

2013

Business & Management: International Perspectives
on Healthcare Technology Management (Part 1)

*The Maintenance of Medical Equipment
by Clinical Engineers*

-The Importance of Clinical Engineers in Hospitals-

Jun yoshioka

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Japan Association for Clinical Engineers (JACE)

Background

Past presentations at AAMI's conference

2010

“The Challenge of the Next Generation of Medical Equipment from the CE’s Perspective”

Kiyoshi Matsusaka, AAMI 2010 Conference & Expo (Tampa FL)



2011

“Clinical Engineers System in Japan and New Basic Job Guidelines 2010”

Kiyoshi Matsusaka, AAMI 2011 Conference & Expo (San Antonio, TX)



2012

“Defining the Role of the Medical Equipment Safety Manager”

Kiyoshi Matsusaka, AAMI 2012 Conference & Expo (Charlotte, NC)



Outline

Healthcare Technology Management

- ▶ YAMAGATA UNIV. HOSPITAL

Department of Clinical Engineering

- ▶ Safety Management **In Japan**

Common method of maintenance of medical equipment

- ▶ The benefits of having Clinical Engineers

Example of a mechanical ventilator, ME rack

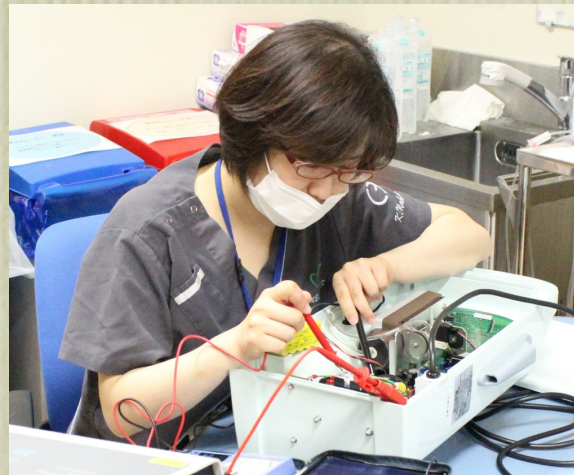
- ▶ The Unique Device Identification System

We hope to build the UDI system

YAMAGATA UNIV. HOSPITAL *Department of Clinical Engineering*

Business Operations

- *Extracorporeal circulation*
- *Blood purification*
- *Hyperbaric oxygenation*
- *Maintenance*
- *Education*



Safety management

Technological Developments

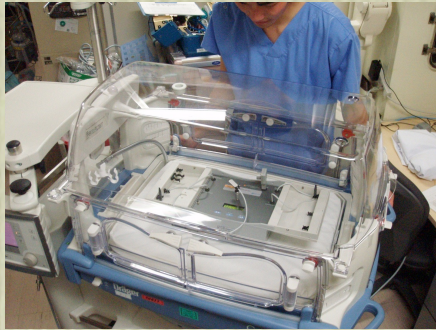
Technological developments have led to significant improvements in the performance of more advanced models.

⇒ *More complicated circuitry among numerous CPU boards and sensors.*

⇒ *More possible weaknesses leading to breakdowns.*

Increased special maintenance of medical equipment is necessary.

Incubator Analyzer



Defibrillator Analyzer



Mechanical Ventilator Analyzer



*Various
Analyzers*

The inspection of medical equipment is evaluated using various analyzers.

Replacing faulty parts in house at our department contributed to more prompt responses and less repair costs.

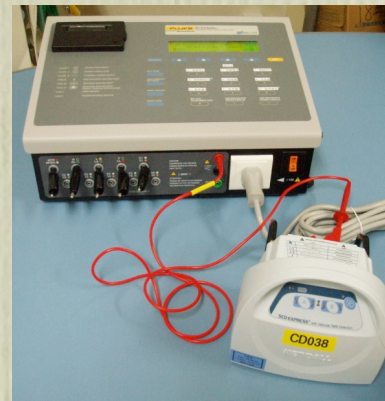
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Infusion Device Analyzer



External Pacemaker Analyzer



Electrical Safety Analyzer



Electrosurgery Analyzer

Focus point

Clinical engineers maintain medical equipment-

- Specifically by those who can use a specialized analyzer.

