

# “Efficient” Operating Room Management

“by use of balanced scorecards to control and guide  
operating room management”

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# 1. European – US difference in operating room management

- Arrangement literature: US +++++
- “OR Manager”: [www.ormanager.com](http://www.ormanager.com)
- Franklin Dexter (Iowa): [www.franklindexter.net](http://www.franklindexter.net)
- American Association of Clinical Directors: [www.aacdhq.org](http://www.aacdhq.org)
- Economics of Operating Room Utilization
  
- Impact of technical advances < changes in health care economics
  - Current medico-economic environment
    - Failure of government policy
      - Widespread development and implementation of latest technology
    - Role of physicians: evidence-based practice ??
      - To determine where health care dollars could be best spent
      - Medical education: little, if any, cost containment or accountability training
    - Society: unrealistic expectations regarding health care
      - “all diseases can be cured” and “all outcomes should be good”

- Cost analysis: Terminology ???
  - Direct costs (fixed / variable)
  - Indirect costs (fixed / variable)
  - Intangible costs
- Cost analysis: Models
  - Cost identification (+++)
    - Actual cost of providing a service
  - Cost – benefit (-)
    - Outcome: valued in economic terms
    - objective : minimize the cost to achieve a benefit goal defined “a priori”
  - Cost – effectiveness (++)
    - “how to best allocate limited resources”

# Categories of OR costs

<u>Type of cost</u>	<u>Definition</u>	<u>Example</u>
Fixed	Costs incurred regardless of volume	Buildings
Variable	Costs incurred at rate directly related to volume	OR Supplies Anesthetic drugs
Semivariable	Costs with both fixed and variable characteristics	OR nurses

☞ OR time is OR money ...

- Wake Forest University Outpatient Surgical Center (F. Dexter)
  - 50 working weeks a year
  - 14.000 OR hours available (based on 8 hours a day)
  - Or 840 000 OR minutes available for surgery
  - Actual utilization rate: 78 %
  
- When all costs are allocated, total cost per minute of OR time: 14.28 \$ a minute

# “Total OR activity costs”

## F. Dexter

- Every minute of OR time used or un-used is the main determinator
- Every available minute of OR time should be optimally utilized in order to guarantee optimal OR utilization
- ☞ Efficient use of OR time is the major factor of total OR activity costs

## 2. Characteristics of the “OR”

- Multidisciplinaryity +++++
- “Protected” environment
  - “The OR suite seems to be an inner sanctum to itself adhering to its own rules”*
  - WR Hopper 2003
- Important investments +++++
  - up to 20% of total hospital budget
- Important financial source for total hospital
- Structure of direction of the OR???
  - historical allocation of OR to the surgeon
- Definition of objectives to be obtained???
- Conflict of different interests

### 3. “Rules” for daily OR Management

- OR board of directors
  - with hospital direction
  - representatives of “all” different parties responsible for OR “protocol”
  - resolution of conflicts/issues
  - balanced scorecards
- OR protocol
  - allocation of OR suites
  - issues of holidays
  - rules for urgent / semi-urgent procedures...
- Clear structure of OR organization... for “all” parties
- OR board of directors
- OR protocol
- Clear structure of OR organization...
  - who should be the “OR Manager”?
  - medical issues / nursing issues
  - balanced scorecards – objectives
  - open communication



## 4. Pivotal role of information systems

### OR information systems

- optimal OR efficiency by optimal utilization of every available OR time
  - Electronic scheduling of OR procedures
  - Daily management of OR activity
  - Posthoc evaluation of OR activity by analysis of all registered data in balanced scorecards

## OR Information Systems

- electronic scheduling of all OR procedures  
= “getting the schedule done”
  1. Create a realistic elective schedule
    - open versus block booking
    - block release time
    - real-time-based schedule
    - accurate listing of procedures
  2. Getting the schedule done = planning the day before

- Benchmarking the peri-operative process ...

What have we learned ???

