Cardiac Intensive Care on a Shoestring budget

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General principles

- In the 80s the ICU cost was 8% of total hospital expenses.
- At present time the ICUs are the most expensive part of any hospital, and can consumes up to 30% of the total hospital expenses in the USA.

In Colombia

- The Colombian government expends in health maintenance programs

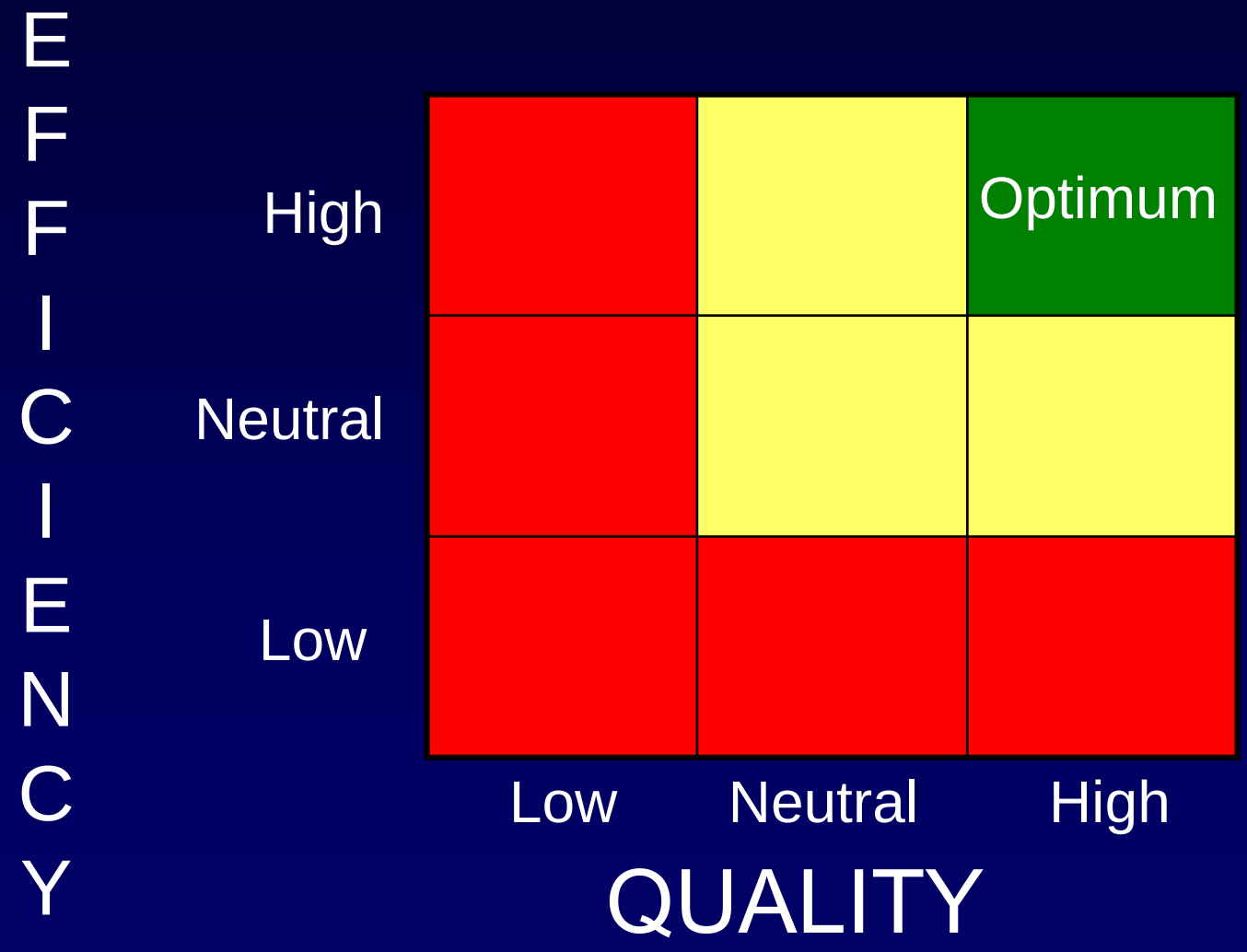
  US $ 500.oo habitant/year.
- The minimum wage in Colombia is

  US $ 250.oo/month

In the world

- Rationalization of costs is imperative, and cost containment measures have to be implemented in our ICUs, specially in not rich countries to continue giving good care to our cardiac patients with our limited resources.

Utilization of resources



Quality in CICU

- Structure
- Process
- Consequence

Quality

STRUCTURE

Are the resources and technologies that have been configured to give care.

It is no equivalent to quality

Quality

PROCESS

It refers to how the care is given, how do you measure de physiologic variables, how are drugs administered, how are the procedures done.