Clinical engineering has decreased medical equipment failure which exposes patients to potentially harmful risks.

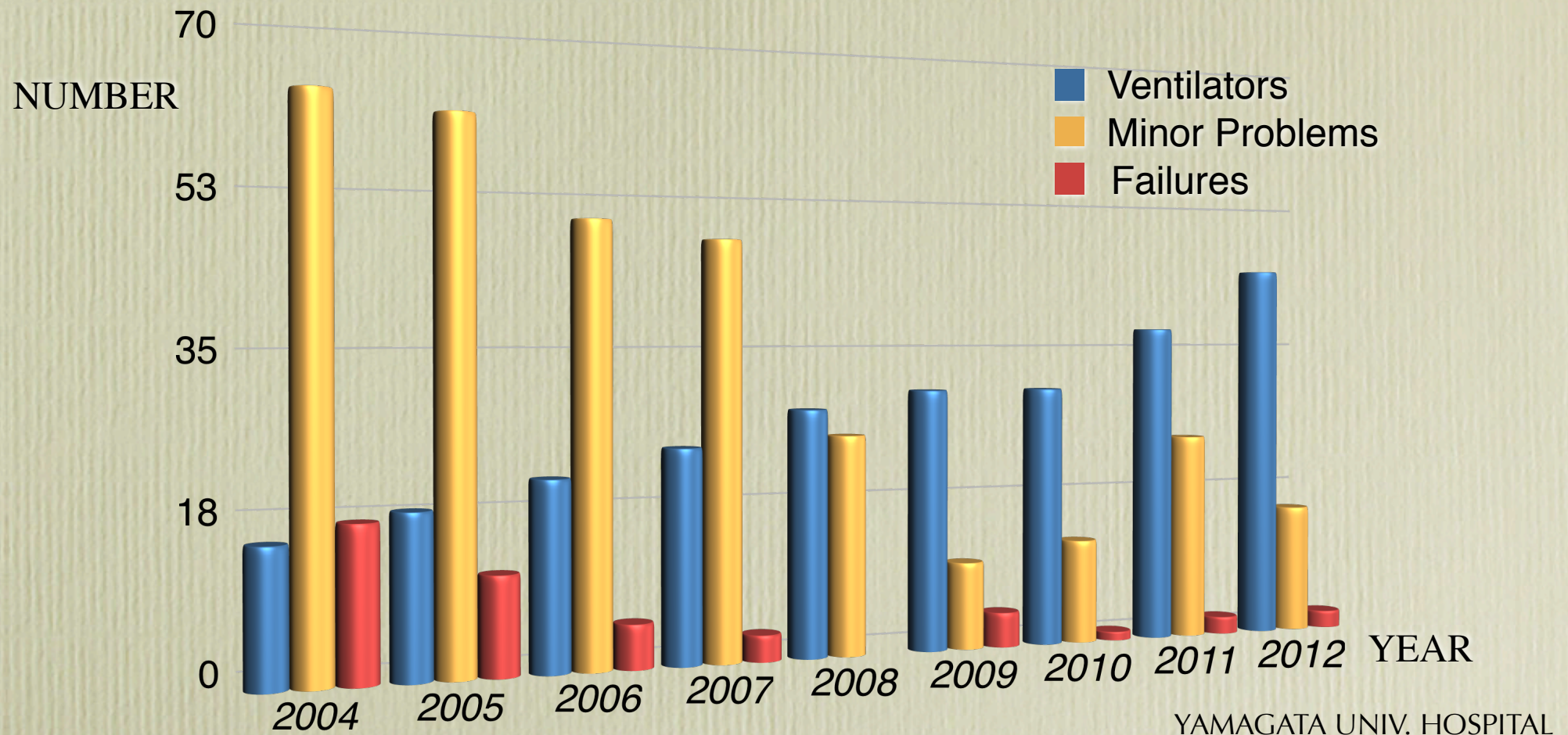
The benefits of having Clinical engineers

