Presented by:

HIMSS EMRAM STAGE 6&7 CLUB

La Fe Hospital Universitari i Politècnic

A CASE STUDY BY ANADOLU MEDICAL CENTER-TURKEY

Burak Uzkan – IT Director

@ anadolusaglik

ANADOLU H

In Affiliation with
JOHNS HOPKINS MEDICINE

- **Anadolu Group & Foundation**
- **Anadolu Medical Center**
- **Top Medical Specialties**
- **International Services**

- 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 agreeme
  - *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

Joint Commission® INTERNATIONAL

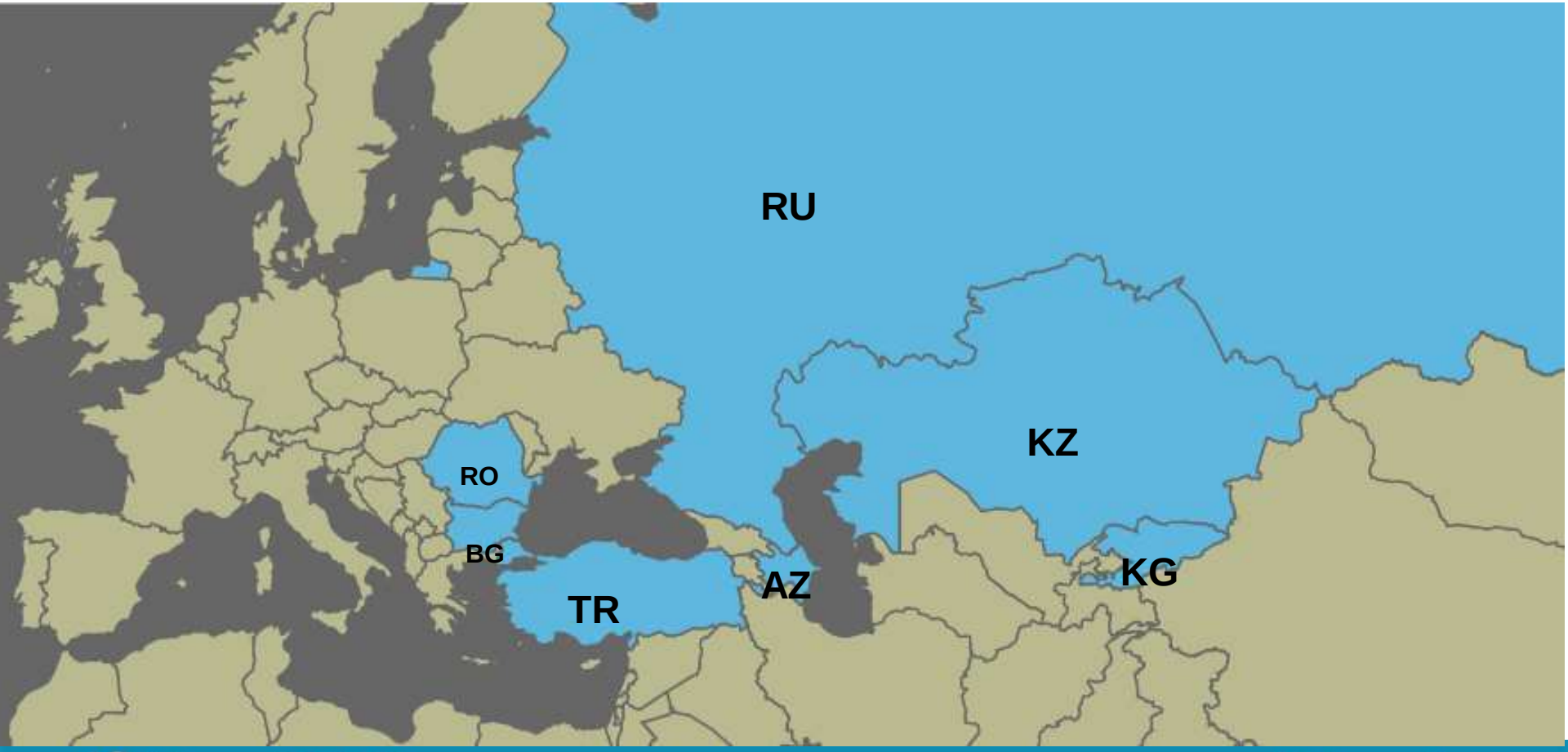
ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE
European Society for Medical Oncology

ISO 14001

WORLD CERTIFICATION SERVICES WCS — OHSAS 18001

ISO 9001

AMC Representative Offices / 14 Offices in 6 Countries



Anadolu's IT Strategyy Background in 2005

Business Drivers

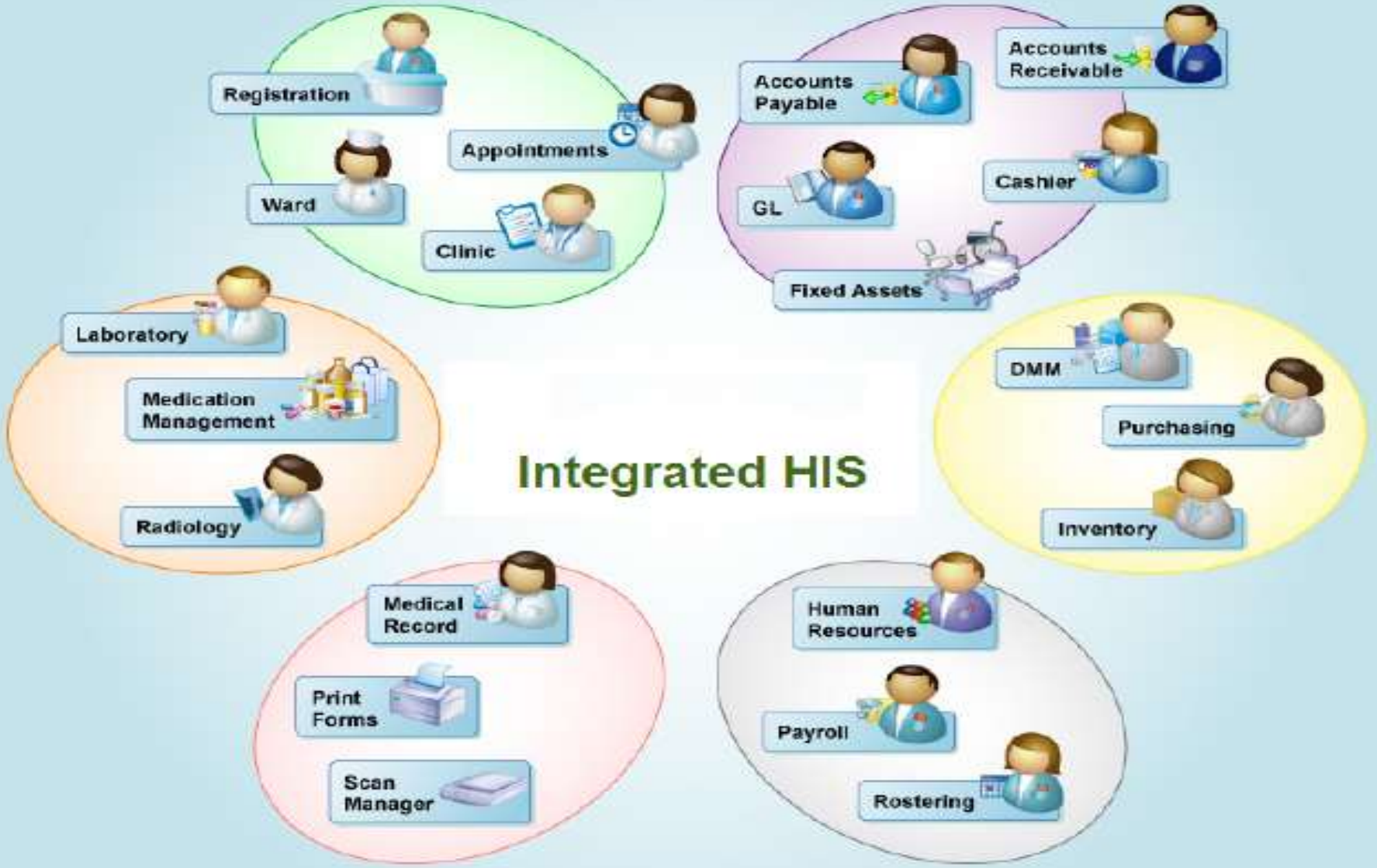
- Highest Quality of Care
- Patient Safety
- Patient Satisfaction
- Cost Challenges
- Employee Satisfaction
- Medical Tourism opportunities
- Accreditation (JCI, ISO, etc)
- John Hopkins Affiliation

