VALUE AND INNIVATION THROUGH SAFE TECHNOLOGY
PHARMACY INFORMATION SYSTEM (PHIS)

2018
History

Dominion, has been dedicated for more than 20 years to the development of exclusively health solutions.

FarmaTools has been deployed in:

- México
- Portugal
- Honduras
- Argentina
- Chile
- España
OPTIMIZATION AND IMPROVEMENT OF HOSPITAL PHARMACY BASED ON TECHNOLOGY

Logistics and Procurement Management

Clinical Area

Medical ITC
Pharmaceutical spending is the highest budget after payroll

- All this budget is managed from the pharmacy systems.

The system allows the dispensing of more than one million drugs per day

- For this, the system manages around 450,000 prescriptions per day between pharmacological and non-pharmacological.

Thousands of professionals from the health sector daily at FarmaTools

- Pharmaceutical, administrative, medical, nursing or management, use our solution as their main every-day-tool.
**Economic management**

- **Inventory control** always in real time.
- **Automatized procurement** based on consumption.
- **Expiry control**, loans, dispensations, regularizations, repackaging.

**Bid management**

- **FarmaTools** allows you to keep track of published bids and competitions, informing of the state they are in or of their completion.

**Automation and messaging**

- The system communicates with different automated systems and allows the identification of drugs and materials or supplies by barcode.
Business Case for Hospital X:
• 100 Beds
• Annual Budget: $100M
• Annual procurement Budget for medicines: $30M
• Estimated 30% of total Budget goes to purchase medicines.

Optimization of purchasing management
• 20% reduction in purchasing management: $200/mo X 12 mos = $2,4K/year.
• Optimization of purchases reducing the acquisition cost by 10%: $3M/year.

Optimization of pharmaceutical warehouse management
• Reduction to zero the loss due to expiration of the medication: 5% of $30M = $1.5M/year
• Reduction of 20% of the fixed assets of pharmacy warehouses: $6M/year

30% time savings for administrative and management tasks.
• $300/mo x 12 mos = $3,6K/year

Reduction of clinical errors. Avoidable errors due to adverse use of the medicine $2.6M/year
**Optimization of purchasing management**
- 20% reduction in costs required for purchasing management
- Optimization of purchases reducing costs by 10%

**Reduction of administrative costs**
- Savings of 30% of the time required for administrative and management processes

**Optimization of pharmaceutical warehouse management**
- Reduction to zero the loss due to expiration of the medication
- Reduction of 20% of the fixed assets of pharmacy warehouses
Hospitales madrileños pagan hasta el 20% más por los mismos fármacos

Los centros podrían ahorrar 1,9 millones de euros si compraran de forma centralizada, advierte un informe de la Cámara de Cuentas.

Fármacos de uso hospitalario

Diferencias de precio pagado por cuatro centros:

- Clínico San Carlos
- Gregorio Marañón
- Ramón y Cajal
- La Princesa

<table>
<thead>
<tr>
<th>Los 20 Fármacos en los que más se gasta</th>
<th>Mínimo</th>
<th>Máximo</th>
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<tbody>
<tr>
<td>Flebogamma</td>
<td>319,3</td>
<td>387,7</td>
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<tr>
<td>Kivexa</td>
<td>281,8</td>
<td>342,0</td>
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<tr>
<td>Isentress</td>
<td>548,0</td>
<td>663,8</td>
</tr>
<tr>
<td>Humira</td>
<td>905,6</td>
<td>960,0</td>
</tr>
</tbody>
</table>

Diferencia en %

- Flebogamma: 21,45%
- Kivexa: 21,36%
- Isentress: 21,12%
- Humira: 8,27%
Benefits of correct management:

• Real time cost information
• Administrative cost reduction
• Storage capacity optimization
• Improvements in medicine availability and delivery times
• Automatized system centralized management thanks to the PHIS
• Cost control by patient, by intervention, by process, ...etc.
• Analysis and validation tools for the medical practice
• Patient safety = cost reduction
Logistics Management

- Processes and Decision Making automatization, saves money.
- Less storage costs with lower volumes of storage, losses and destruction.
- No expiration losses.
- Purchasing adjusted to consumption.
- Expense evaluation analytics.
- Elaboration costs optimization.
Logistic Management issues:

- **Expiration:**
  - PHIS allows to eliminate medicine losses due to expiration by monitoring lots close to expiration.
  - Monitoring deliveries by hospital floor.

- **Over stock Issues** – missing information for decision making.

