A CASE STUDY BY
ANADOLU MEDICAL CENTER-TURKEY

Burak Uzkan – IT Director

@ anadolusaglik

#ciosummit2015 @himsseurope
• Founded in 1979
• More than 50 projects completed including 3 hospitals, faculties, schools, dorms, sports and social facilities

• Scholarships to more than 20,000 students

• Social Responsibility Projects

• Anadolu Group companies donate 1-5% of their earnings to the foundation every year.
AMC Hospital

AMC Outpatient Clinic
Affiliation with JHI

- Licensing agreement
  - Grant of license to use the name
  - Exclusivity
  - Board representation
  - Medical directorship

- Educational, consulting and patient services agreement
  - Training opportunities for administrators
  - Administrative coordination
  - Clinical program evaluation
  - Architectural and engineering design input
  - Human resources consulting
  - Medical equipment/technology evaluation
  - Health information technology
  - Performance improvement, audits
  - Joint conferences
  - Medical second opinion
  - Telemedicine
  - Patient referrals
• Located on 42 acres (180,000 m2) piece of land
• 49,000 m2 closed area
• 10 minutes to Sabiha Gökcen Airport and 45 minutes to Atatürk Airport
• Peaceful environment with all inpatient rooms having sea view
• A general acute care hospital
• Fully equipped in world standards

• 136 Doctors
• 384 Nurses
• 209 Bed Capacity
• 59 ICU Beds
• 8 Operating Rooms
• 1074 Employees in total
Top Medical Specialties

- Oncology
  - Medical Oncology
  - Bone Marrow Transplantation
  - Radiation Oncology
  - PET CT
  - Pain Management

- Cardiac Care
- Cardiac Surgery
- Neurosurgery
- Orthopedic Oncology
- Reconstructive Microsurgery
- General Surgery
- Infertility/IVF
Accreditations
AMC Representative Offices / 14 Offices in 6 Countries
Anadolu’s IT Strategy Background in 2005

**Business Drivers**
- Highest Quality of Care
- Patient Safety
- Patient Satisfaction
- Cost Challenges
- Employee Satisfaction
- Medical Tourism opportunities
- Accreditation (JCI, ISO, etc)
- John Hopkins Affiliation

**Business Solutions**
- Fully Integrated HIS
- RIS/PACS
- NMIS
- BMTIS
- Dispensing System
  - Drug
  - Materials
- ERP System
- CRM

**Technologies**
- Medical-Grade Network
  - LAN
  - WAN
  - Wireless environment
- High Available computing platform
  - Storage Solutions
  - Archiving
- Layered Security
- Service Oriented Architecture
- Web – Based technology
- BPM / Workflow management platform
Integrated HIS
Seamless Interoperability Between Functional Areas
Integrated IT for enhanced care delivery