Business Solutions

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

Technologies

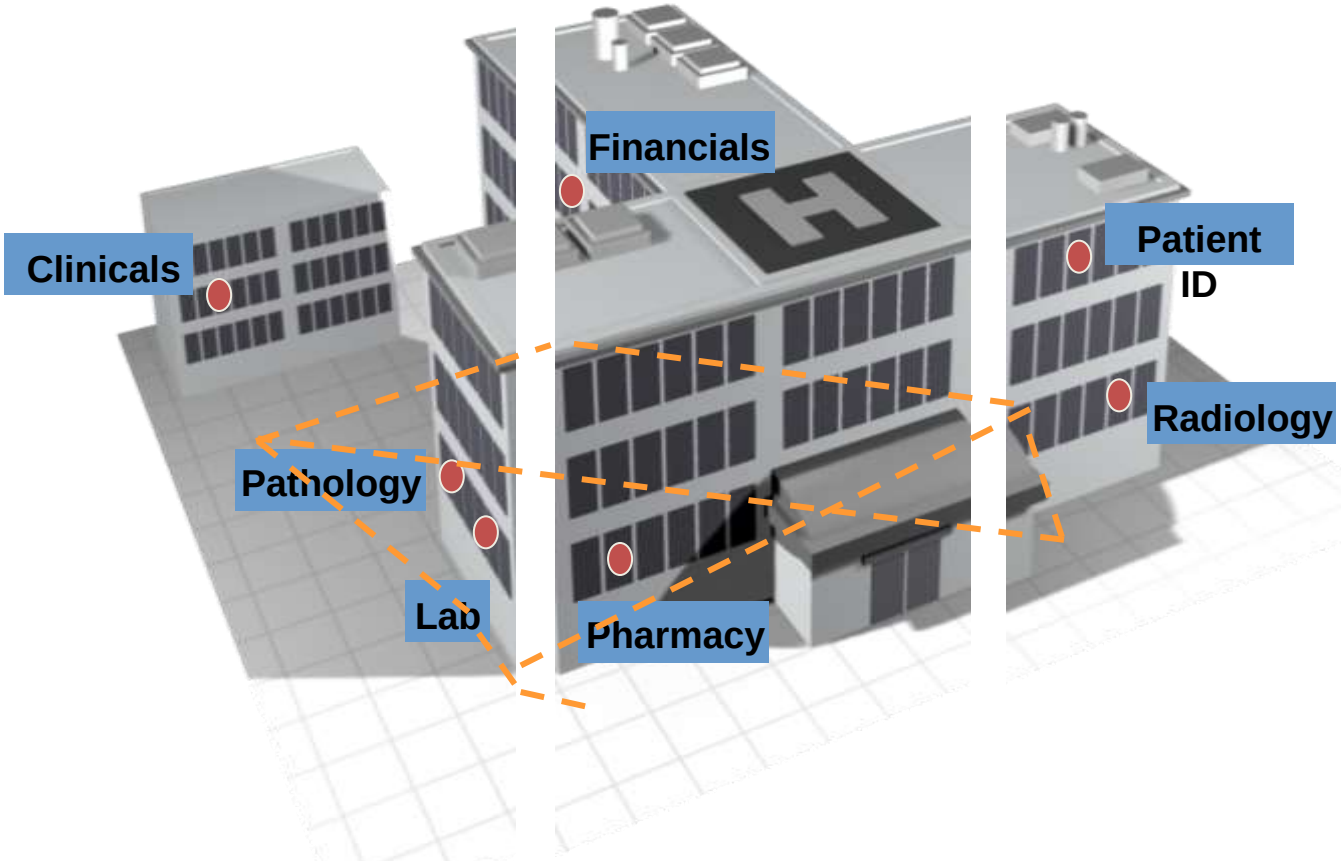
- Medical-Grade Network
  - LAN
  - WAN
  - Wireless environment
- High Available computing platform
  - Storage Solutions
  - Archiving
- Layered Security
- Service Oriented Architecture
- Web – Based technology
- BPM / Workflow management platform


Registration
Appointments
Ward
Clinic
Accounts Payable
Accounts Receivable
GL
Cashier
Fixed Assets
Laboratory
Medication Management
Radiology
Integrated HIS
DMM
Purchasing
Inventory
Medical Record
Print Forms
Scan Manager
Human Resources
Payroll
Rostering

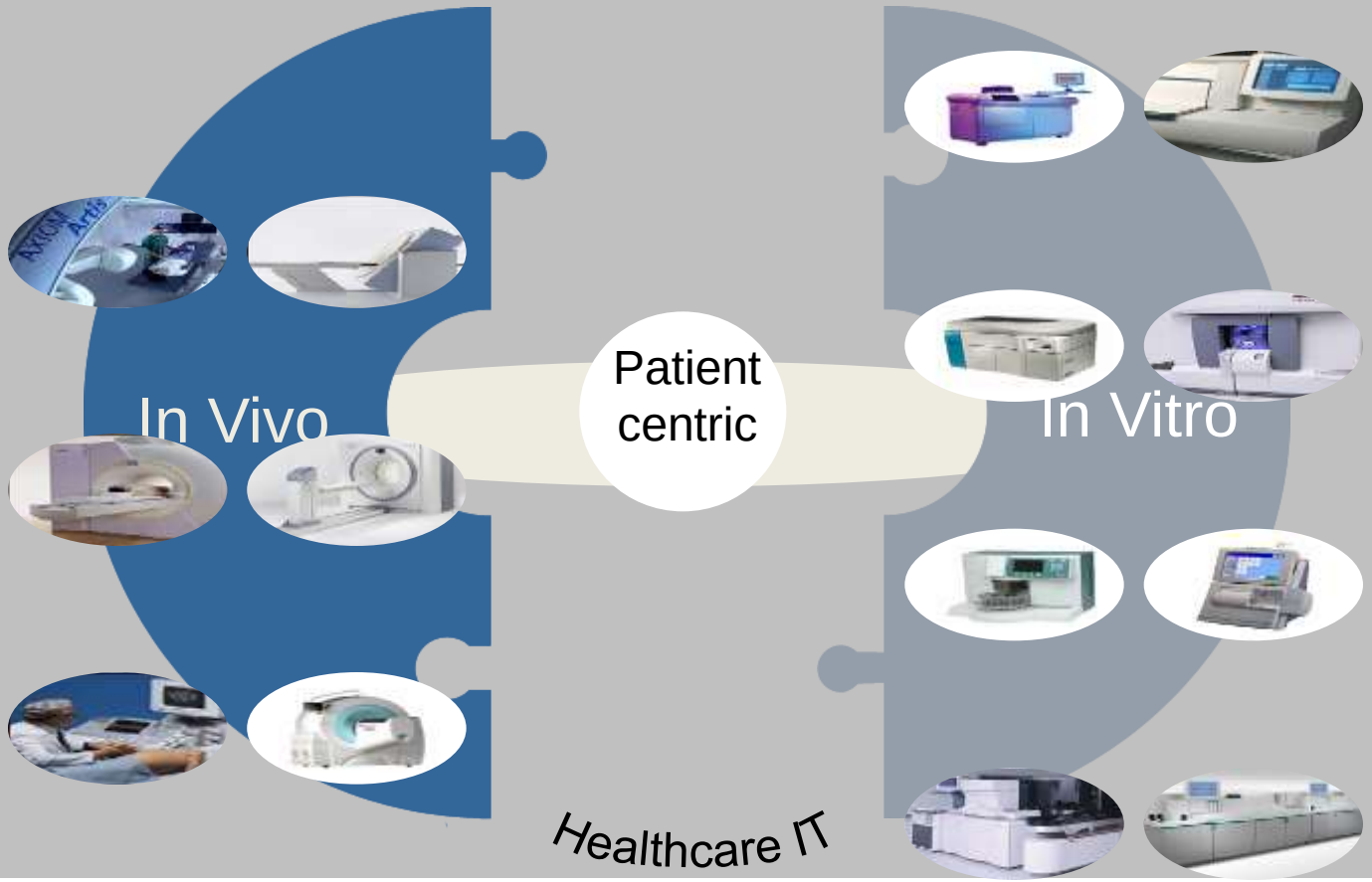
ANADOLU

In Affiliation with
JOHNS HOPKINS MEDICINE

Seamless Interoperability Between Functional Areas



Integrated IT for enhanced care delivery



Integrated Digital Health System Solution

Software usage and IT supported processes		Stage Relevance
What percent of all current medical records are electronic (incl. digital/scanned data)?	76-100%	
Physician Documentation		
What percent of physicians use the Physician Documentation system?	76-100%	
What percent of Physician Documentation generates discrete (computer-readable) data?	76-100%	
Electronic Ordering		
Electronic ordering for nursing and/or physician services	Yes	
What % of all inpatient non-medication orders are processed electronically?	76-100%	
Electronic ordering for medication	Yes	
What % of all inpatient medication orders are processed electronically?	76-100%	
Clinical Decision Support (for...)		
Clinical Documentation (Physician / Nursing Documentation)	No	Stage 6
Medication Orders	Yes	
Non-Medication Orders	Yes	
Image Management System (IMS)		
Is your solution integrated with your Electronic Medical Record (EMR)?	Yes	
Does your image management solution support Non-DICOM standards?	Yes	
What % of medical images in Radiology are managed by your IMS?	100 % (all)	
What % of medical images in all other departments are managed by your IMS?	26-50%	
Closed Loop Medication		
2nd line of validation for critical medication prescriptions which is documented	Yes	
Automated Dispensing of medication is available	Yes	
Which of the following is auto-identified during bedside medication administration?		
Patient	No	Stage 6
Nurse	No	
Medication (unit dose or 1 day multi-dose sachet)	No	Stage 6
Electronic Medication Administration Record (EMAR) available at point of care / bedside?	No	Stage 6
Closed-loop medication administration at the point of care	No	Stage 6

Software Applications

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

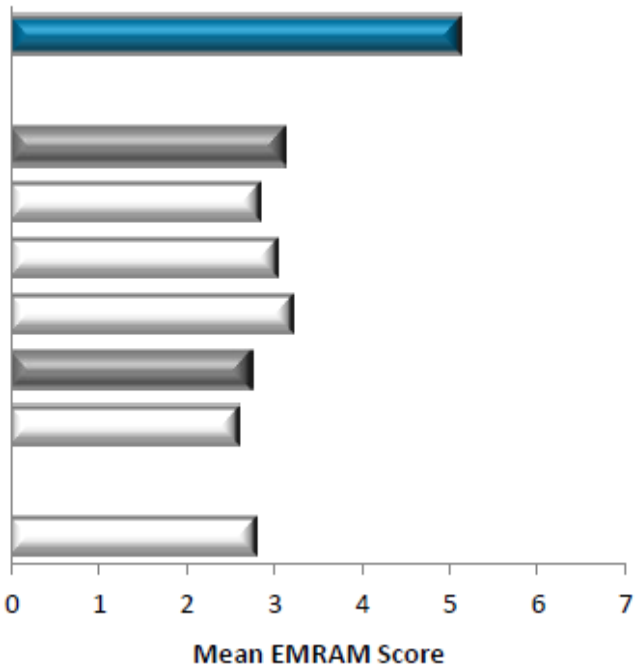
Level of Integration

	Level of Integration with EMR / clinical HIS	Scope of Deployment (for inpatient care)	Contract Year (respectively last Major Upgrade)
Business Intelligence	Stand-alone - integrated	Hospital/enterprise-wide	2014
Clinical Data Warehousing	Stand-alone - integrated	Hospital/enterprise-wide	2014
Quality Management	EMR- / HIS-module (part of suite)	Department/area-specific	2009
Laboratory Information System	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Pharmacy Management System	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Radiology Information System	Stand-alone - integrated	Hospital/enterprise-wide	2013
Cardiology Information System	Stand-alone - integrated	Hospital/enterprise-wide	2015
Electronic Patient Record / Clinical Data Repository	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Nursing Documentation	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Physician Documentation	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Electronic Medication Administration Record (eMAR)	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Patient Administration System (PAS)	EMR- / HIS-module (part of suite)	Hospital/enterprise-wide	2009
Enterprise Resource Planning (ERP)	Stand-alone - integrated	Hospital/enterprise-wide	2011

Your EMRAM Score:	5.1000	
EMRAM scores for your comparison	Mean	Count
Europe*	**3.1**	**1,066**
Hospitals < 500 beds	2.8	811
Private not for Profit	3.0	138
General Medical hospitals	3.2	908
Turkey	**2.7**	**324**
Hospitals < 500 beds	2.6	263
Private not for Profit	0.0	0
General Medical hospitals	2.8	262

* 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

Healthcare Business News

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

Patterson

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.

