Reproduction

Poster Presentations / Présentation des affiches

64th Annual Meeting / 64e Assemblée annuelle

The Royal College of Physicians and Surgeons of Canada

in collaboration with

The Canadian Society

for Clinical Investigation

and participating societies

Le Collège royal des médecins et chirurgiens du Canada

en collaboration avec

La Société canadienne de recherches cliniques

et les associations participantes

September 13-17 septembre 1995

Montréal

Reproduction program managed by:
Programme de reproduction dirigé par:
Medical Poster Reproductions, Inc.
594 Middle Road • Bayport, NY 11705
(516) 472-2020

The Royal College of Physicians and Surgeons of Canada
In collaboration with
The Canadian Society for Clinical Investigation
and participating societies

Le Collège royal des médecins et chirurgiens du Canada
en collaboration avec
La Société canadienne de recherches cliniques
et les associations participantes

Plan to attend!

Soyez des nôtres!

774 promenade Echo Drive
Ottawa, Canada K1S 5N8
Tel: (613) 730-8177
Fax: (613) 730-8252

145
RC-85

Comparison of ICU Investigation Patterns and Costs in Two Urban Centres

A. Spanier, D. Bell, B. Verhoff, T. Ostryzniuk, M.J. Hoppensack, D.E. Roberts,
McGill University, Montréal, University of Manitoba, Winnipeg

A. Spanier, D. Bell, B. Verhoff, T. Ostryzniuk, M.J. Hoppensack, D.E. Roberts, McGill University, Montréal, University of Manitoba, Winnipeg

Comparison of ICU Investigation Patterns and Costs in Two Urban Centres

Abstract

We hypothesized that testing practices and resulting costs vary between tertiary care ICU's. Hospital A (HospA) has a 12 bed combined ICU and Hospital B (HospB) has separate 10 bed medical and surgical units. Demographic, APACHE II, TISS, length of stay (LOS), diagnostic data, and type and frequency of 86 laboratory or imaging investigations were compared between institutions for consecutive admissions during an 11 month period. A common cost list was used for both institutions, and data was normalized to an ICU day. 90% of all tests for both institutions were attributed to 23 frequently performed tests (FREQ; data reported as mean ± SD).

	Demographics		Test data (test/day)		
Hospital	A	B		A	B
number	911	1203	FREQ	20.1	14.8
LOS	3.5 ± 4.9	4.3 ± 7.1	Cost/day($)	143	94
APACHE	16.0 ± 8.4	19.3 ± 8.2	INFREQ	1.3	2.3
TISS	34.7 ± 13.0	34.9 ± 12.5	Cost/day($)	32	45

Although HospB had higher acuity, costs for the frequently performed 23 investigations were less at this hospital. This was due to fewer tests per admission and to lower percentages of admissions receiving investigations at HospB. Of the 23 FREQ tests, HospA costs exceed HospB costs for 14 tests by a total $54 per day. HospB had higher costs for 9 tests with a cost difference of $5 per day. This data suggests that monitoring and comparing testing frequency between institutions could be used to reduce costs and improve efficiency of care.

Objective

To compare laboratory and imaging investigation patterns and resulting costs in the adult intensive care units (ICU) of two urban teaching hospitals.

Method

Setting: **Hospital A** - A 12 bed level III adult medical and surgical ICU in the baseline data collection phase of implementing an information-based resource management program.

Hospital B - Separate 10 bed adult medical and surgical level III ICU's 5 years into the process of implementing an information-based resource management program.

Data Collection

We prospectively collected individual patient data for consecutive admissions over an 11 month period beginning March 1, 1994.

Demographic - Age, sex, admission diagnoses, length of stay, ICU survival.

Acuity of Illness - Worst APACHE II score in the first 24 hours following admission.

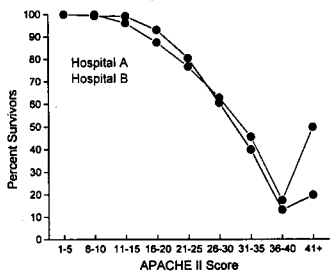
Intervention level - Daily TISS (Therapeutic Intervention Scoring System) for the first 5 days.

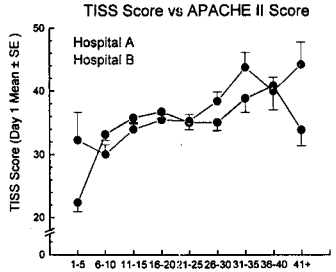
Resource Consumption - Frequency per admission of 86 laboratory and diagnostic tests.