In Vivo

Patient centric

In Vitro

Healthcare IT
Integrated Digital Health System Solution

Information Technology

Medical

Services

Infrastructure
<table>
<thead>
<tr>
<th>Software usage and IT supported processes</th>
<th>Stage Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physician Documentation</strong></td>
<td></td>
</tr>
<tr>
<td>What percent of all current medical records are electronic (incl. digital/scanned data)?</td>
<td>76-100%</td>
</tr>
<tr>
<td>What percent of physicians use the Physician Documentation system?</td>
<td>76-100%</td>
</tr>
<tr>
<td>What percent of Physician Documentation generates discrete (computer-readable) data?</td>
<td>76-100%</td>
</tr>
<tr>
<td><strong>Electronic Ordering</strong></td>
<td></td>
</tr>
<tr>
<td>Electronic ordering for nursing and/or physician services</td>
<td>Yes</td>
</tr>
<tr>
<td>What % of all inpatient non-medication orders are processed electronically?</td>
<td>76-100%</td>
</tr>
<tr>
<td>Electronic ordering for medication</td>
<td>Yes</td>
</tr>
<tr>
<td>What % of all inpatient medication orders are processed electronically?</td>
<td>76-100%</td>
</tr>
<tr>
<td><strong>Clinical Decision Support (for...)</strong></td>
<td></td>
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<tr>
<td>Clinical Documentation (Physician / Nursing Documentation)</td>
<td>No</td>
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<tr>
<td>Medication Orders</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Medication Orders</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Image Management System (IMS)</strong></td>
<td></td>
</tr>
<tr>
<td>Is your solution integrated with your Electronic Medical Record (EMR)?</td>
<td>Yes</td>
</tr>
<tr>
<td>Does your image management solution support Non-DICOM standards?</td>
<td>Yes</td>
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<tr>
<td>What % of medical images in Radiology are managed by your IMS?</td>
<td>100 % (all)</td>
</tr>
<tr>
<td>What % of medical images in all other departments are managed by your IMS?</td>
<td>26-50%</td>
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<tr>
<td><strong>Closed Loop Medication</strong></td>
<td></td>
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<tr>
<td>2nd line of validation for critical medication prescriptions which is documented</td>
<td>Yes</td>
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<tr>
<td>Automated Dispensing of medication is available</td>
<td>Yes</td>
</tr>
<tr>
<td>Which of the following is auto-identified during bedside medication administration?</td>
<td></td>
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<tr>
<td>Patient</td>
<td>No</td>
</tr>
<tr>
<td>Nurse</td>
<td>No</td>
</tr>
<tr>
<td>Medication (unit dose or 1 day multi-dose sachet)</td>
<td>No</td>
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<tr>
<td>Electronic Medication Administration Record (EMAR) available at point of care / bedside?</td>
<td>No</td>
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<tr>
<td>Closed-loop medication administration at the point of care</td>
<td>No</td>
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</table>
## Software Applications

<table>
<thead>
<tr>
<th>Software Application</th>
<th>Current Status</th>
<th>Purchase or Installation planned (within 3 years)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Administration System (PAS)</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Enterprise Resource Planning (ERP)</td>
<td>Live and Operational</td>
<td>No</td>
</tr>
<tr>
<td>Business Intelligence</td>
<td>Live and Operational</td>
<td>No</td>
</tr>
<tr>
<td>Clinical Data Warehousing</td>
<td>Live and Operational</td>
<td>No</td>
</tr>
<tr>
<td>Quality Management</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Intensive Care Management System</td>
<td>Not Available / Not Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Radiology Information System</td>
<td>Live and Operational</td>
<td>No</td>
</tr>
<tr>
<td>Cardiology Information System</td>
<td>Live and Operational</td>
<td>No</td>
</tr>
<tr>
<td>Oncology Management Software</td>
<td>Not Available / Not Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
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<tr>
<td>Laboratory Information System</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Pharmacy Management System</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Electronic Medication Administration Record (eMAR)</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Electronic Patient Record / Clinical Data Repository</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Nursing Documentation</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Physician Documentation</td>
<td>Live and Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Chronic Disease Management System (CDMS)</td>
<td>Not Available / Not Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
<tr>
<td>Dictation with Speech Recognition</td>
<td>Not Available / Not Operational</td>
<td>Yes - Purchase/Roll-out of new application</td>
</tr>
</tbody>
</table>
## Level of Integration

<table>
<thead>
<tr>
<th>Level of Integration with EMR / clinical HIS</th>
<th>Scope of Deployment (for inpatient care)</th>
<th>Contract Year (respectively last Major Upgrade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Intelligence</td>
<td>Hospital/enterprise-wide</td>
<td>2014</td>
</tr>
<tr>
<td>Clinical Data Warehousing</td>
<td>Hospital/enterprise-wide</td>
<td>2014</td>
</tr>
<tr>
<td>Quality Management</td>
<td>Department/area-specific</td>
<td>2009</td>
</tr>
<tr>
<td>Laboratory Information System</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Pharmacy Management System</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Radiology Information System</td>
<td>Hospital/enterprise-wide</td>
<td>2013</td>
</tr>
<tr>
<td>Cardiology Information System</td>
<td>Hospital/enterprise-wide</td>
<td>2015</td>
</tr>
<tr>
<td>Electronic Patient Record / Clinical Data Repository</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Nursing Documentation</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Physician Documentation</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Electronic Medication Administration Record (eMAR)</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Patient Administration System (PAS)</td>
<td>Hospital/enterprise-wide</td>
<td>2009</td>
</tr>
<tr>
<td>Enterprise Resource Planning (ERP)</td>
<td>Hospital/enterprise-wide</td>
<td>2011</td>
</tr>
</tbody>
</table>
### Your EMRAM Score: 5.1000