Advertisement | **View Media Kit**

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**.

Vendor Evaluation Criteria Categories

Category	Vendor Status
Vision	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)
Viability	Ability to implement and execute their strategy to address the evolving needs of their market(s)
Technical Architecture	Application and integration architecture plus the technologies, tools and standards supporting the architecture
Functionality	Range and scope of product line offerings, functionality and usability
Costs	Total cost of ownership – acquisition, implementation, maintenance and added staff
Service Levels	Implementation approach and success, user vendor ratings, support and maintenance

Expected Outcomes

Improving Quality of Care	Enhancing Clinical Safety	Increasing Operational Efficiency
▪ 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	▪ 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	• Reduction in medical record staff costs • Reduction of transcription costs • Reductions in patient length of stay • Saving to due to reduction of medical records management • Additional patients seen per month per GP

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HIMSS Europe

7-8 October 2015
Valencia, Spain

THANK YOU!

Burak Uzkan
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HIMSS Europe

7-8 October 2015
Valencia, Spain

INFORMATION TECHONOLGY AND DRUG MANAGEMENT IN IRCCS CANDIOLO

Franca Goffredo
Pharmacy - Candiolo Cancer Institute

@ Insert Twitter Handle Here

Oveview

CANDIOLO
Fondazione del Piemonte per l'Oncologia
ISTITUTO PER LA RICERCA E LA CURA DEL CANCRO
CANDIOLO
Presidio Ospedaliero accred. ex art. 43 L.833/78

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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
- Chemoterapy 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 admistrative 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

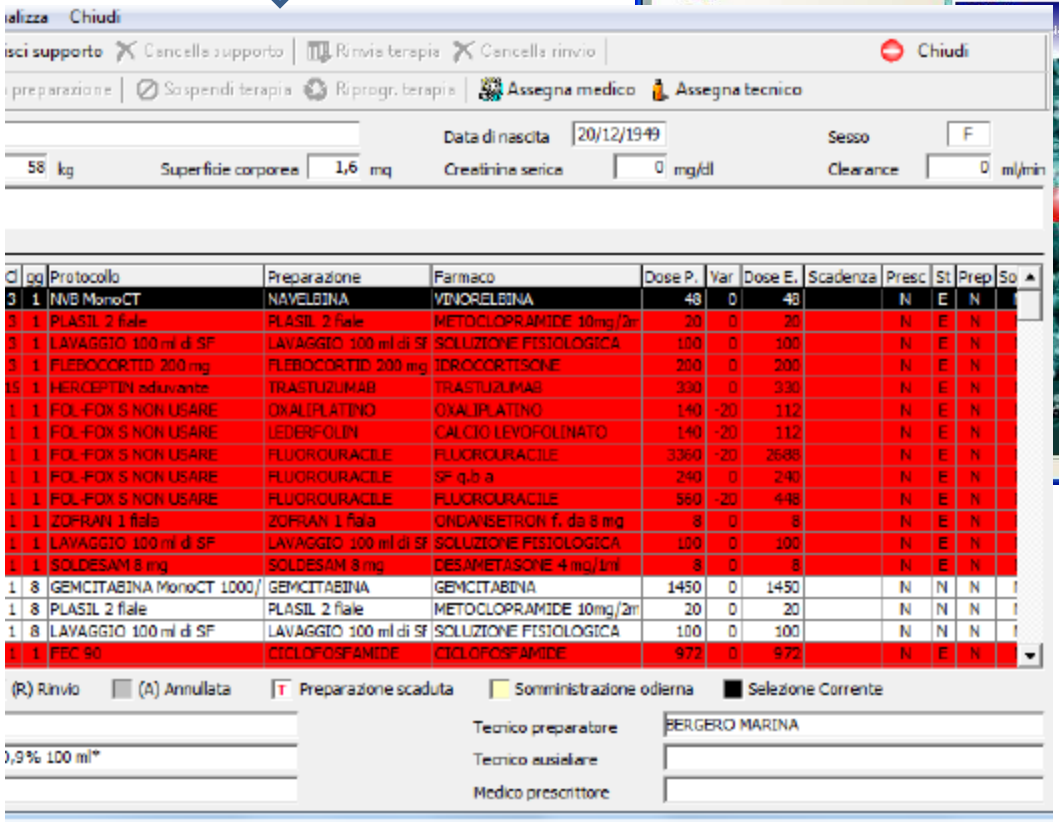
Focus on Antineoplastic production and management

