Development of a regional ICU database for longitudinal ICU performance monitoring:

Summary and Way forward

HA Convention

15 May 2013

The presentation

- Contain two parts:

  - Summary of what we have achieved
  - Experience sharing from management perspective, consider the lessons to be learnt (Briggs, 2001)

Our Challenges

- ICU is the most expensive, technologically advanced and resource-intensive area of medical care.

- The service is so scarce and it is usually only offered to those whose condition is potentially reversible and who have a good chance of surviving with intensive care support.

- Since the critically ill are so close to dying, the outcome of this intervention is difficult to predict.

Methodology

- Case mix : heterogeneity in the ICU patients' severity of illnesses

- Differences across institutional settings

- Risk-adjusted model to tackle the confounders

- APACHE (Acute Physiology and Chronic Health Evaluation) was chosen as the standard tool and validated benchmark index for ICU outcome prediction and performance assessment
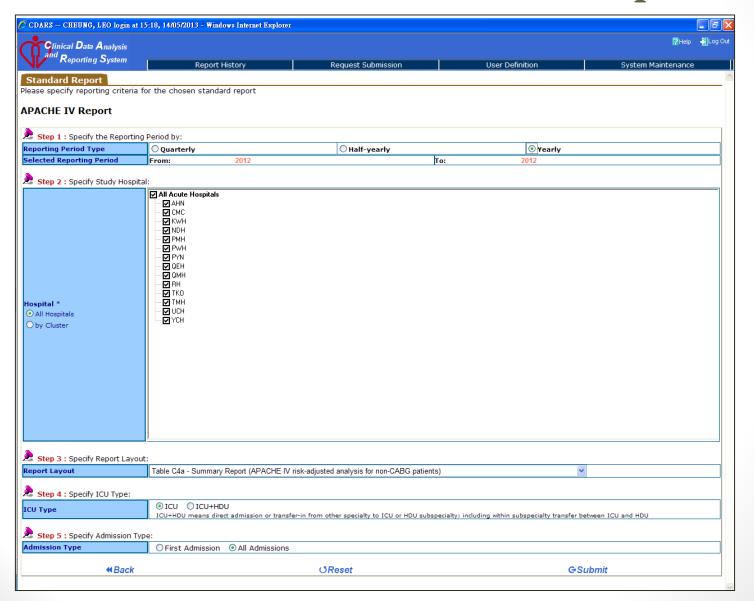
Milestones

- 2007: with the support from the Head Office IT and Statistics Departments, an *APACHE data entry interface* with extensive built-in logic and data check was built in the HA Clinical Management System (CMS)

- 2008: APACHE IV (the latest version of APACHE) *score calculators* to do the back end score calculation

- 2008: User-friendly prognostic *score reporting function* was added in the Clinical Data Audit and Research System (CDARS)

- 2009: *Designated ICU data collection team* was set up to alleviate the ICU frontline clinical staff's workload in data collection and data entry

CMS APACHE Form

CDARS APACHE Standard Reports

Milestones (2):

- 2011: Local benchmarking by using 2007 to 2011 data
  - The performance fluctuation spotted was fed back to the individual ICU and hospital management for the respective exploration and service improvement.

- 2012: Benchmark HA ICU data with about 200 ICUs in the UK (collaboration with the Intensive Care National Audit and Research Centre, ICNARC) with recalibrated APACHE model

Benchmarking

- Is best suited to high-performance companies that are attuned to the need to adapt to best practice

- To address exceptional events or performance

Example

HA's ICU Risk-adjusted Outcome in 2007 to 2011

Example (cont'd)

- Good practice observed in a unit with consistent good performance:

1. All team members work and cooperate together with **high morale**
2. Adopted the hospital approach of **Crew Resource Management** to improve patient safety
3. Promoting **learning culture** within the department
4. Successful implementation of ICU Clinical Information System (**CIS**). Medication incidence has decreased dramatically since implementation.
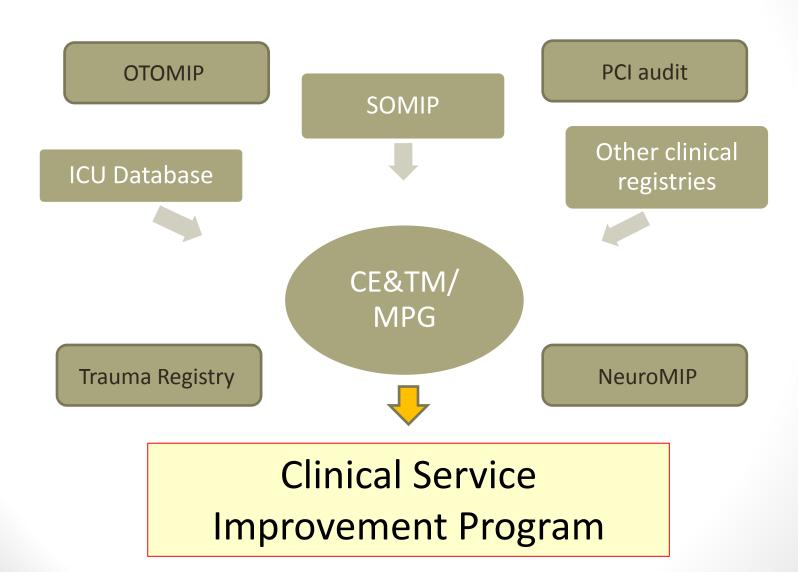
Our sharing...

- Everything talking about resources:
  - IT system development (time and money)
  - Data collection (technology and manpower)
  - Data analysis (expertise, other contextual information)
  - Data reporting (sensitive to the political context of the public reporting process)
  - *How can these be sustainable? By what way?*

- Useful for Service planning
  - Can it tell good pattern of service delivery?
  - *E.g. How many ICU should we have?*
  - *E.g. How many beds should an individual ICU has?*

Reviewing Organisational Performance

- Griffith & Alexander (2002):
  - Clear strategic guidance, leadership and planning are essential, particularly when alternative targets compete for limited resources

  - This is especially critical for uniting existing and new improvement activities into a systematic, organisational-wide approach.

Way forward

Acknowledgments

- COC (ICU)

- HO Statistics & Workforce Planning

- HO Health Informatics and IT