Bedsidescanning,
the missing link in patient safety

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Copenhagen 21-10-2014
To err is human …

• Report Institute of Medicine: “To Err is Human” (1999)
  – 44,000 – 88,000 deaths/year by medical errors
  – Extrapolation for Belgium (11 million inhabitants):
    • 1000 deaths / year (<150 medication errors)
    • € 2,500,000 / year for 700 bed hospital
  – Avoidable ADE in 2 % of the admissions
Real life ...

- Oops, wrong room
- Benzo’s are good, much benzo’s are better
- Prune concentrate ?
- Marcoumar 1,5 !
Distribution of medication errors

34% Prescribing
4% Administration
62% Transcribing

- CPOE
- Scanning
- Pharmacy
From prescribing to C.P.O.E.
Decision support for prescribers

Dienstgebonden sjablonen

Substitutie van medicatie BISOPROLOL EG TABL 10 MG

Mogelijke substituties:
- Form. Medicatie: EMCONCOR Vorm: DRAG 10 MG

Disclaimer
Deze databank werd met de grootste zorg samengesteld. Eventuele onjuistheden die aan de apotheek worden gesignaleerd, zullen zo snel mogelijk worden gecorrigeerd.

GM ↔ GM 0 0 1
GM ↔ Voeding 1
Pijnscore 0
ADR 0
<table>
<thead>
<tr>
<th>Medicatie</th>
<th>Toed.</th>
<th>ma 28-04</th>
<th>di 29-04</th>
<th>wo 30-04</th>
<th>do 01-05</th>
<th>vr 02-05</th>
<th>za 03-05</th>
<th>zo 04-05</th>
<th>ma 05-05</th>
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</thead>
<tbody>
<tr>
<td>NATR.CHLOIDE 0,9 % (FL INF 50 ML)</td>
<td>IV Inf</td>
<td>1 Infuus</td>
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<tr>
<td>NATR.CHLOIDE 0,9 % (FL INF 100 ML)</td>
<td>IV Inf</td>
<td>1 Infuus</td>
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<tr>
<td>NEULASTA MN (SPUNT 6 MG)</td>
<td>SC</td>
<td>1 stuk</td>
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<tr>
<td>PERIO AID MONOSPHEL (FL 600 ML 0,12 %)</td>
<td>OROMUC</td>
<td>3*10 ml</td>
<td>4*10 ml</td>
<td>4*10 ml</td>
<td>4*10 ml</td>
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<td>4*10 ml</td>
</tr>
<tr>
<td>MAALOX ANTACID (ZAKJE 4,3 ML)</td>
<td>PO</td>
<td>3*1 zakje</td>
<td>3*1 zakje</td>
<td>3*1 zakje</td>
<td>3*1 zakje</td>
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<td>3*1 zakje</td>
</tr>
<tr>
<td>PANTOMED (TABL 20 MG)</td>
<td>PO</td>
<td>20 mg</td>
<td>20 mg</td>
<td>20 mg</td>
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<td>20 mg</td>
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<td>20 mg</td>
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<tr>
<td>ALOXI (FL INF 250 MCG/5 ML)</td>
<td>IV Bolus</td>
<td>250 µg</td>
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<tr>
<td>LAXOBERON (FL 15 ML)</td>
<td>PO</td>
<td>10 drup</td>
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<tr>
<td>FORLAX (ZAKJE 10 G)</td>
<td>PO</td>
<td>1 zakje</td>
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<tr>
<td>MOVICOL (ZAKJE NEUTRAAL 10 G)</td>
<td>PO</td>
<td>2*1 zakje</td>
<td>2*1 zakje</td>
<td>2*1 zakje</td>
<td>1 zakje</td>
<td>1 zakje</td>
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<td>1 zakje</td>
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<tr>
<td>LASIX (AMP INF 20 MG/2 ML)</td>
<td>IV Bolus</td>
<td>4*1 g</td>
<td>4*1 g</td>
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<tr>
<td>DAFALGAN (TABL FORTE BRUIS 1 G)</td>
<td>PO</td>
<td>4*5 drup</td>
<td>4*5 drup</td>
<td>4*5 drup</td>
<td>4*5 drup</td>
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<td>4*5 drup</td>
<td>4*5 drup</td>
</tr>
<tr>
<td>HALDOL (FL DGP P O. 9 MG/ML 16 ML)</td>
<td>PO</td>
<td>2*5 mg</td>
<td>2*5 mg</td>
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<tr>
<td>ZYPREXA (TABL 5 MG)</td>
<td>PO</td>
<td>3*1 mg</td>
<td>3*1 mg</td>
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<tr>
<td>TEMESTA (TABL EXPEDIT 1 MG)</td>
<td>PO</td>
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**Chemo schema:**