Procedural Times Glossary (Association Anesthesia Clinical Directors)

Case Time = time from start of room set-up to completion of room clean-up

Resource Hours = total number of hours scheduled to be available for procedures

Room Ready = time when room is cleaned and all supplies are present

Start Time = patient in room

Turnover Time = time from previous patient out of room to succeeding patient in

## Introduction of an OR Information Management System

- Operating Room Scheduling and Management Information System
  - Since January 2001
  - ZOL : 17 operating theatres / 3 different locations
  - Operation Room : part of the Yuse Matrix Box = integrated cross-department software package for hospital's primary care processes
  - Yuse Operation Room : 3 major parts
    - Centralized electronic scheduling of all OR procedures
    - Daily management of all OR activity
    - Posthoc balanced scorecards

## Introduction of ORM-m in ZOL

- Scheduling of OR procedures
- User friendly
- Fast and accurate data entry and access
  - unique patient identification
- Allows block scheduling
  - = scheduling of OR cases within predictable availability of the OR
  - dead-line for scheduling ?
  - what about emergencies ?
  - combination of block and “open” scheduling with deadline 36 hours before
  - after deadline : not-scheduled interventions + urgent interventions

- Has a visual grid of OR time allocation  
visualization of total OR availability  
holidays, 100% or 75% availability ?  
Planning day before surgery ...  
by OR manager
- Uses and processes historical data (case time)  
registration of case time for OR procedures  
case time = from start of room set-up to completion  
of clean-up  
.... from patient IN room to patient OUT room ??? ....  
local OR organisation ? ....  
not for pts with postoperative referral to ICU ? .... What about  
case time vs surgical time ? .... What about  
turnaround times ?

## Introduction of ORM-m in ZOL

- Balanced Scorecards
  - block utilization (%)
  - room utilization (%)
  - case (procedure) time (/surgeon)
  - real vs estimated case time
- overall OR times :
  - between call and arrival in OR
  - between arrival and room IN
  - turnaround times
  - cancellations
  - OR activity inducing extra staffing costs
  - emergencies / non scheduled procedures

## Balanced Scorecards

- block utilization

YUSE

Block-Occupation (realized) ZG 2001-1  
mean occupation : 95.7%

## Example of use of balanced scorecards :

- Comparison of “performance” or “efficiency” of all OR activity for elective daycase abdominal surgery for 2000-1 to 2001-1
  - No urgent or semi-urgent procedures : only scheduled procedures

	2000	2001
total available OR time	805h	805h
Operative procedures	764	815

- 6.6% increase in number of performed procedures

At what expenses ???

	2000	2001
Total available OR time	805h	805h
Operative procedures	764	815
Total duration of OR procedures	1044h50min	1127h35min*
Total excess time	147h20min	123h04min*
Total unused time	46h45min	35h21min*

- -16.3%\* excess OR time

excess time defined as realized OR time exceeding the normal limits of OR activity, and inducing extra costs for nursing staff

normal OR time at our institution : 8.00 AM to 4.30 PM

excess time : OR time > 4.30 PM



- OR activity for elective abdominal surgery for 2001-1
  - 6.6% increase in number of performed procedures

### At what expenses ???

- -16.3%\* excess OR time
- -23%\*unused OR time

unused OR time defined as OR time during normal activity hours without any procedure performed

INCOME > > EXPENSES

increased OR performance

- How to explain ???

- -23%\* unused OR time
  - significant reduction in turnover time  
(time between patient OUT and next patient IN)

2000      m12.3min  
m7.8min\*

2001

- -23%\* unused OR time
  - significant reduction in turnover time  
(time between patient OUT and next patient IN)

2000      m12.3min  
m7.8min\*

2001

possibly due to a reduction in arrival time to OR?

2000      m21.3min

2001      m14.1min\*

# Conclusion: introduction of ORM- m in ZOL

- Balanced Scorecards with objective, readily available information on :
  - block utilization
  - room utilization
  - case (procedure) time (/surgeon)
  - real vs estimated case time
  - overall OR times :
    - between call and arrival in OR
    - between arrival and room IN
    - turnaround times
    - Cancellations
    - OR activity inducing extra staffing costs
    - emergencies / non scheduled procedures