CLOSED LOOP MEDICATION AND PATIENT SAFETY STRATEGY AT VIMERCIATE HOSPITAL

GIOVANNI DELGROSSI - CIO
Vimercate Hospital Trust

Lombardy is the most densely populated Region with 9,917,714 inhabitants spread over 12 Provinces.

Province of Monza Brianza is distributed over 405 km² with 850,000 inhabitants.
Vimercate Hospital Trust

5 HOSPITAL STRUCTURES
1.290 INPATIENT BEDS
47.000 ADMISSIONS/YEAR
5.5M OUTPATIENT TREATMENTS/YEAR
197.000 EMERGENCY DEPARTMENT VISIT/YEAR
5.500 DELIVERIES/YEAR
24.500 SURGICAL INTERVENTIONS/YEAR

11 OUTPATIENT DEPARTMENTS
4 DIALYSIS CENTERS
6 PSYCHIATRIC CENTERS
9 CHILD NEUROPSYCHIATRIC UNITS
13 DENTAL CENTERS

3.400 EMPLOYEES

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Vimercate Digital Hospital
Software Architecture

Application Services
- E-PRESCRIPTION
- DIGITAL SIGN
- TIME STAMP

Electronic Medical Record
- PATIENT RECORD
- DOCUMENT REPOSITORY
- IMAGING REPOSITORY

Interoperability and Integration Services

Middleware

Regional Health Record

EXTRANET

Front End Systems
- CUP
- ADT
- PS

Departmental Systems
- RIS/PACS
- LIS
- AN PAT
- AMB
- REP
Electronic Medical Record – from paper to EMR

• BEDSIDE CLINICAL DATA
  - real time data access
  - full mobility features
  - 300 smart Tablet PC

• APPLICATION USABILITY
  - smart functionalities
  - “touch” technology

• SYSTEM SECURITY AND INTEGRITY
  - Strong and secure authentication
  - Data Encryption
  - Database synchronization
Electronic Medical Record – main functionalities

- PATIENT SECURE IDENTIFICATION
- CLINICAL HISTORY AND DIAGNOSYS
- CLINICAL DIARY
- EXAM ORDER ENTRY AND REPORTS
- DRUG PRESCRIPTION AND ADMINISTRATION
- VITAL SIGNS MANAGEMENT
- EVALUATION RATING CLINICAL SCALES
- NURSES NEED PLAN
- “CLINICAL SUMMARY”
Digital Imaging System – integrated process

- RADIOLOGY IMAGES
- CARDIOLOGY IMAGES
- ENDOSCOPY IMAGES
- GINECOLOGY IMAGES
- DIGITAL DIAGNOSTIC SYSTEM
- DICOM WORKLIST, STORE, SR
- FULLY INTEGRATED PROCESS
Integrated Electronic Medical Record

500 doctors
1,600 nurses
300 Tablet PC
2,000 PC and VDI
Medication Integrated Process - Unit Dose

Hospital Pharmacy

Processing Site

Hospital Ward
Medication Integrated Process – Unit Dose

- Unique Barcode
- Pharmaceutical Specialty
- Active ingredient
- Dosage
- Expiration date
- Pharmaceutical Lot

MOTILIUM*30CPR RIV 10MG
P.A.: DOMPERIDONE
G.F.: COMPRESSE RIVESTITE
D.S.: 31/12/2013 L.: 2009L239
Medication Integrated Process – central preparation

- 6 automated warehouses
- 500 beds managed
- 8 hospital areas served
- 4 daily deliveries
- Unit Dose ward warehouse
Medication Integrated Process - Prescription

- Bedside prescription
- Coded Drug list
- Daily prescription validation
- Basic CDSS functionalities
  - allergy check
  - interaction check
- HL7 real time communication
Medication Integrated Process – Drug Preparation

Automated Warehouse

Drug drawers

Automatic transport system

Ward
Medication Integrated Process – drug cart

- Preparation of drug carts
- Packed drug integration
- Unit Dose integration
Medication Integrated Process - Administration

• Patient Identification through personal wrist barcode scanning
• Unit Dose barcode scanning
• Barcode Check
Medication Integrated Process – Barcode Check

• **Perfect Chain**: right drug and right unit dose serial code

• **Broken Chain**: right drug with equivalence but different unit dose code

• **Alert**: Broken Chain with no equivalence with prescribed drug
Medication Integrated Process – Barcode Check
Medication Integrated Process – Barcode Check

<table>
<thead>
<tr>
<th>Medication</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>CLOPIDOGREL SOLTATO</td>
<td>Standard non infusionale. Dose: 150 mg/12 hours. 1 Compresse Via di somministrazione: ORALE</td>
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<tr>
<td>AMPICILLINA/SULBACTAM</td>
<td>Standard non infusionale. Dose: 1.5 g three times per day. 1 Ampicillin/Sulbactam (UNASYN® IV 1.5 g=500 mg/0.2 mL+ 0.2 mL o equivalente). 1 Preparazione isofluclo: Soluzione idroalcolica, 10 ml</td>
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Safety Strategy – Barcode Check - RFID

• Blood Transfusion Process

• Vital Parameters Detection

• Medical Devices tracking

• Surgical Instruments tracking
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