- **Stock breaking issues:**
  - Reactive demand generation
  - Higher costs for acquiring in units, not lots
  - Not rotating low rotation medicines correctly.
Characteristics

FarmaTools Structure:
> PHIS
> Administrative modules.
  > Clínical modules.
> Masters module.
> Scalable and parametrizable system

Experienced in interoperability with:
> Information systems:
  - Clinical EST
  - ERP
  - LABORATORIES
> Automations:
  - Automated patient dispensing systems.
  - Vertical automated systems.
  - Horizontal automated systems.
  - Robots for the manufacture of mixtures.

Implemented in 80% of hospitals in the Spanish public environment:
La Paz Hospital in Madrid (1331 beds), Puerta de Hierro Hospital (613 beds) or Reina Sofía Hospital (1319 beds, five centers).
Analytical Management (Statistics, Reports)

Comparative and evolutionary reports. Search for the reduction of administrative work.

Custom exploitation of user's needs

System Management

- User control authorized
- Definition of profiles, buttons where they can act, Menu options etc.
- Complete traceability of all actions

Volume

The medication supply of about 600,000 patients daily. Calculates and optimizes the management of more than 375,000 products per day.
Pharmaceutical validation

Our vision.
The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) approved in 2004 the standard MM.4.10, on validation of treatments by the pharmacist, which states that:

"Pharmacists must review all medication orders before they are dispensed or taken from the plant stock, automated closet or other distribution system."
Hospitalization and emergencies
- Electronic Prescription
- Assisted Patient's prescription.
- Calculation of dose in Results function
- analytical
- Assisted Validation,
- medical communication
- pharmacist
- Pharmacovigilance.
- Administration

Alerts in all modules by ...
- Interactions, Teratogenias, Allergies, overdosage, Cross-allergies, Therapeutic Duplicity, Renal Insufficiency, Hepatic, rules based on the analytical results ...

External patients
- Provision of patients
- they're going to the hospital,
- necessary medication and patient's agenda.
- Calculation of compliance therapeutic.
- Surveillance and monitoring of the patient.
**Clinical Trials**

Open and parameterizable management of clinical trials typologies.
Definition of trials and protocols
Prescription of tests, monitoring, evolution records and clinical trial documentation.

**Parenteral Nutrition ...**

Prescription of nutritional data.
Nutrition Protocols.
Calculation of rainfall.
Processing recommendations.
Quality control and traceability.

**Pharmacology**

Registration of raw materials, quality and documentation at the reception, labeling.
Preparation of quality materials and accompanying documentation.
Process integration
Quality control and traceability.
Oncology patients and day hospital

- Prescription protocol and associated with the diagnosis.
- Management of chemotherapy cycles and adverse effects.
- Support to the doctor and pharmacist in making decisions: control of correct doses, impact with analytical results, calculation based on weight, surface, AUC ...

Modules of safe administration to patients at bedside

- The system allows to uniquely identify the patient and their treatment, validating that it is correct and recording incidents.
- Centralized teacher of drugs and supplies.
Prevention of Oncohematological drug preparation errors

- Traceability and integral quality control in the process of prescription, preparation and administration.
- Voice recognition system.
- Gravimetric control, labeling with batches, expiration, order of administration and quality control in the elaboration.
Secure labeling system

- The system allows you to label mixtures in FarmaTools, identifying each one with a unique code.
- A cytostatic, a patient, a moment, zero errors.

Identification of safe and traceable access

- Implementation of biometric systems for user identification.

Flexible module

- It adapts to the preferred systems by nursing.
- Available for multiple mobile systems including PDA.

SOUND AND VISUAL WARNINGS

FARMATOOLS MODULES > CLINICAL MODULES
Continued search for zero error of medication

Closer and closer to achieving this goal

Every day more PRMs are solved with FarmaTools

Validation = Patient safety

The system allows to analyze in an agile way, the pharmacological profile of the patient the day before the dispensation, the objective is not already to facilitate 100%. Now, we must buy time for research.

Continue increasing cost reduction

Not only based on the improvement of processes and the reduction of adverse effects. Also looking for the analysis of therapies and generating statistical processes of efficient use of the drug.
The imperative for computerized Physycian Order Entry in Massachusetts Hospitals

Our estimate of preventable adverse drug event rates of 10.4 percent and potential annual savings of $2.7 million per hospital are conservative. If CPOE systems were fully implemented in the 63 Massachusetts hospitals technology, the number of adverse drug events prevented every year could be approximately million annually.

All Massachusetts hospitals should complete full implementation of CPOE systems, including comprehensive clinical decision support, within the four year period 2008-2011.
Saving Lifes, Saving money