Quality

CONSEQUENCE

Is the final anticipated result, that presumably must be positive, like relieving the suffering or pain, increase in life expectancy or to survive a potentially fatal event.

Quality

- COMPLICATIONS
  - Nosocomial infections
  - Accidental extubations
  - Accidental catheters pulled out
  - Endotraqueal tube obstructions
  - Number of events related to the monitoring devices

Costs in CICU

- Fix costs

  Are those that independent of usage. (salaries, utilities)
- Variable costs

  Are those that change with patient volume. (pharmaceutical supplies)

Fix costs in CICU

1. Personnel
2. Equipments
3. Maintenance
4. State
5. Disposables
6. Education

Costs in ICU (1989-90)

COMPONENT	US $	%
MEDICAL SALARIES	163	26.8
NURSES	353	58.0
NON-MEDICAL PERSONNEL	9	1.5
STATE DEPRECIATION	2.7	0.4
MAINTENANCE (BUILDING)	3.8	0.6
DEPRECIATION AND MAINTENANCE MEDICAL EQUIPMENT	20.3	3.3
NON-DISPOSABLES	9.4	1.5
DISPOSABLES	47.0	7.8
TOTAL	608.2	100

García S, Ruza F, Alvarado F, Madero R, Delgado MA, Dorao P. Frías M. Analysis of cost in a Pediatric ICU. Intensive Care Med 1997; 23: 218-225

Fix costs in CICU- Shaio

COMPONENT	%
SALARIES MEDICAL AND NON-MEDICAL PERSONNEL	76.67
PUBLIC SERVICES	8.6
MAINTENENCE	3.32
DISPOSABLES	3.47
DEPRECIATION OF BUILDING AND EQUIPMENT	7.94
TOTAL	100.00

Variable costs in CICU

1. Pharmacy
2. Radiology
3. Laboratory
4. Ventilation
5. Special technology

Variable costs in CICU

Preparation of drugs

ANTIBIOTICS	TOTAL # DOSIS TMT	COSTS W/O PREP	COSTS W PREP	SAVED
OXACILIN	32	$ 12.000	$ 10.500	12.5 %
GENTAMICIN	4	$ 3.600	$ 2.700	25 %
VANCOMICIN	40	$ 172.680	$ 120.876	30 %
MEROPENEM	40	$ 726.400	$ 363.200	50 %
CEFAZOLIN	12	$ 27.600	$ 11.500	58 %
AMIKACIN	10	$ 75.000	$ 22.500	70 %
AMPICILIN	30	$ 201.000	$ 50.920	74 %

Variable costs in CICU
Preparation of drugs

	W/O PREPARATION	W PREPARATION
LEVOSIMENDAN	US $ 1.200	US $ 200 For patients less than 10 kilos

Costs in CICU

time expend in preparation of drugs

	NURSING	PHARMACY
DAILY PREPARATION TIME	**1.3 MINUTES IN PREFILLED SYRINGE WITH ANTIBIOTIC**	**0.5 MINUTES IN PREFILLED SYRINGE WITH ANTIBIOTIC**
TOTAL TIME EXPENDED PREPARING DRUGS	**1725 MIN = 28 HOURS = 1.2 DAYS = 4 WORK SHIFTS OF 6 HOURS DAY**	**663 MIN = 11 HOURS = 0.5 DAYS = 2 WORK SHIFTS OF 6 HOURS DAY**

NURSING TIME SAVED 45%

Costs in CICU

Reduction of costs

- Fast track ?

Anesthesiology 2003; 99:982–7

A Systematic Review of the Safety and Effectiveness of Fast-track Cardiac Anesthesia

Paul S. Myles, M.B.B.S., M.P.H., M.D., F.C.A.R.C.S.I., F.A.N.Z.C.A., David J. Daly, M.B.B.S., F.A.N.Z.C.A.,†*
George Djaiani, M.D., D.E.A.A., F.R.C.A.,‡ Anna Lee, B.Pharm., M.P.H., Ph.D.,§
Davy C. H. Cheng, M.D., M.Sc., F.R.C.P.C.‖

In conclusion, this systematic review found no evidence of increased mortality or morbidity rates with FTCA techniques using lower opioid dose regimens when compared with traditional high-dose opioid techniques. Because of the known cost benefits of FTCA combined with concomitant changes in operating room scheduling and ICU nurse staffing,

Costs in CICU

Reduction of costs

- Fast track

  Reduces variable costs, but the fix costs are the same (nurses, doctors, building, public services, etc.).

  It has the benefit of increasing the rotation of beds in the ICU, reduces the risk of nosocomial infections (wound and related to mechanical ventilation)

Costs in CICU

Reduction of costs

Physician-attributable Differences in Intensive Care Unit Costs

A Single-Center Study

Allan Garland, Ziad Shaman, John Baron, and Alfred F. Connors, Jr.