<table>
<thead>
<tr>
<th>EMRAM scores for your comparison</th>
<th>Mean</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitals &lt; 500 beds</td>
<td>2.8</td>
<td>811</td>
</tr>
<tr>
<td>Private not for Profit</td>
<td>3.0</td>
<td>138</td>
</tr>
<tr>
<td>General Medical hospitals</td>
<td>3.2</td>
<td>908</td>
</tr>
<tr>
<td><strong>Turkey</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitals &lt; 500 beds</td>
<td>2.6</td>
<td>263</td>
</tr>
<tr>
<td>Private not for Profit</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>General Medical hospitals</td>
<td>2.8</td>
<td>262</td>
</tr>
</tbody>
</table>

* Countries included are (descending order by N): Turkey, Spain, Germany, Italy, United Kingdom, Netherlands, Austria, Portugal, Denmark, France, Belgium, Switzerland, Poland, Norway, Slovenia, Finland, Greece, Iceland, Ireland

* Source: HIMSS Europe Database, Q2/2015 (data from 7/2013 – 06/2015)
Cerner To Buy Siemens Health IT Business for $1.3 Billion

Cerner: Siemens health IT unit positions company for move beyond EHRs

By John N. Frank and Darius Tahir
Posted: August 5, 2014 - 4:30 pm ET
Tags: Acquisitions, Cerner Corp., Deals, Electronic Health Records (EHR), Executives, Information Technology, Revenue

(Story updated at 7:45 p.m. ET.)

Health technology and electronic health records powerhouse Cerner Corp., is spending $1.3 billion to purchase Siemens Health Services, the health information technology business of Germany's Siemens AG, Cerner announced Tuesday.

The newly combined company will have $4.5 billion in annual revenue and will invest $650 million annually in research and development, Kansas City, Mo.-based Cerner said. Its client base will include 18,000 facilities in the U.S. and Germany.

"We believe this is an all-win situation for the clients of both organizations and all of our associates and shareholders," said Neal Patterson, Cerner's CEO and co-founder.

The deal also calls for Cerner and Siemens to form a strategic alliance to "bring new solutions to market that combine Cerner's health IT leadership and Siemens' strengths in medical devices and imaging," the Cerner announcement said.
<table>
<thead>
<tr>
<th>Category</th>
<th>Vendor Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>Vendor’s vision for the healthcare Industry and for their market(s); their plans to address the evolving needs of the market(s) (e.g. strategy)</td>
</tr>
<tr>
<td>Viability</td>
<td>Ability to implement and execute their strategy to address the evolving needs of their market(s)</td>
</tr>
<tr>
<td>Technical Architecture</td>
<td>Application and integration architecture plus the technologies, tools and standards supporting the architecture</td>
</tr>
<tr>
<td>Functionality</td>
<td>Range and scope of product line offerings, functionality and usability</td>
</tr>
<tr>
<td>Costs</td>
<td>Total cost of ownership – acquisition, implementation, maintenance and added staff</td>
</tr>
<tr>
<td>Service Levels</td>
<td>Implementation approach and success, user vendor ratings, support and maintenance</td>
</tr>
</tbody>
</table>
### Expected Outcomes

#### Improving Quality of Care
- Reduction in cardiac Mortality within 90 days of heart attack
- Reduction in hospital readmissions
- Increase in Stage 0 breast tumour recognition
- Reduction in hospitalisations for diabetic patients

#### Enhancing Clinical Safety
- Reduction in MRSA infections
- Reduction in medication errors per 1000 hospital stays
- Medication errors avoided due to barcoding scanning alerts
- Decrease in time from order to administration
- Decrease in delayed administration of medications
- Reduction in medication errors and near misses

#### Increasing Operational Efficiency
- Reduction in medical record staff costs
- Reduction of transcription costs
- Reductions in patient length of stay
- Saving due to reduction of medical records management
- Additional patients seen per month per GP
THANK YOU!