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

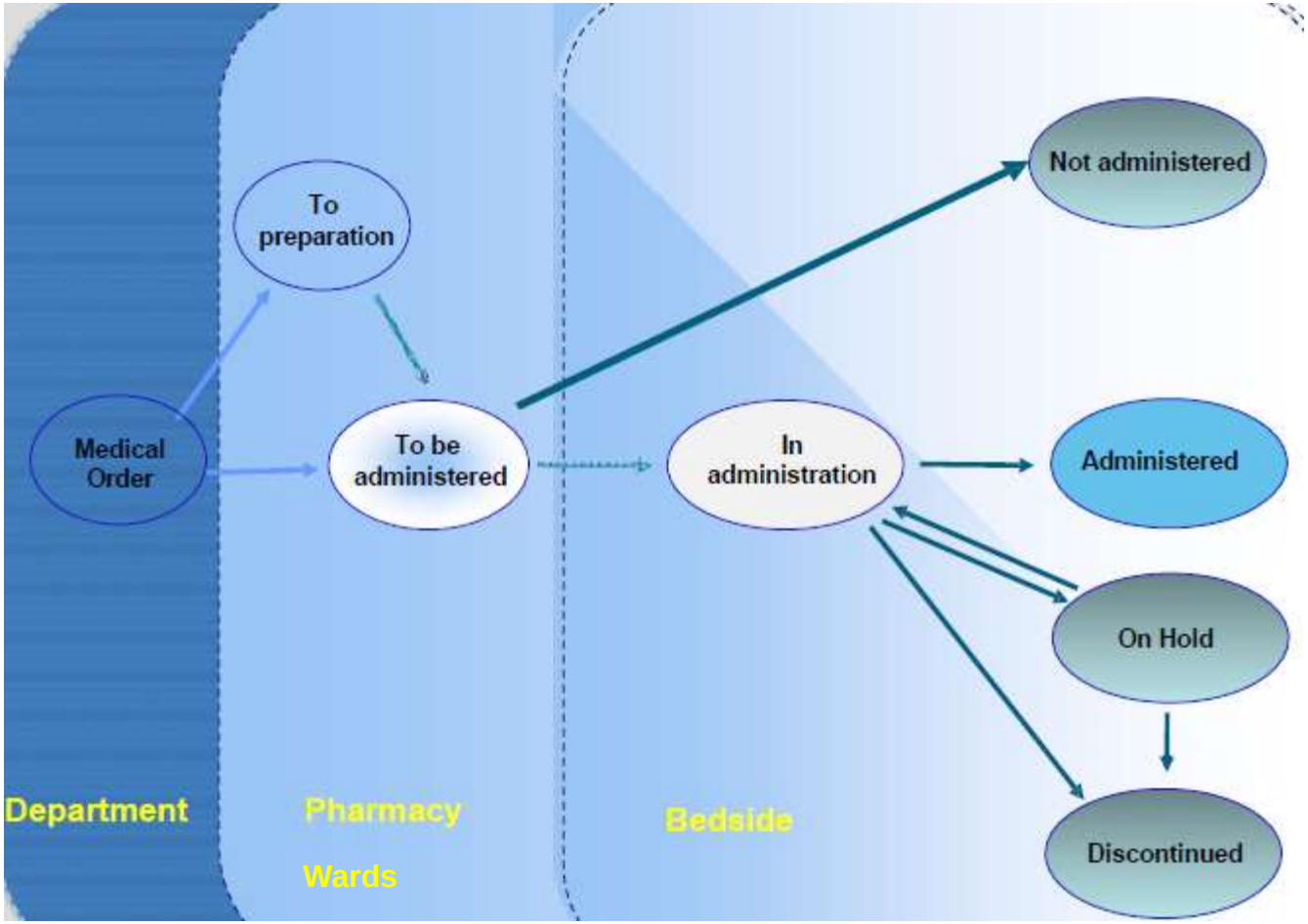
Interoperability

Dedalus Clinical Information System

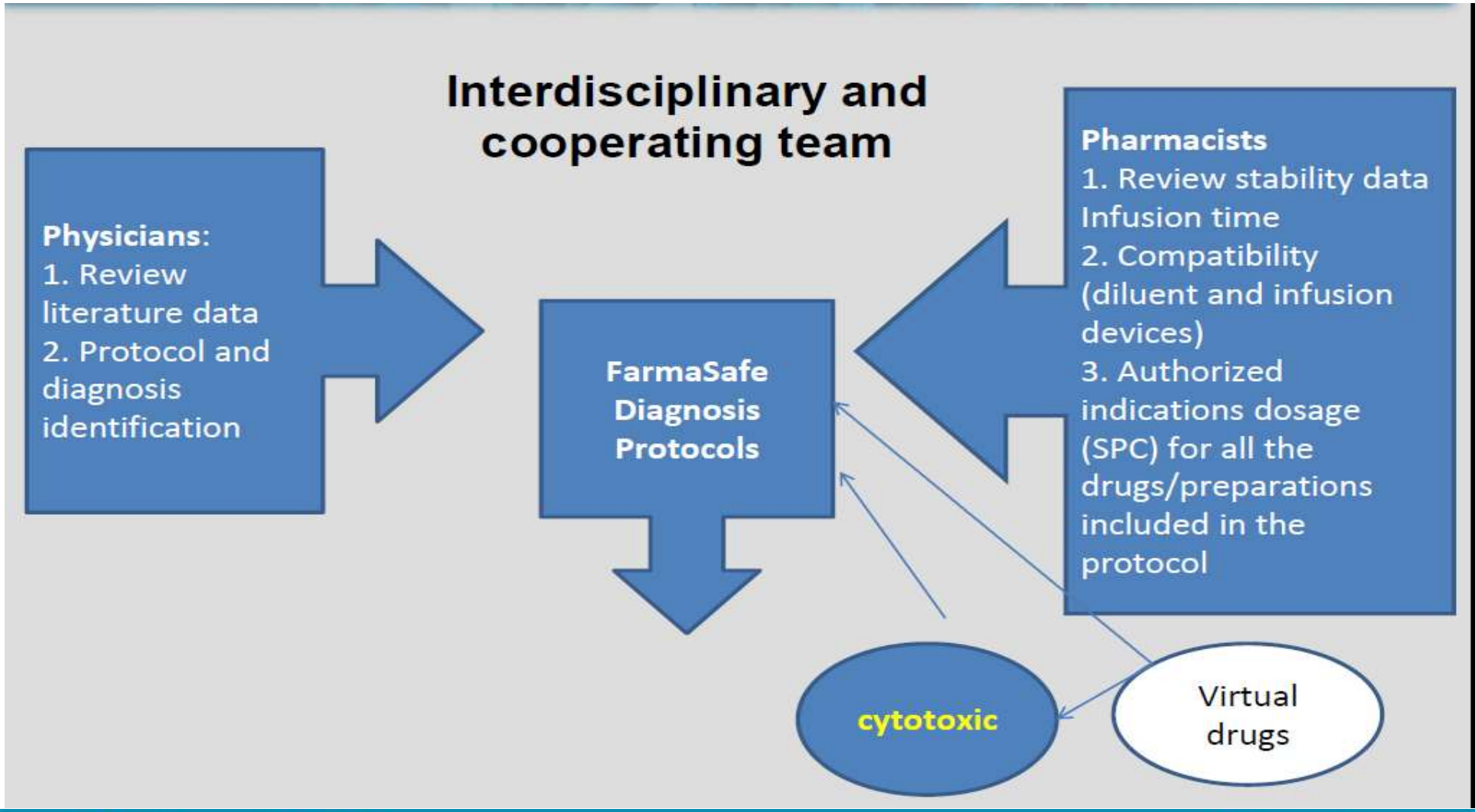
- EMR: Tabula Clinica
- Surgical Pathway: Ormaweb
- Drug Lifecycle Management: FarmaSafe@

Dedalus
HEALTHCARE SYSTEMS GROUP

The tracking path of medications: the closed loop



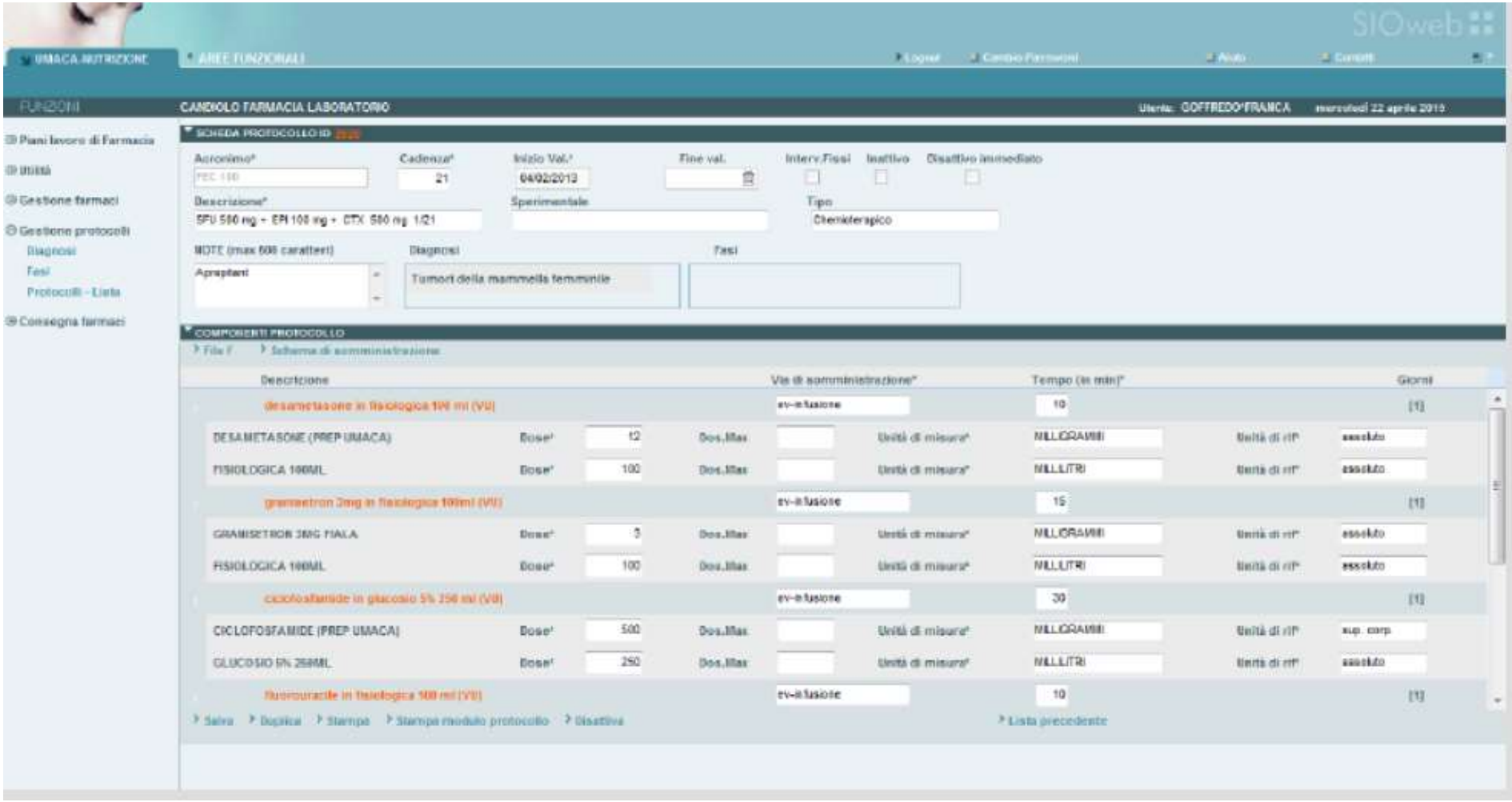
New chemotherapy protocol definition



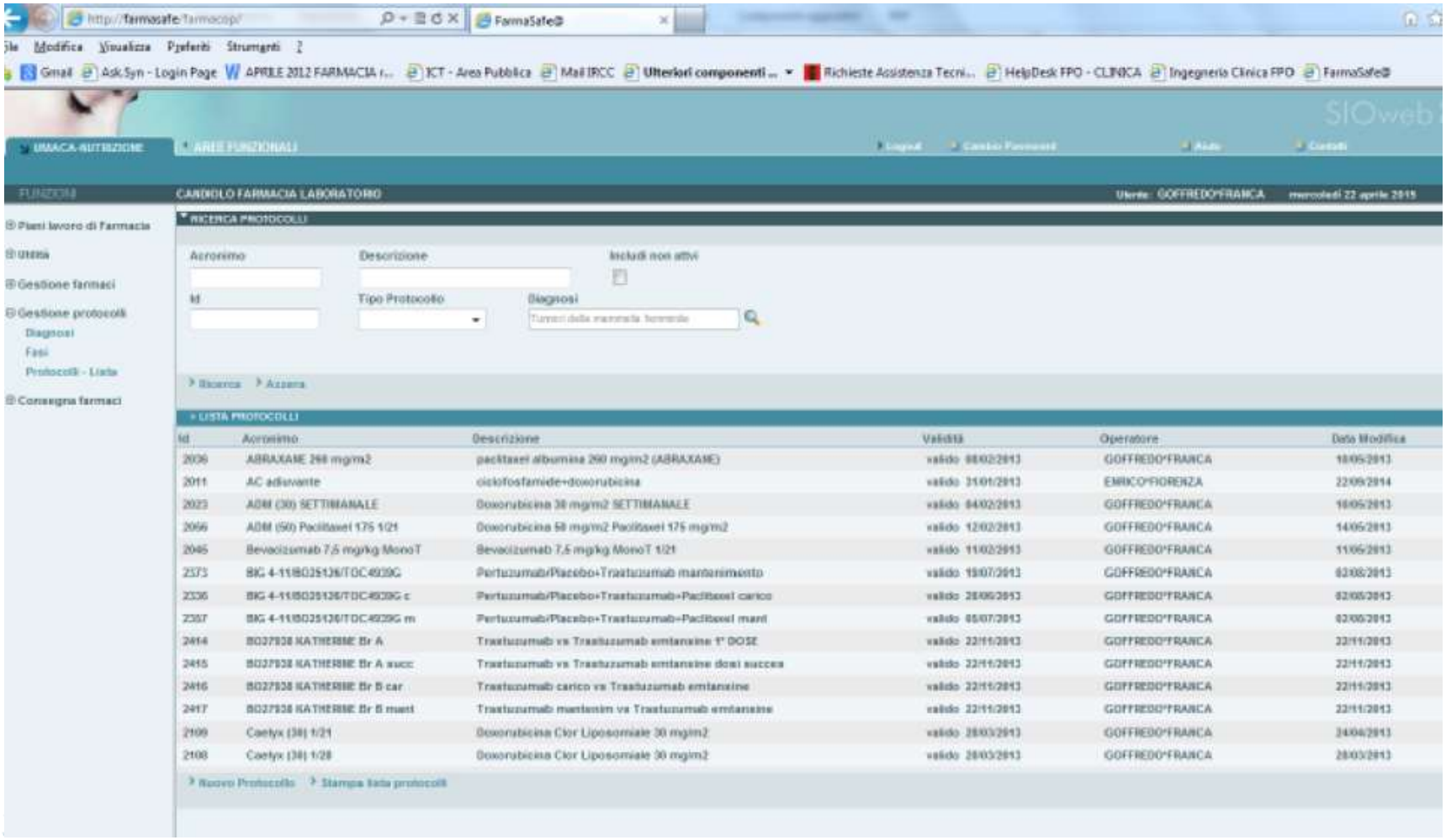
Pharmacy Workload

- Chemotherapy Protocols: 434
- Virtual drugs: 923
- Umaca: 143
- Preparations (Pharmacy) : 171
- Preparations (Wards) 122

