%
Post cardiopulmonary arrest	88	14.0	78,135	6.3	319.3	7.5
Septic Shock	68	10.8	284,489	22.8	646.8	15.2
Pneumonia	53	8.4	144,048	11.6	588.6	13.8
Subarachnoid hemorrhage	28	4.4	17,529	1.4	60.0	1.4
Cardiogenic shock	25	4.0	29,589	2.4	96.1	2.3
Head injury	23	3.7	19,092	1.5	46.8	1.1
Upper GI bleed	23	3.7	54,657	4.4	178.0	4.2
Abdominal aortic aneurysm repair	17	2.7	30,395	2.4	100.4	2.4
Total	630		1,246,103	52.8	4,265	47.9



Summary

- For patients who survive ICU admission, resource consumption per admission increases as acuity increases over most of the admission APACHE II score range (1 to 35).
- Patients with very high APACHE II scores on admission who survive do not have disproportionately high resource consumption or length of stay.
- For patients who expire in ICU, resource consumption per admission decreases as acuity increases over most of the admission APACHE II score range.
- Most expenditure in patients who expire in ICU (75%) occurs in patients with admission APACHE II scores between 11 and 30 where predicted survival was between 64% and 98%.
- Total expenditure in patients with admission APACHE II scores > 30 who have a greater than 50% probability of death in ICU and who eventually expire was only 8% of global resource consumption.