Example of a mechanical ventilator

*[Purpose] The usefulness of maintaining ventilators by Clinical Engineers was studied. [Methods] We evaluated 30 ventilators, with accuracy measured **2500** times using the PTS-2000 (Mechanical Ventilator Analyzer) during after-use inspections. Faulty mechanical ventilators were repaired by calibration and by replacing sensors, circuit boards, and so on.*



The Number of Ventilators, Minor Problems, and Failures



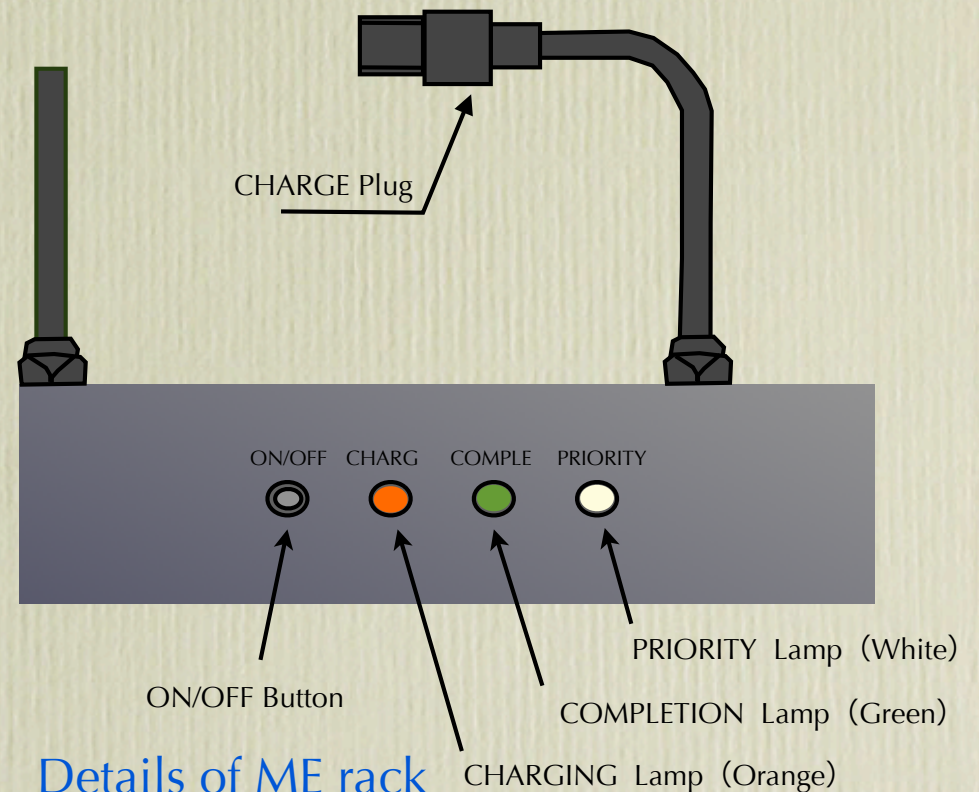
*The involvement of CEs in maintaining ventilators
has ensured safe management.*

Development

Development of ME rack

An efficient battery charging management system for battery equipped medical equipment.

Jun Yoshioka et al. Journal of Japan Association for Clinical Engineering Technologists (2012)