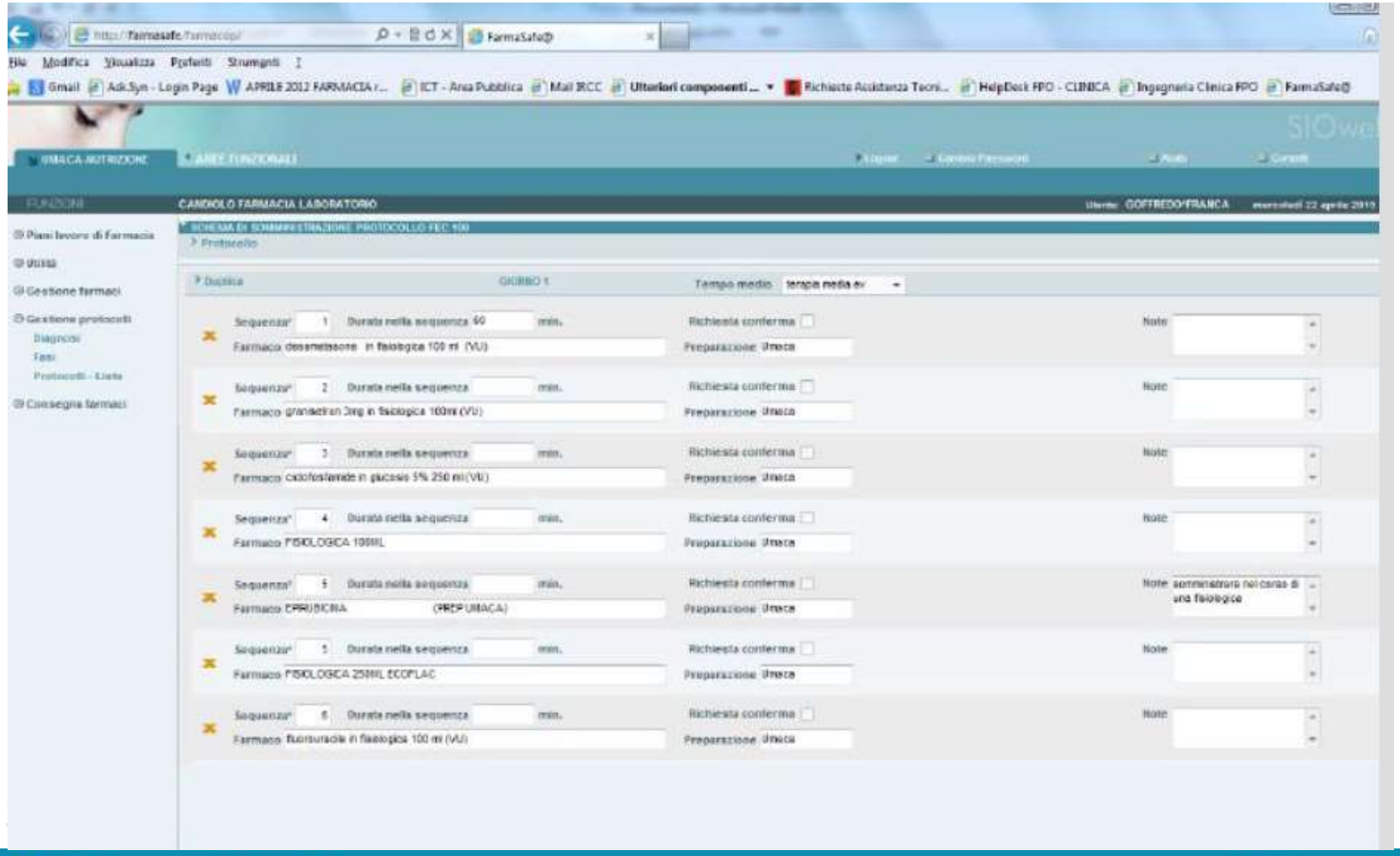
Drugs and preparations



Breast Cancer Protocol list

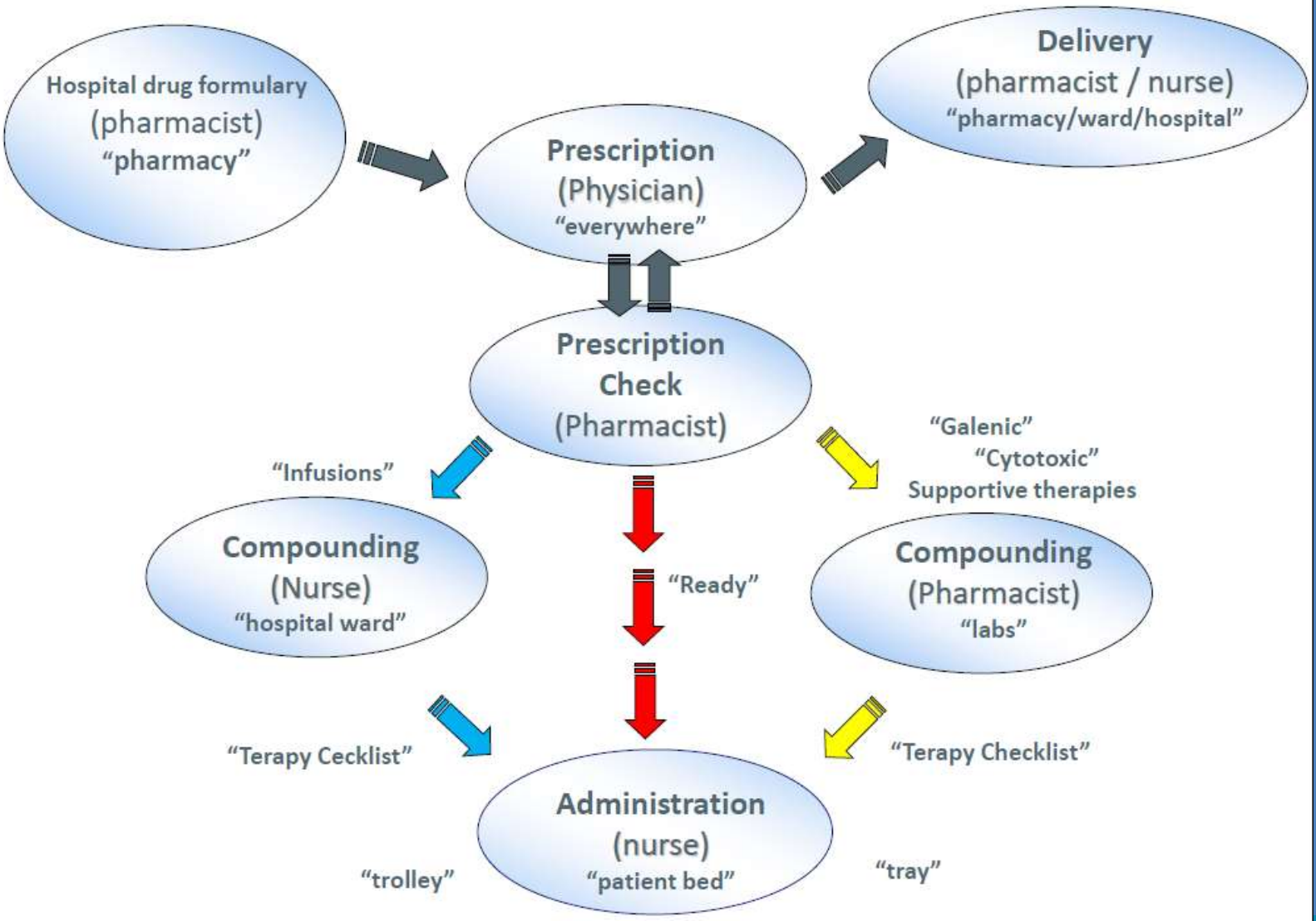


Administration Schedule



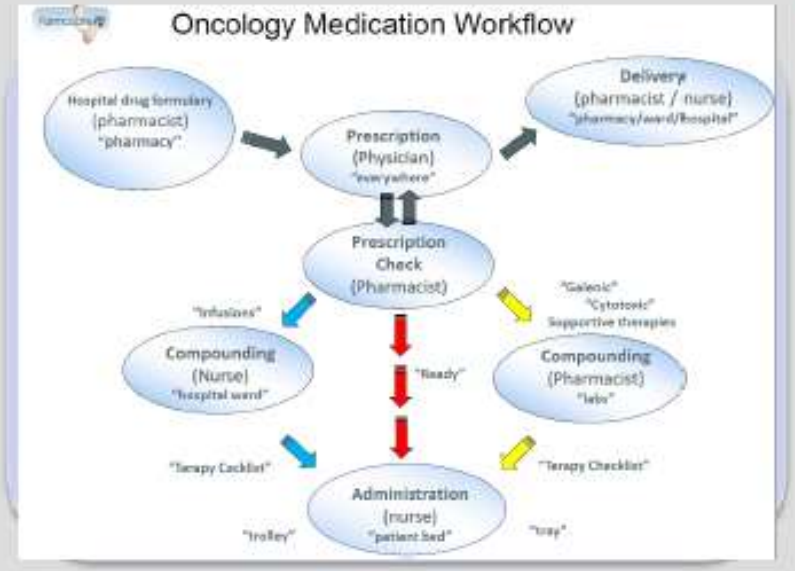
FarmaSafe

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**

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

The virtual Drug ensures
the real equivalence of Medicine Drugs

Virtual Drug

Virtual Drug is a combination of Medicines

Acetylsalicilic acid

Tablets 500 mg

Brand

Generic

Aspirin 500 mg tablets

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

- Tradename • Perfalgan vial 1 g
- Tradename • Paracetamol Teva vial 1 g
- Tradename • 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
- Responsability 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 enphasized 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

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THANK YOU!