Am J Respir Crit Care Med Vol 174. pp 1206–1210, 2006

Conclusions: There are large differences among intensivists in the amount of resources they use to manage critically ill patients. Higher resource use was not associated with lower length of stay or mortality.

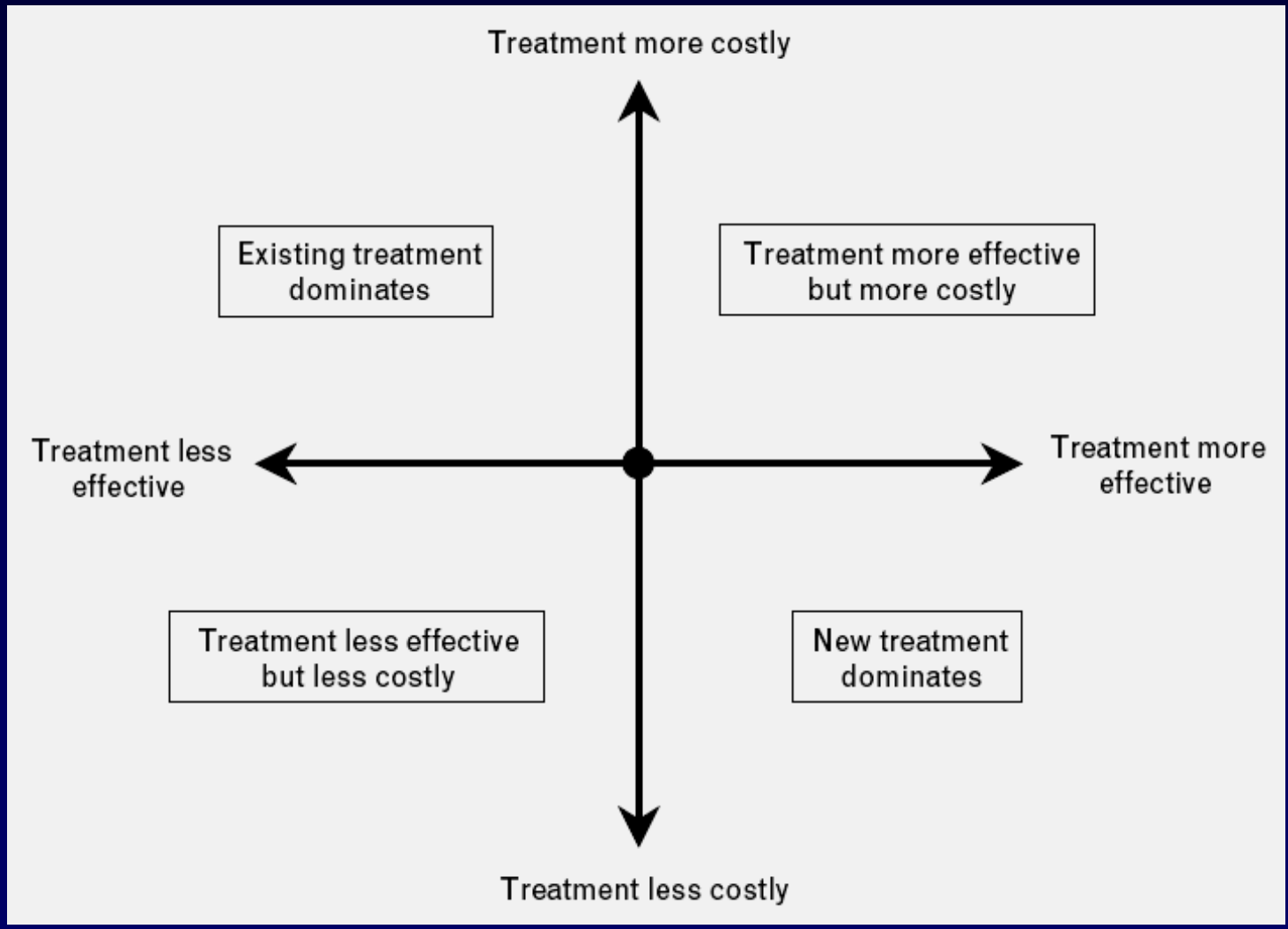
Reduction of costs in CICU

- Avoid unnecessary exams (routine daily chest X-Rays, daily laboratory work out, unnecessary arterial blood gases)
- Develop general management guidelines for the most common pathologies

Reduction of costs in CICU

- Protocols for most frequent procedures
- Protocols for the preparation of some non-emergency drugs
- Preparation of drugs in the pharmacy in single dosages.
- Reduce waste.

Cost effectiveness



Kahn, JM. Curr Opin Crit Care 2006;12:399-404

We are not rich enough to buy cheap goods.

Abood Shaio

Cardiac intensive care can be done on a shoestring budget