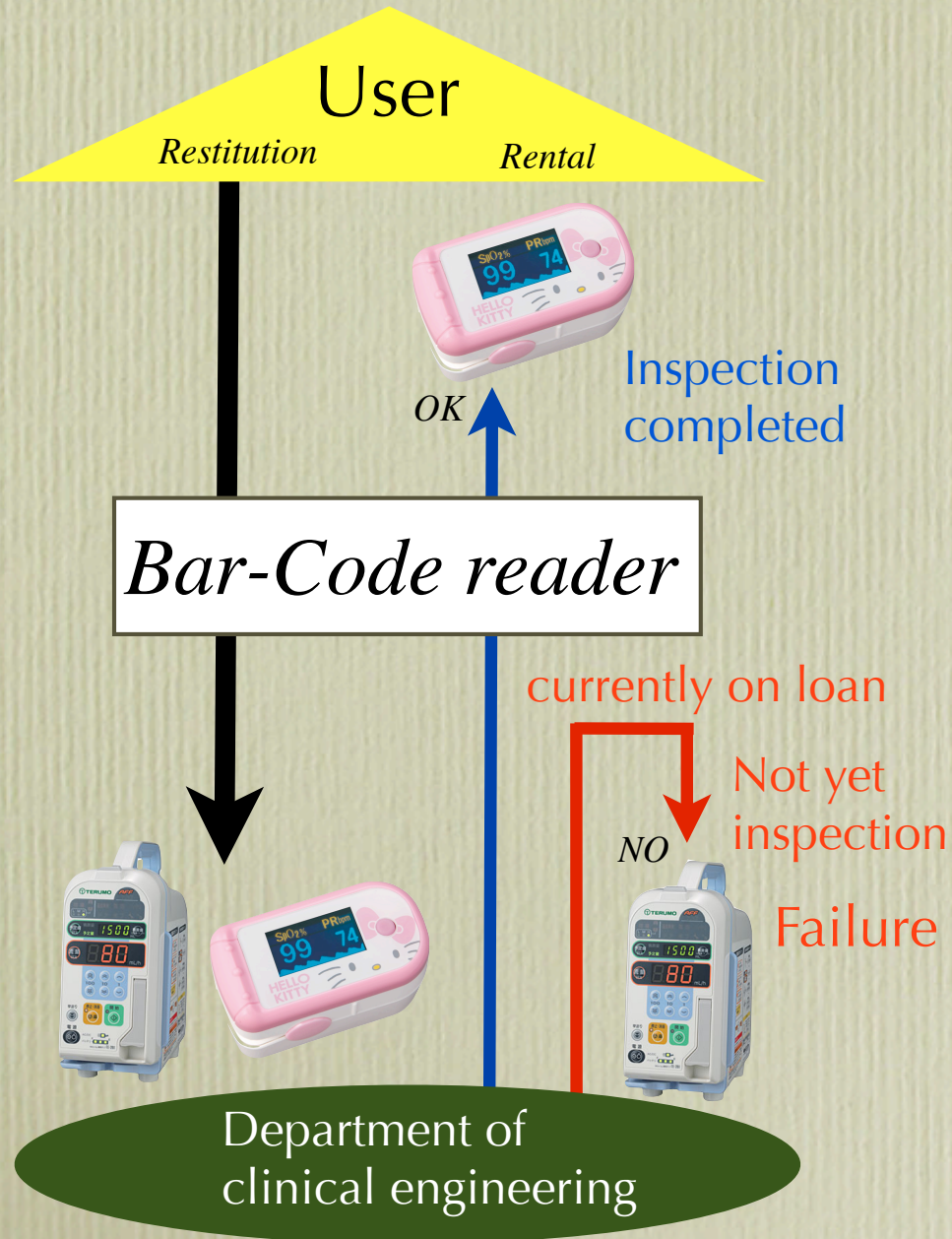


ME rack



First In First Out
F *I* *F* *O* *System*

An original management ledger of individual medical equipment

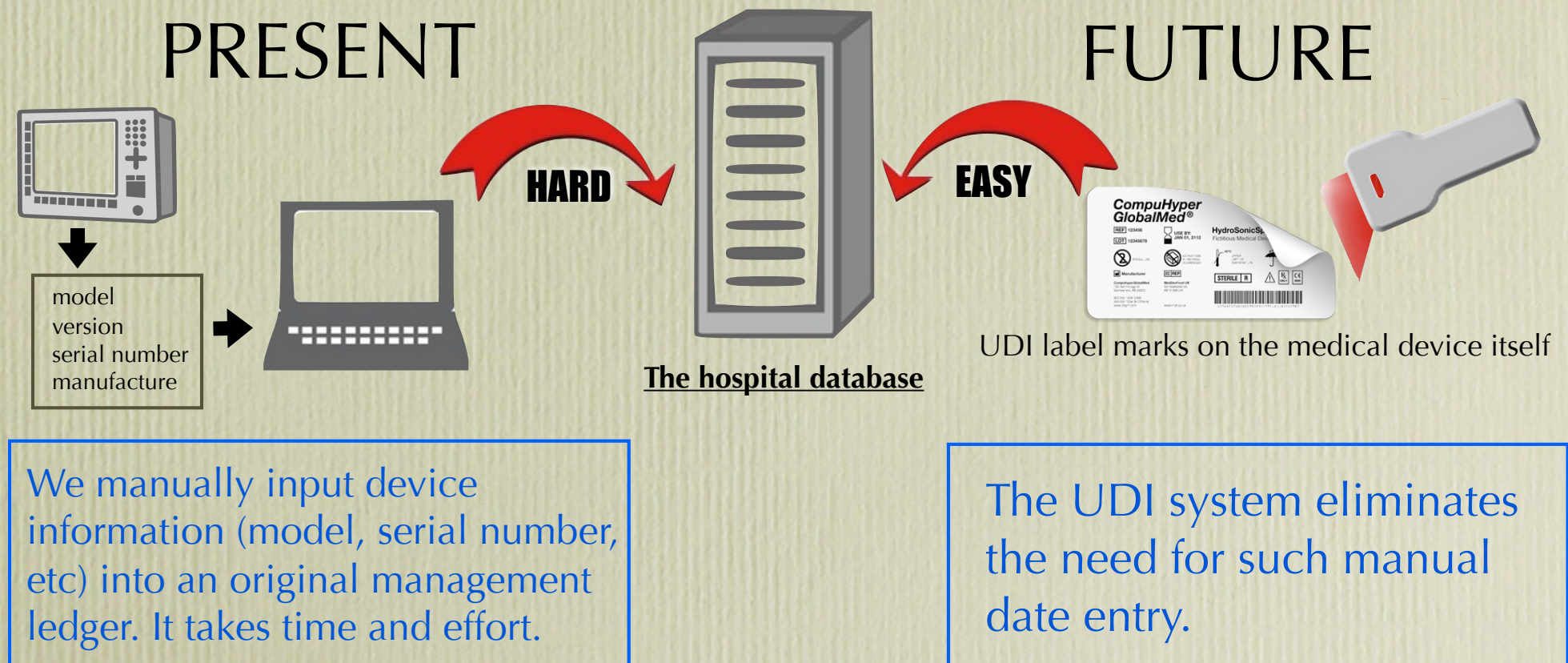


The management ledger tool scans the barcode and provides us with complete medical equipment management

The Unique Device Identification system

UDI

Simplify the Integration of Device Information Into Data Systems.



We believe that the utilization of UDI in the clinical field is effective.

Reduce Medical Errors

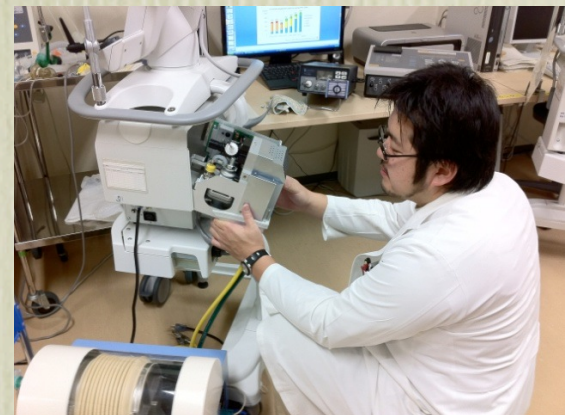


The UDI system will remove possible confusion and inappropriate usage of medical devices. (e.g., a device failure, wrong patient, different material, different medicine, or user ID)

We hope to build the UDI system for a safer and more effective therapy treatment.

- ▶ *Clinical Engineers are an essential profession for the safe operation of medical equipment.*
- ▶ *Clinical engineering has decreased medical equipment failure which exposes patients to potentially harmful risks.*

Conclusion



END

Yamagata Prefecture