- **VIP** Etoposide 100mg/m² Ifosfamide 2000mg/m² Cisplatine 30mg/m² (GEEN LIMIET OP 2m²)
You’re not a number ...
Bedside scanning …

• The final checkpoint!
• Requirements
  – Fully deployed CPOE
  – Hardware and software
  – Barcode on every single dose
• UZ Leuven
  – First blood and antineoplastic drugs
  – All medication
    • 14.000.000 doses / year
    • > 95 % of all doses is scanable
Packaging ...
Single dose, barcode …

- Single Dose versus Unit Dose versus Nominative dose
... hard to get!

• How to get 14.000.000 doses ready?
  – Repacking in the pharmacy
    • Legally seen as compounding
    • GMP in cleanroom
    • Time consuming
    • 4 blistering machines
  – Outsourcing
    • Legally possible
    • GMP in cleanroom
    • Expensive for small batches

→ market is changing
With a little help … ?

• Pharmaceutical industry
  – Delivery in single dose barcoded packages ?
  – Willingness but …
    • Global management does not see the advantage
    • Blistering lines are European or global
    • Different registration, different artwork
    • Need for a standard or legal obligation
    • Costs and difference between markets

• Policy makers
  – Provide a standard and a flexible framework for registration, artwork, information on primary package, …
Voice of the customer ...

EAHP STATEMENT ON THE NEED FOR BARCODING OF THE SINGLE DOSE ADMINISTERED IN HOSPITALS

JUNE 2012 (UPDATED FROM 2007 & 2010 STATEMENTS)

What is meant by barcoding of the single dose?

By “single dose” EAHP refers to the single item of medicine in an individual packaged component. This could for example include the single medicine within a perforated multi-dose blister pack, a syringe, a vial or an ampoule*.

For the primary purpose of reducing medication errors and protecting patient safety, EAHP’s statement calls for each single dose of medicine used within hospitals and supplied to the hospital by manufacturers or wholesalers to include an individual barcode in GS1 datamatrix format.
Confusion ... due to dual request

- Bulk is **NOT DONE**!
These are the meds we need in appropriate care giving ...
These are the meds we need in appropriate care giving ...
Why SD/BC by company?

(Single Dose / BarCode)

- GMP production facility
- Optimal storage conditions (primary)
- Minimal cost (just do it once, big batches)
- Liability
- Protection against counterfeiting
- Supply chain management (all packaging levels)
- Added value in drug selection (P&T committee, track and trace, …)
Step by step

• Step 1: Identification
  – Unique identifier
    • Used in translation tables (1 on n relation)
    • Link to databases (measures, photo’s, leaflets, …)

• Step 2: Traceability
  – Batch / serial
  – Expiration date
  → Already feasible for non-blister ?!
BSS in practice ...

Dispensing and ordering
Reconstitution
Administration
BSS in practice

• Module dispensing and ordering
BSS in practice

• Module pharmacy: Dispensing
BSS in practice

- Module reconstitution
  - Barcode verification of every ingredient
  - Reconstituted medication gets barcode
BSS in practice

- Module administration
How does it work?
Does it work?

• **YES it works!**
  – Wrong patient
  – Wrong product
  – Wrong dose
  – Wrong time of administration
  – Wrong timeline cytotoxics
  – Double medication or dose
  – Contraindications and allergies for (standing) orders
  
  – Different patient incident reports (FONA)
  – Follow up use of decision support CPOE
Does it stop here?

- Scanning while order-picking in pharmacy
- Pilot materiovigilance / traceability (UDI)
- Clinical rules, machine learning, …
- Opportunities:
  - Patient compliance projects
  - Electronic SKP, photo of medication
  - 2D/BC labels on clinical trial medication
    - Prevents medication errors in trials
- Deployment to partner hospitals (www.nexuzhealth.be)

→ Quality improvement and patient safety is “a way of life”
Questions ?