Burak Uzkan
CIO, Anadolu Medical Center
burak.uzkan@anadolusaglik.org

@ Insert Twitter Handle Here
INFORMATION TECHNOLOGY AND DRUG MANAGEMENT IN IRCCS CANDIOLO

Franca Goffredo
Pharmacy - Candiolo Cancer Institute

@ Insert Twitter Handle Here
Outline

• The Cancer Institute of Candiolo
• The introduction of the new Hospital Information System Software
• The drug workflow
• To weigh up the pros and cons after 2 years
• Conclusions
Overview

The Institute for Cancer Research is a private non-profit institution founded and supported by the Fondazione Piemontese per la Ricerca sul Cancro-Onlus (FPRC)
It’s operated by the Fondazione del Piemonte per l'Oncologia (FPO: a joint venture between the FPRC and the Piedmont Region). It’s part of the Piedmontese Oncological Network
The FPRC provides enduring fund raising to complete and develop the Institute's buildings and technologies to foster research.
The FPO is responsible for managing the clinical organization and patients care (150 beds)
It is linked to the Department of Oncology of the University of Torino.
Its mission is a significant contribution to fight cancer, by understanding the basics, and by providing state-of-the-art diagnostic and therapeutic services. The core of the Institute is the interface between molecular biology and medicine.
A few numbers

- Total hospital beds: 150
  Year 2014
- Patients from Italy: 5,600
- Patients from European countries: 1,100
- Day Ward Treatments: 10,600
- Chemotherapy preparations: 20,900
- Surgical operations: 2,720
- Ambulatory Care Visits: 1,159,600
Pharmacy Staff

- The Pharmacy Service includes:
  - 4 pharmacists
  - 2 pharmacists specialising in Hospital Pharmacy
  - 1 Pharmacy student (preparing his/her thesis)
  - 6 technicians
  - 2 people involved in administrative activities
  - Drug store keepers and support staff
Pharmacy activities

- It’s responsible for:
  - Supplying and distributing drugs for in and out patients (drugs are dispensed at patient’s discharge, with all oral chemotherapies)

- Supporting Formulary Service activities and Ethics Committee activities, promoting appropriateness of drugs use

- Receiving, storing and dispensing investigational drugs, attending start up meetings, monitoring visits, responsible for drug accountability

- Producing IV therapies including mabs, Pain control therapies, supportive care therapies for a total of about 55,000 preparations per year, for adults only
Pharmacy Activities

• The Pharmacy is not yet considered a place where you find high technologies

• We have 2 Baxa pumps which are used particularly for filling elastomeric pumps

• We are moving to complete automation because we think that technology can give us high support for improving:
  – Patients’ safety,
  – Personnel safety
  – quality
  – recording process

• Save:
  – money (high cost of oncology drugs)
  – time
Focus on Antineoplastic production and management

The change of Process

Centralization Cytotoxic preparation:

- Reduce Occupational Exposure
- Reduce microbiological contamination
- Clinical Risk Management
  - Preventing medication errors in prescription-administration processes
- Medications cost reduction
  - over 30% of antineoplastic drugs expenditure
The Pharmacy has had its own information tool since starting in 1998.

The ward informatization process started in the year 2006 with a homemade software called – RICOWIN – for Admission.
New Hospital Information System Software

ICT: the new Hospital Information System Software

In 2013 we moved to Healthcare Systems
by Dedalus for hospital and clinical management:

Dedalus Hospital Information System: Arianna
- Booking for Outpatient Service
- ADT
- Computerized Physician Order Entry
- Document Repository
- Digital signature

Dedalus Clinical Information System
- EMR: Tabula Clinica
- Surgical Pathway: OrmaWeb
- Drug Lifecycle Management: FarmaSafe®

Interoperability
The tracking path of medications: the closed loop
New chemotherapy protocol definition

Interdisciplinary and cooperating team

Physicians:
1. Review literature data
2. Protocol and diagnosis identification

FarmaSafe Diagnosis Protocols

Pharmacists
1. Review stability data
   Infusion time
2. Compatibility
   (diluent and infusion devices)
3. Authorized indications dosage
   (SPC) for all the drugs/preparations
   included in the protocol