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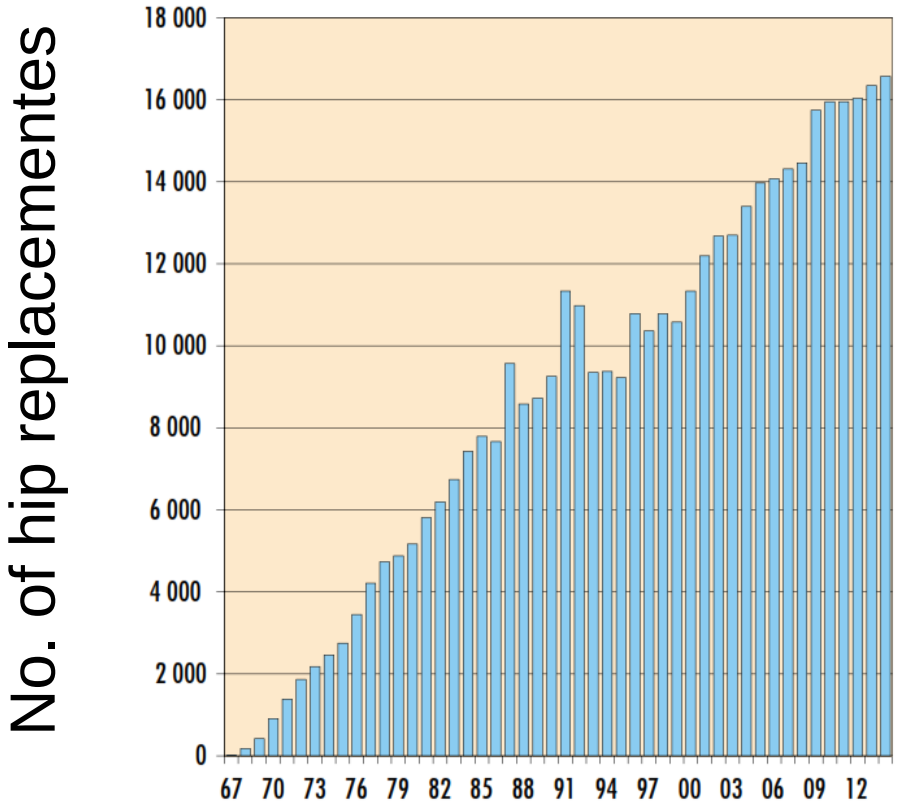
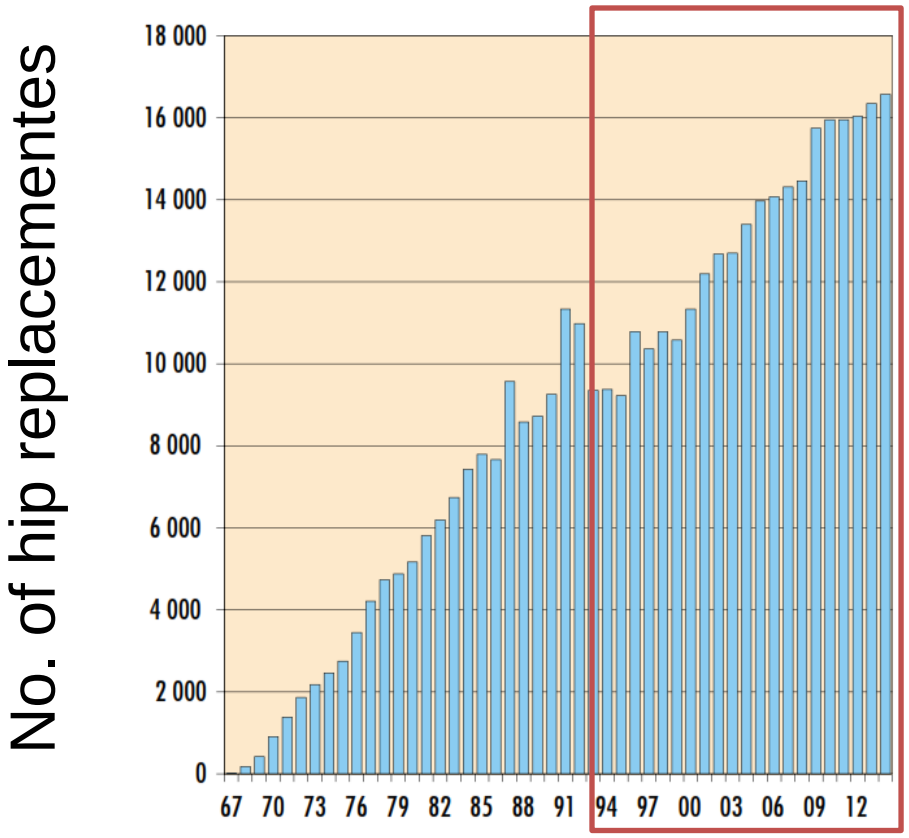
IMPLEMENTATION OF VALUE BASED HEALTH CARE IN JOINT REPLACEMENT UNIT AT SAHLGRENSKA UNIVERSITY HOSPITAL

Maziar Mohaddes
MD, PhD

Background


No. of hip replacementes
18 000
16 000
14 000
12 000
10 000
8 000
6 000
4 000
2 000
0
67 70 73 76 79 82 85 88 91 94 97 00 03 06 09 12
Year

Background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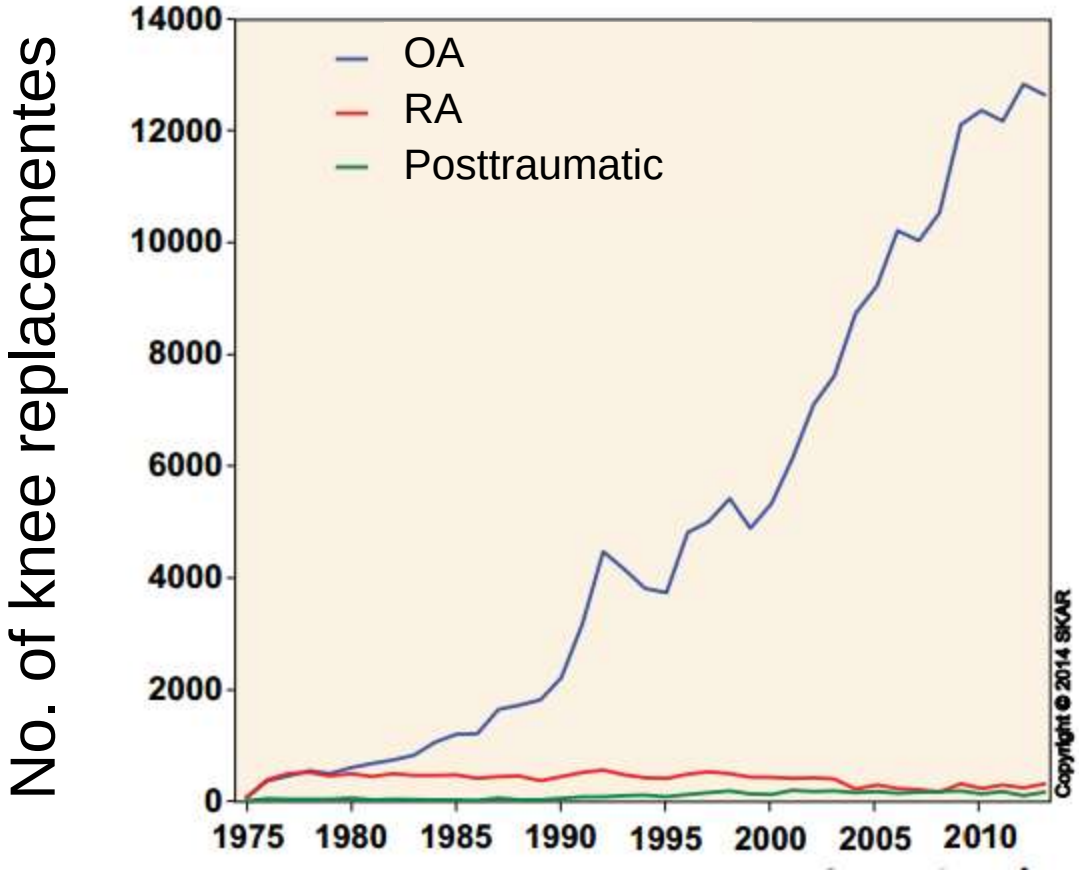
0
67 70 73 76 79 82 85 88 91 94 97 00 03 06 09 12
Year

Background



Swedish Knee Arthroplasty Register

New Public Management

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

*Hood, C. (1995). The new public management in the 1980s: variations on a theme. Accounting, Organizations and Society, 20(2), 93-109.

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

*Hood, C. (1995). The new public management in the 1980s: variations on a theme. Accounting, Organizations and Society, 20(2), 93-109.

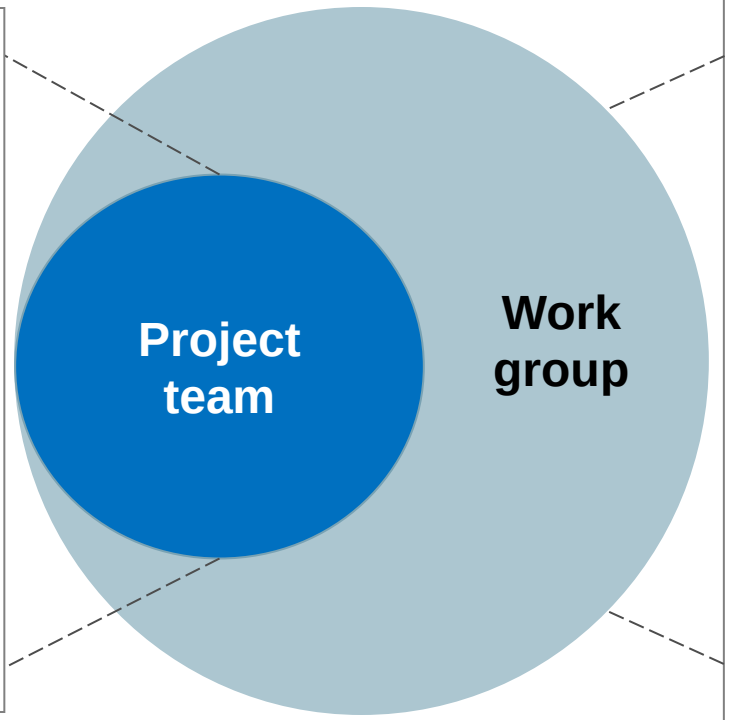
New Public Management – orthopaedic view