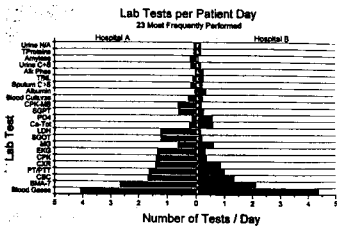
Costs were calculated using a combined cost list derived from averages calculated from independent cost analyses performed at each hospital.

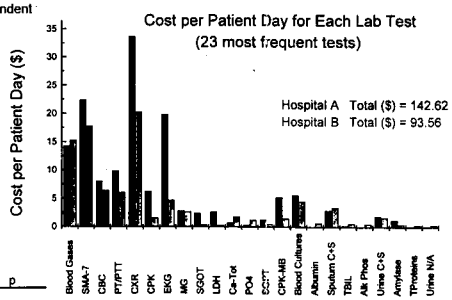
Patient Demographics

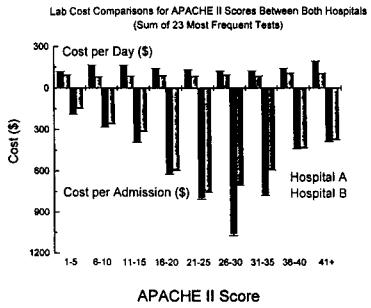
	Hospital A Total	Hospital B Total	p
n	911	1203	
Age (years)	64	58.2	p < 0.0001
Length of Stay (days)	3.5	4.3	p = 0.0036
Length of Stay adjusted for step-down unit	4.6		NS
APACHE II Score	16	19.3	p < 0.0001
First day TISS Score	34.7	34.9	NS
% Female	40.3	41.5	

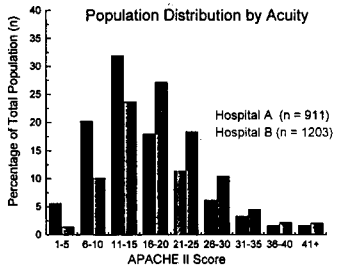


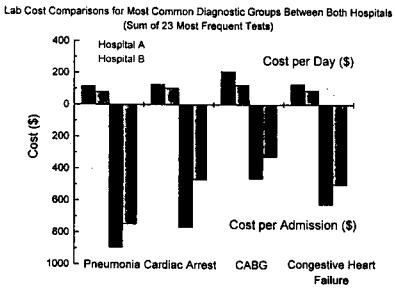












Primary Admission Diagnoses

		Hospital A		Hospital B		
		Incidence	% Total	Incidence	% Total	% Grand Total
1	Coronary Bypass Graft	239	26.2	170	14.1	19.4
2	Cardiac Arrest	45	4.9	88	7.3	6.3
3	Congestive Heart Failure	34	3.7	68	5.7	4.8
4	Pneumonia	32	3.5	62	5.2	4.5
5	Craniotomy	56	6.2	22	1.8	3.7
6	Septic Shock	23	2.5	44	3.7	3.2
7	Abdominal Aortic Aneurysm Repair	24	2.6	43	3.6	3.2
8	Upper GI Bleed	25	2.7	23	1.9	2.3
9	Cardiogenic Shock	14	1.5	31	2.6	2.1
10	Chronic Obstructive Lung Disease	19	2.1	17	1.4	1.7
11	Bowel Resection	19	2.1	15	1.3	1.6
12	Aortic Valve Repair or Replacement	7	0.8	26	2.2	1.6
13	Post-op Respiratory Failure	7	0.8	22	1.8	1.4
14	Subarachnoid Hemorrhage	4	0.4	19	1.6	1.1
15	Head Injury - other bleeds, non post-op	2	0.2	20	1.7	1.0
	Total Percent		55.7		60.4	57.7

Potential Impact of Hospital A Stepdown Unit

1) 422 of 911 patients spent an additional 1058.5 days in attached stepdown unit in Hospital A.

2) Additional laboratory cost per ICU admission would average $67.00 for Hospital A patients.

Hospital A	With Stepdown unit	Without
Cost / Admission	$555.00	$488.00

Summary

1) Outcome as assessed by ICU survival was similar in both hospitals when adjusted for acuity (APACHE II).
2) Hospital A demonstrated higher testing frequencies and costs per admission (20.12 vs 14.78 tests/day and $488.12 vs $399.39 per admission) despite a moderately lower mean APACHE II score (16.0 vs 19.3) and a shorter length of stay (3.5 vs 4.3 days) than Hospital B.

Conclusions

1) Our observations describe institutional differences in testing which cannot be explained on the basis of patient characteristics.
2) These differences appear to have no obvious effect on patient outcome.
3) Use of tests was consistently lower in hospital B regardless of the level of patient acuity or diagnosis.
4) Our findings suggest potential efficiencies in Hospital A could save more than $170,000.00 per year.