Virtual drugs

cytotoxic
Pharmacy Workload

- Chemotherapy Protocols: 434
- Virtual drugs: 923
- Umaca: 143
- Preparations (Pharmacy): 171
- Preparations (Wards): 122
Drugs and preparations
Breast Cancer Protocol list

<table>
<thead>
<tr>
<th>Id</th>
<th>Acronimo</th>
<th>Descrizione</th>
<th>Valida</th>
<th>Operatore</th>
<th>Data Modifica</th>
</tr>
</thead>
<tbody>
<tr>
<td>3036</td>
<td>ABRAZARE</td>
<td>pacitaxel albumina 260 mg/m2 (ABRAZARE)</td>
<td>valido 8/02/2013</td>
<td>GOFFREDO FRANCA</td>
<td>10/02/2013</td>
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<tr>
<td>3011</td>
<td>AC adiuvante</td>
<td>ciclofosfamide-doxorubicina</td>
<td>valido 9/02/2013</td>
<td>GOFFREDO FRANCA</td>
<td>10/02/2013</td>
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<tr>
<td>3023</td>
<td>ADM (30) SETTIMANALE</td>
<td>doxorubicina 30 mg/m2 SETTIMANALE</td>
<td>valido 10/02/2013</td>
<td>GOFFREDO FRANCA</td>
<td>10/02/2013</td>
</tr>
<tr>
<td>3034</td>
<td>ADM (50) Policotinato 175 1/2</td>
<td>doxorubicina 50 mg/m2 Policotinato 175 mg/m2</td>
<td>valido 11/02/2013</td>
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<tr>
<td>3043</td>
<td>Bevacizumab 7.5 mg/kg MonoT</td>
<td>Bevacizumab 7.5 mg/kg MonoT</td>
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<tr>
<td>2573</td>
<td>BIG 4-11 BDG3136/552/1050</td>
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<td>10/02/2013</td>
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<tr>
<td>2324</td>
<td>BIG 4-11 BDG3136/552/1050 c</td>
<td>Pertuzumab/Trastuzumab-Paclitaxel carico</td>
<td>valido 14/02/2013</td>
<td>GOFFREDO FRANCA</td>
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<td>2575</td>
<td>BIG 4-11 BDG3136/552/1050 d</td>
<td>Pertuzumab/Trastuzumab-Paclitaxel mantenimento</td>
<td>valido 15/02/2013</td>
<td>GOFFREDO FRANCA</td>
<td>10/02/2013</td>
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<tr>
<td>2414</td>
<td>BO27125 Katrine Br A</td>
<td>Trastuzumab vs Trastuzumab emameitin 1° DOSE</td>
<td>valido 16/02/2013</td>
<td>GOFFREDO FRANCA</td>
<td>10/02/2013</td>
</tr>
<tr>
<td>2415</td>
<td>BO27125 Katrine Br A succ</td>
<td>Trastuzumab vs Trastuzumab emameitin 1° DOSE</td>
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<td>10/02/2013</td>
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<td>BO27125 Katrine Br B manten</td>
<td>Trastuzumab mantenimento vs Trastuzumab emameitin</td>
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<td>10/02/2013</td>
</tr>
<tr>
<td>2009</td>
<td>Cardil (38) 1/21</td>
<td>doxorubicina, cisor liposomiale 30 mg/m2</td>
<td>valido 20/03/2013</td>
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<td>2008</td>
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<td>10/02/2013</td>
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</tbody>
</table>
## Administration Schedule