Value Based Health Care

$$\text{Value} = \frac{\text{Outcome}}{\text{Cost}}$$

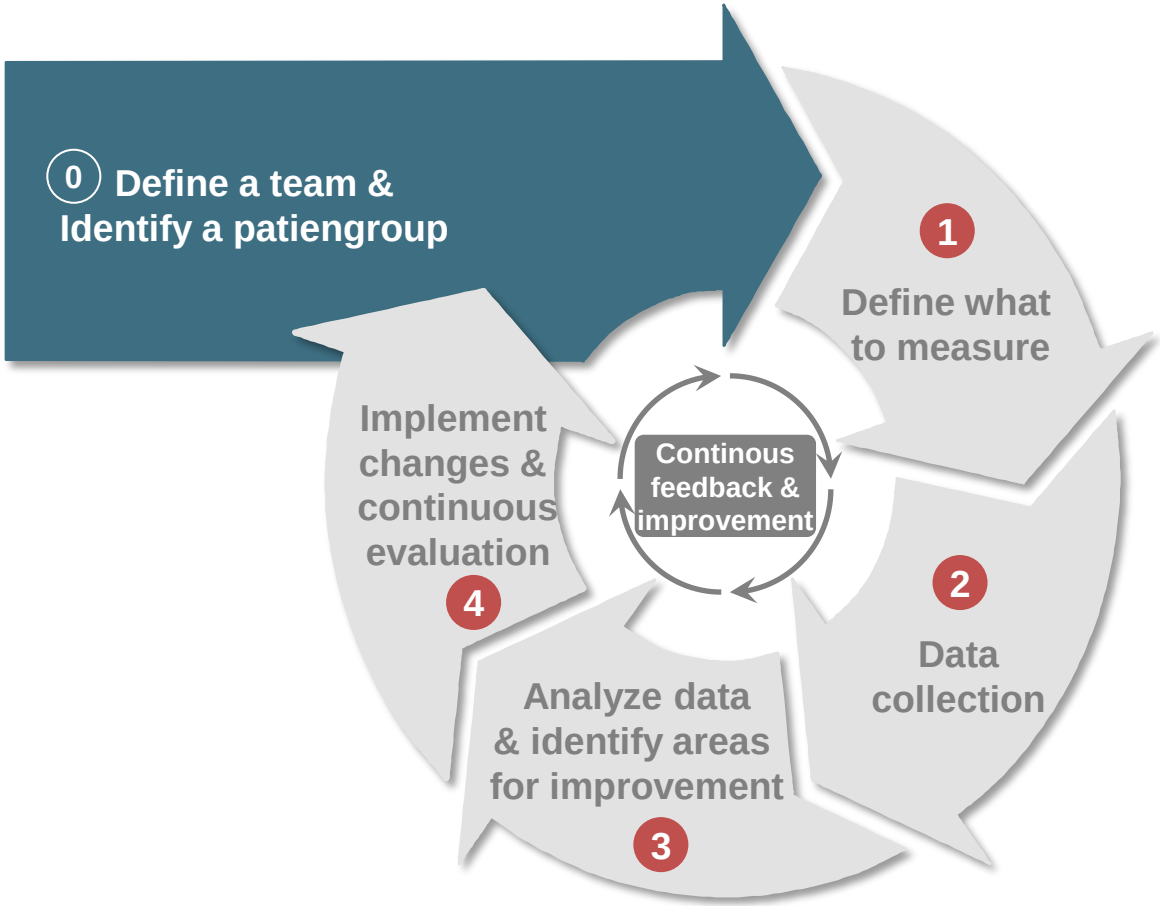
Value Based Health Care

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

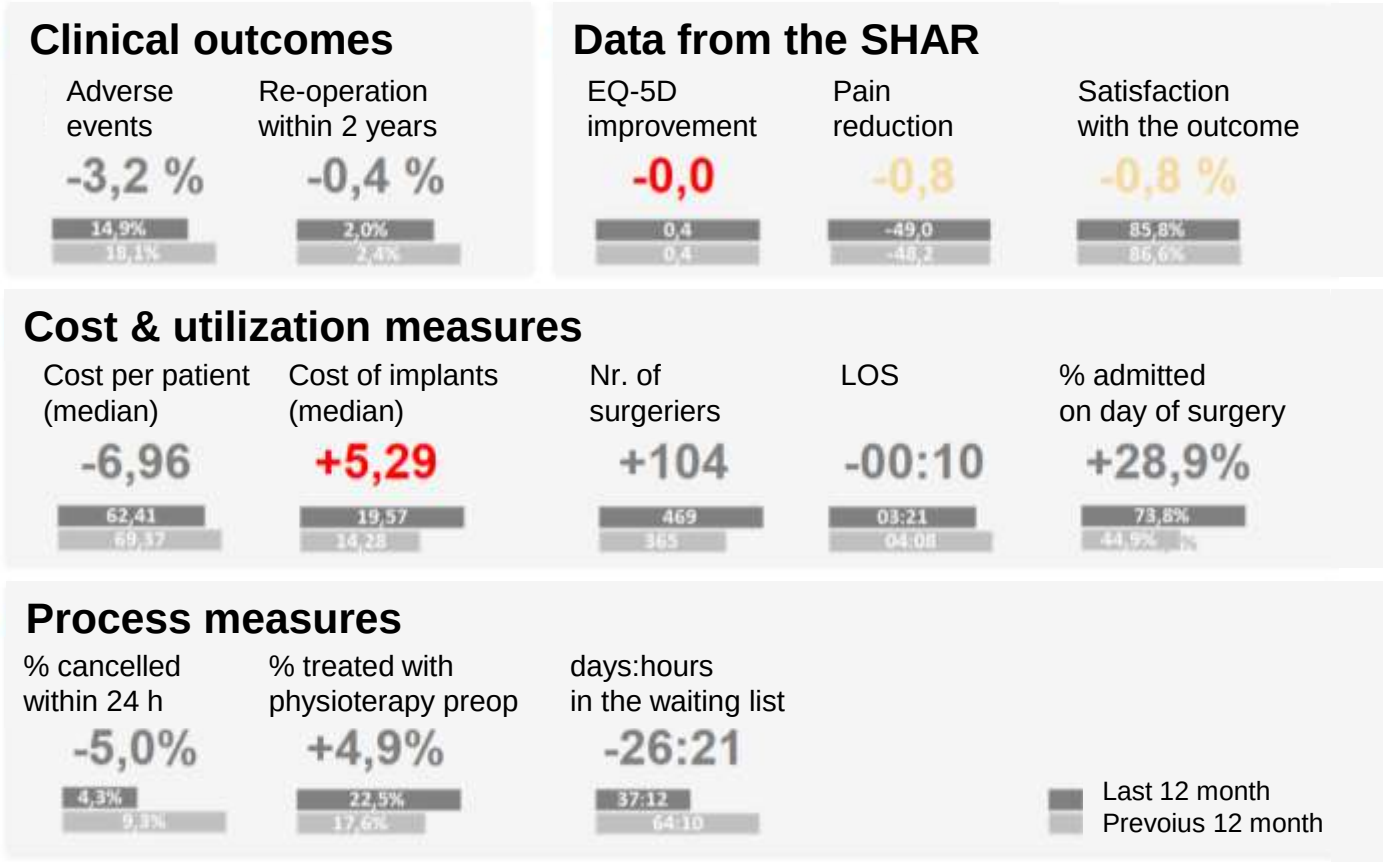


Work group
- Staffan Skarrie
- Åsa Sand
- Magnus Karlsson
- Lena Danemo
- Eva Levin
- Erik Houltz
- Marie Björk
- Jenny Hempel
- Katarina Dahlgren
- Jonas Thanner
- Emma Svensson
- Henrik Malchau
- Per-Olof Holmberg