<table>
<thead>
<tr>
<th>Sequence 1</th>
<th>Durata nella sequenza 90 min.</th>
<th>Richiesta conferma</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequenza</td>
<td>Farmaco dismesso in fisioterapia 101 ml (VI)</td>
<td>Preparazione</td>
<td></td>
</tr>
<tr>
<td>Sequenza</td>
<td>Farmaco granulare in fisioterapia 160 ml (VI)</td>
<td>Preparazione</td>
<td></td>
</tr>
<tr>
<td>Sequenza</td>
<td>Farmaco cardiotonic in glucosio 5% 250 ml (VI)</td>
<td>Preparazione</td>
<td></td>
</tr>
<tr>
<td>Sequenza</td>
<td>Farmaco FIDELICA 100 ml</td>
<td>Richiesta conferma</td>
<td></td>
</tr>
<tr>
<td>Sequenza</td>
<td>Farmaco FIDELICA 250 ml ECOPLAC</td>
<td>Preparazione</td>
<td></td>
</tr>
<tr>
<td>Sequenza</td>
<td>Farmaco Flurbriac sul fiato 100 ml (VI)</td>
<td>Preparazione</td>
<td></td>
</tr>
</tbody>
</table>
Medication Workflow

1. Hospital drug formulary (pharmacist) "pharmacy"
2. Prescription (Physician) "everywhere"
3. Delivery (pharmacist / nurse) "pharmacy/ward/hospital"
4. Prescription Check (Pharmacist)
5. Compounding (Nurse) "hospital ward"
6. Compounding (Pharmacist) "labs"
7. Administration (nurse) "patient bed"
8. "Ready"
9. "Terapy Checklist"
10. "Infusions"
11. "Galenic" "Cytotoxic" Supportive therapies
12. "trolley"
13. "thrapy Checklist"
Oncology Medication Workflow

Prescription record

- Prescription drug order
- Compounding records and reports
- Compounding label
- Container label
- Cancer protocol report
- Historical report

Cart Summary
- Working plan activities
- Synoptic treatment
- Active treatments
- Drug Delivery
- Administration

Drug Therapies Report
### Extended codification to a “7th ATC level”:
**Substance, Pharmaceutical Form, Dosage**

<table>
<thead>
<tr>
<th>Level</th>
<th>ATC codification</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°</td>
<td>A</td>
<td>Gastrointestinal system and metabolism</td>
<td>Anatomic</td>
</tr>
<tr>
<td>2°</td>
<td>02</td>
<td>Medicines related to acid secretion disorders</td>
<td></td>
</tr>
<tr>
<td>3°</td>
<td>B</td>
<td>Medicines for the peptic ulcer treatment</td>
<td>Therapeutic</td>
</tr>
<tr>
<td>4°</td>
<td>C</td>
<td>Acid pomp inhibitors</td>
<td></td>
</tr>
<tr>
<td>5°</td>
<td>01</td>
<td>Omeprazole</td>
<td>Chemical</td>
</tr>
<tr>
<td>6°</td>
<td></td>
<td>Oral capsule</td>
<td>Pharmaceutic form</td>
</tr>
<tr>
<td>7°</td>
<td></td>
<td>20 milligrams</td>
<td>Dosage</td>
</tr>
</tbody>
</table>

The virtual Drug ensures the real equivalence of Medicine Drugs
Virtual Drug

Virtual Drug is a combination of Medicines

- **Aspirin 500 mg tablets**
- **Acetylsalicylic acid Tablets 500 mg**
- **Acido acetylsalicilic 500 mg tablets**
Regional tenders: issues

• The virtual drug can help physicians in selecting the active substance and nurses in administering the correct Medicinal products associated with it
• Medicinal products are bought through regional tenders
• Quick variations in tradenames
• Risk of medication errors on the wards
Virtual drug

Paracetamol vial 1 g

- Perfalgan vial 1 g
- Paracetamol Teva vial 1 g
- Perfusalgan vial 1 g
Evaluations after 2 years of activity

We are able to know at anytime

• Patients: who, when, what medicine received,
• At which point of the path is the drug
• Responsibility for each health care professional involved in the process
• The cost of the therapies for
  ✓ the management of the budget
• The drug data flow to be sent to the region
  • For reimbursement
  • For monitoring
Evaluations after 2 years of activity

- The transition to the new system was not free of resistance
- It was not easy to move all at once from one programme to another, in June 2013
- Health care professionals found many problems and were not always available to solve them, sometimes they emphasized them (resistance to change)
- We had the assistance of the software personnel for one year
- After a while we started to cooperate
- Now it is integrated with the robot software
Conclusions

• Drug management: the programme is very useful for nurses on the wards
• Pharmacists can monitor the process
• It is useful for hospital managers
• Modifications needed are not immediate as with the previous programme (Pharmacy)
• More expensive

In conclusion: positive evaluation
HIMMS STAGE 6

April 2015
THANK YOU!
Franca Goffredo
Pharmacy - Candiolo Cancer Institute
franca.goffredo@ircc.it

@ Insert Twitter Handle Here
IMPLEMENTATION OF
VALUE BASED HEALTH CARE
IN JOINT REPLACEMENT UNIT
AT SAHLGRENSKA UNIVERSITY HOSPITAL

Maziar Mohaddes
MD, PhD
Background

No. of hip replacementes

Year

[Bar chart showing the number of hip replacements over the years, with a peak in the early 1990s and a持续增长 until the end of the chart period in 2012.]
Background

No. of hip replacements

Year
Background

No. of knee replacements

Year

OA
RA
Posttraumatic
New Public Management

- New Public Management
- Competition between health care providers*
- Patients regarded as customers

New Public Management

• New Public Management
• Competition between health care providers*
• Patients regarded as customers
• Process and costs measured and compared
• The patient outcomes were measured but not were included in comparisons

New Public Management – orthopaedic view

Welcome to Day 2 of Training

Today’s subject is “How to screw a customer and make him feel good about it”
Value Based Health Care

Value = \frac{Outcome}{Cost}
Value Based Health Care

**Project team**
- Marie Friberg,
- Ola Rolfson,
- Jenny Gårdmark-Hylén,
- Victoria Mohlén
- Maziar Mohaddes

**Work group**
- Staffan Skarrie
- Åsa Sand
- Magnus Karlsson
- Lena Danemo
- Eva Levin
- Erik Houlitz
- Marie Björk
- Jenny Hempel
- Katarina Dahlgren
- Jonas Thanner
- Emma Svensson
- Henrik Malchau
- Per-Olof Holmberg
Value Based Health Care

0. Define a team & Identify a patient group

1. Define what to measure

2. Data collection

3. Analyze data & identify areas for improvement

4. Implement changes & continuous evaluation

Continous feedback & improvement
### Value Based Health Care

<table>
<thead>
<tr>
<th>Clinical outcomes</th>
<th>Data from the SHAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adverse events</strong></td>
<td><strong>EQ-5D improvement</strong></td>
</tr>
<tr>
<td>-3.2%</td>
<td>-0.0</td>
</tr>
<tr>
<td><strong>Re-operation within 2 years</strong></td>
<td><strong>Pain reduction</strong></td>
</tr>
<tr>
<td>-0.4%</td>
<td>-0.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost &amp; utilization measures</th>
<th>Process measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost per patient (median)</strong></td>
<td><strong>% cancelled within 24 h</strong></td>
</tr>
<tr>
<td>-6.96</td>
<td>-5.0%</td>
</tr>
<tr>
<td><strong>Cost of implants (median)</strong></td>
<td><strong>% treated with physiotherapy preop</strong></td>
</tr>
<tr>
<td>+5.29</td>
<td>+4.9%</td>
</tr>
</tbody>
</table>
| **Nr. of surgeriers** | **days:hours**
| +104 | -26:21 |
| **LOS** | **in the waiting list** |
| -0:00:10 | -26:21 |
| **% admitted on day of surgery** | **% in the waiting list** |
| +28.9% | -26:21 |

Last 12 month
Prevoius 12 month
Outcomes 2014
No of days in the waiting list

Days

2012  2013  2014
0     50    100  150
Cost per patient

- 2013: 70
- 2014: 60
- 2015: 50
No of surgeries performed

- 2011: 600
- 2012: 500
- 2013: 600
- 2014: 900
Clinical outcomes

Adverse events*

-3.2%

Re-operation within 2 years

-0.4%

Cost & utilization measures

Cost per patient
Cost of implants
Nr. of LOS
% admitted

Process measures

% cancelled within 24 h
% treated with physioterapy preop
days:hours in the waiting list

Last 12 month
Previous 12 month

* Urinary tract infections, wound infections, transfusions, fall accidents
Length of stay in the hospital

Traditions and myths in hip and knee arthroplasty
A narrative review

Henrik Husted¹, Kirill Gromov¹, Henrik Malchau²,³, Andrew Freiberg², Peter Gebuhr¹, and Anders Troelsen¹

Departments of Orthopaedic Surgery, ¹Copenhagen University Hospital Hvidovre, Copenhagen, Denmark; ²Massachusetts General Hospital, Boston, MA, USA; ³Sahlgrenska University Hospital, Mölndal, Sweden.
Correspondence: henrikusted@dadlnet.dk

- Ward A
- Ward B
How about the value?