Value Based Health Care

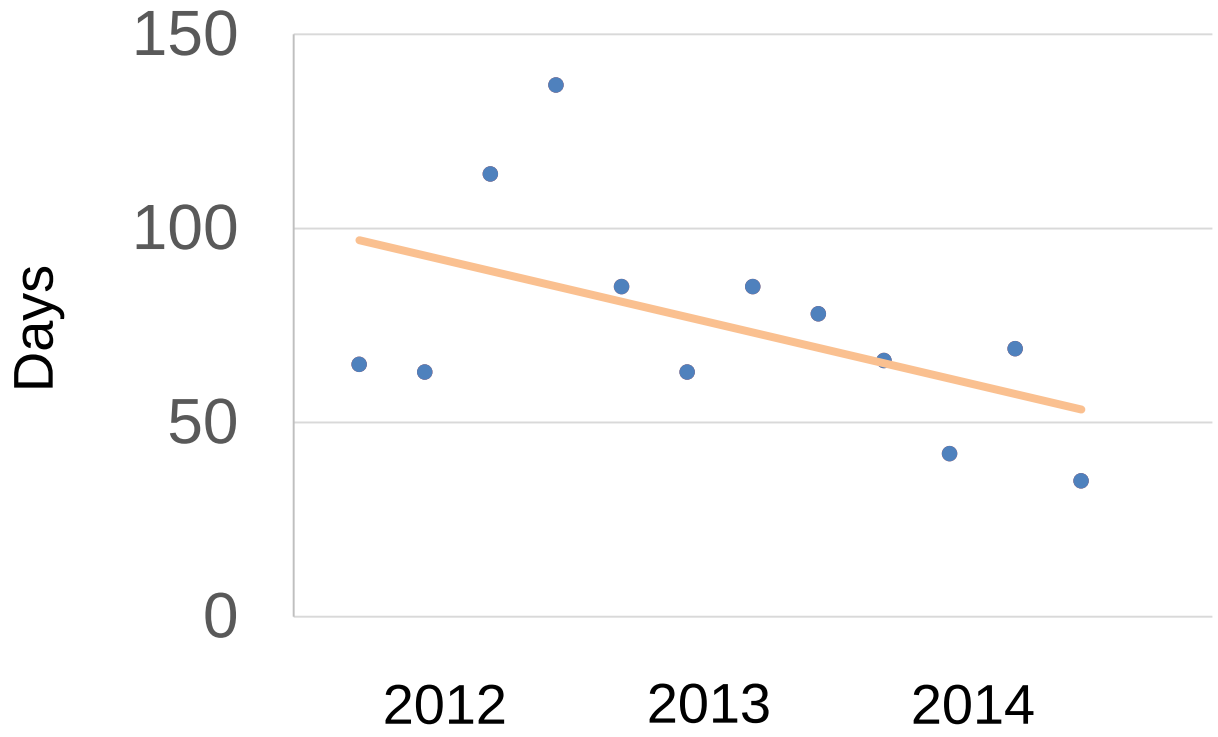


Value Based Health Care

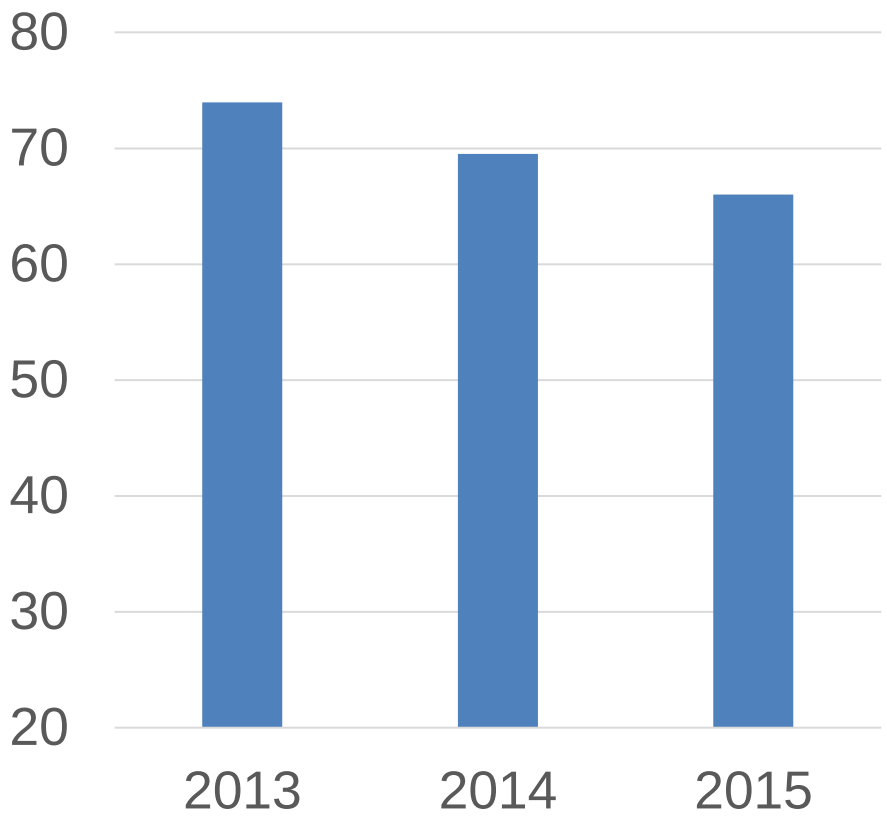


Outcomes 2014

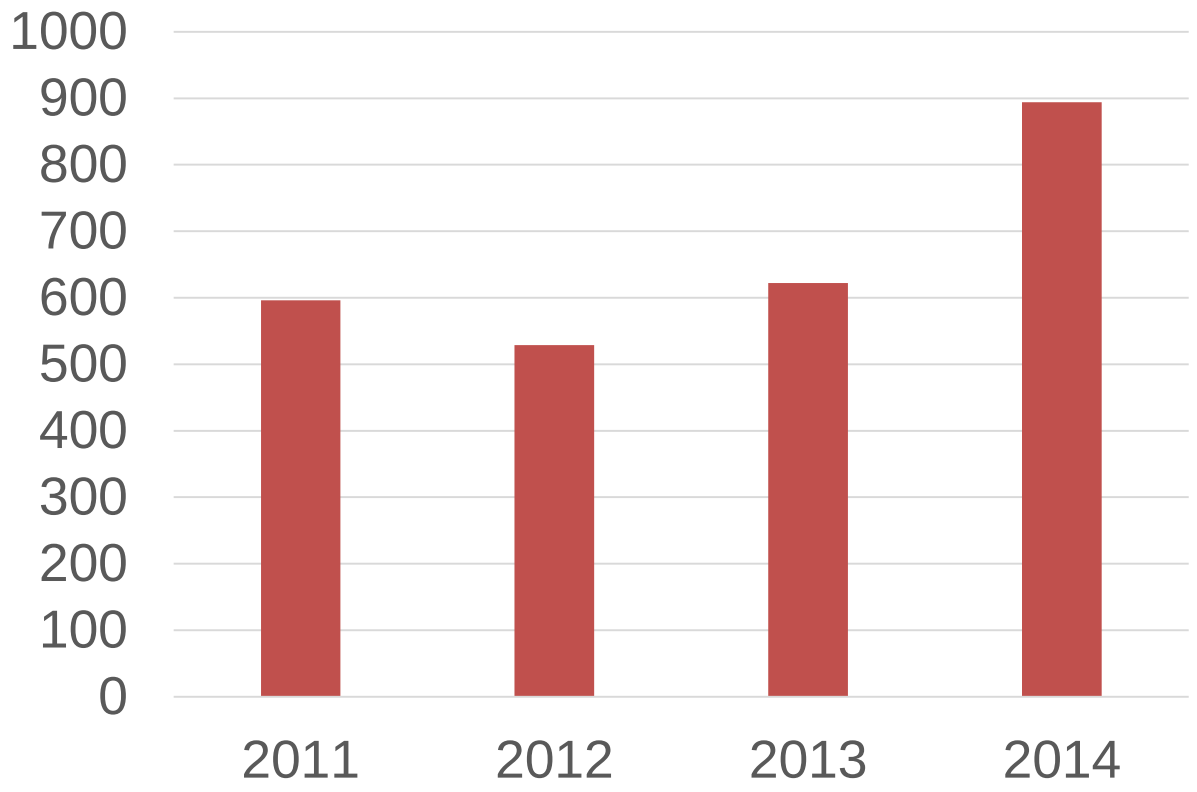
No of days in the waiting list

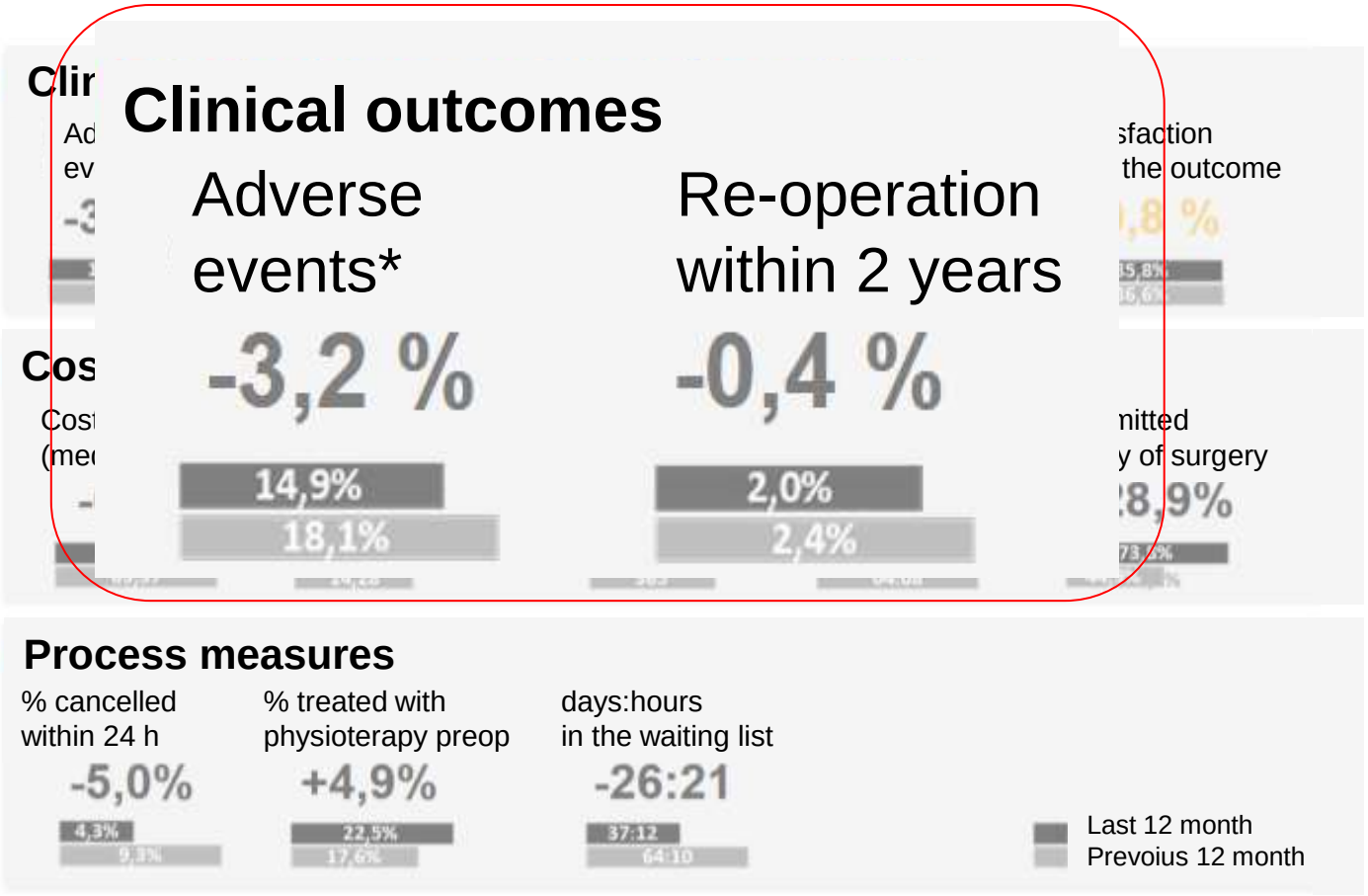


Cost per patient



No of surgeries performed





* Urinary tract infections, wound infections, transfusions, fall accidents

Length of stay in the hospital

548 *Acta Orthopaedica* 2014; 85 (6): 548–555

Traditions and myths in hip and knee arthroplasty

A narrative review

Henrik Husted[1], Kirill Gromov[1], Henrik Malchau[2,3], Andrew Freiberg[2], Peter Gebuhr[1], and Anders Troelsen[1]

Departments of Orthopaedic Surgery, [1]Copenhagen University Hospital Hvidovre, Copenhagen, Denmark; [2]Massachusetts General Hospital, Boston, MA, USA; [3]Sahlgrenska University Hospital, Mölndal, Sweden.
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Submitted 2014-06-28. Accepted 2014-09-11.

- Ward A
- Ward B

How about the value?

$$\text{Value} = \frac{\text{Outcome}}{\text{Cost}}$$

Adverse events ↓ **18%**

Re-operations ↓ **17%**

No of surgeries ↑ **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?

Aktie	1D%	1V%	1M%	3M%	12M%
Electrolux B	-0,62	-0,84	22,82	23,77	83,24
Balder B	-0,07	4,82	24,20	49,29	77,01
Loomis B	-0,29	-0,44	10,31	27,35	74,39
Electrolux A	-1,24	-0,92	20,58	23,67	72,53
Securitas B	-0,08	-0,08	20,26	29,87	70,91
Boliden	-0,35	2,30	33,44	32,29	65,00
Peab B	-0,14	2,69	21,67	39,00	63,24
Hexpol B	-0,61	-0,11	8,55	34,69	58,27
Assa Abloy B	0,44	2,21	12,40	22,61	53,29
Axis	0,21	0,27	66,95	73,17	52,31
Autoliv SDB	-0,74	0,27	12,90	27,94	50,92
Husqvarna A	0,39	-1,74	18,90	16,98	50,49
Husqvarna B	0,08	-1,73	19,07	17,04	50,28
Skanska B	-0,10	1,07	15,05	29,29	50,11
Atlas Copco A	-0,74	-0,96	12,28	23,07	49,39

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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