Value = \frac{Outcome}{Cost}

- Adverse events decreased by 18%
- Re-operations decreased by 17%
- No of surgeries increased by 44%
How about the value?

\[ \text{Value} = \frac{\text{Outcome}}{\text{Cost}} \]

- Adverse events: $18\%$
- Re-operations: $17\%$
- No of surgeries: $44\%$

During 2014 the value increased with $147\%$!
How about that value?

<table>
<thead>
<tr>
<th>Aktie</th>
<th>1D%</th>
<th>1V%</th>
<th>1M%</th>
<th>3M%</th>
<th>12M%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrolux B</td>
<td>-0.62</td>
<td>-0.84</td>
<td>22.82</td>
<td>23.77</td>
<td>83.24</td>
</tr>
<tr>
<td>Balder B</td>
<td>-0.07</td>
<td>4.82</td>
<td>24.20</td>
<td>49.29</td>
<td>77.01</td>
</tr>
<tr>
<td>Loomis B</td>
<td>-0.29</td>
<td>-0.44</td>
<td>10.31</td>
<td>27.35</td>
<td>74.39</td>
</tr>
<tr>
<td>Electrolux A</td>
<td>-1.24</td>
<td>-0.92</td>
<td>20.58</td>
<td>23.67</td>
<td>72.53</td>
</tr>
<tr>
<td>Securitas B</td>
<td>-0.08</td>
<td>-0.08</td>
<td>20.26</td>
<td>29.87</td>
<td>70.91</td>
</tr>
<tr>
<td>Boliden</td>
<td>-0.35</td>
<td>2.30</td>
<td>33.44</td>
<td>32.29</td>
<td>65.00</td>
</tr>
<tr>
<td>Peab B</td>
<td>-0.14</td>
<td>2.69</td>
<td>21.67</td>
<td>39.00</td>
<td>63.24</td>
</tr>
<tr>
<td>Hexpol B</td>
<td>-0.61</td>
<td>-0.11</td>
<td>8.55</td>
<td>34.69</td>
<td>58.27</td>
</tr>
<tr>
<td>Assa Abloy B</td>
<td>0.44</td>
<td>2.21</td>
<td>12.40</td>
<td>22.61</td>
<td>53.29</td>
</tr>
<tr>
<td>Axis</td>
<td>0.21</td>
<td>0.27</td>
<td>66.95</td>
<td>73.17</td>
<td>52.31</td>
</tr>
<tr>
<td>Autoliv SDB</td>
<td>-0.74</td>
<td>0.27</td>
<td>12.90</td>
<td>27.94</td>
<td>50.92</td>
</tr>
<tr>
<td>Husqvarna A</td>
<td>0.39</td>
<td>-1.74</td>
<td>18.90</td>
<td>16.98</td>
<td>50.49</td>
</tr>
<tr>
<td>Husqvarna B</td>
<td>0.08</td>
<td>-1.73</td>
<td>19.07</td>
<td>17.04</td>
<td>50.28</td>
</tr>
<tr>
<td>Skanska B</td>
<td>-0.10</td>
<td>1.07</td>
<td>15.05</td>
<td>29.29</td>
<td>50.11</td>
</tr>
<tr>
<td>Atlas Copco A</td>
<td>-0.74</td>
<td>-0.96</td>
<td>12.28</td>
<td>23.07</td>
<td>49.39</td>
</tr>
</tbody>
</table>

During 2014 the value increased with 147%!
Conclusion

QlikView®, as a business intelligence system has enabled us to explore and visualise data from different sources. This data visualisation has facilitated our journey in to the Value-Based management.
THANK YOU!

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