# **MAR UZ LEUVEN**

# **Development and implementation of 'Check of**

**Medication Appropriateness' in a large tertiary care centre** 

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### **Background**

• Establishment of a full medical electronic patient record

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- Rise of clinical pharmacy services
  - Need for regulatory compliance by hospital accreditation



 During the last decade, traditional drug-oriented services expanded towards patient-oriented services by imbedding computerized Clinical Decision Support

# Why was it done

- CDSS provides support on a hospital-wide basis but only at the level of prescribing
- Bedside clinical pharmacy services provide support at any time of the treatment but only runs for a limited high-risk patient populations due to limited resources





Systems (CDSSs) in the prescribing process and implementing bedside clinical pharmacy services, both leading to improved efficacy and safety of medication use.



#### How was it done

- A worklist with high risk prescriptions, generated by automated queries, is checked by a hospital pharmacist using standardized algorithms
- Interventions are performed via electronic warnings in the patient's file or a phone call to the treating physician in case of a

• The queries screen daily all new and current prescriptions in the electronic prescribing system of the last 24 hours for high risk prescriptions. The screening is carried out irrespective of medication stock location.

Fig 2. Schematic overview of development of queries for high risk medications



Fig 1. Concept - CMA is a liaison between CDSS and bedside clinical pharmacy. It is a dynamic concept with interaction towards the different levels to further improve patient safety.

# What was done

To guarantee patient safety throughout the hospital, specifically targeting patients at risk, a back-office clinical service, Check of Medication Appropriateness (CMA), was developed and implemented in a Belgian 2000-bed tertiary care hospital

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- 2000 beds
- 5000 new prescriptions per day
- 18-month period (March 2016 -
  - August 2017): 97,500 hospitalizations

the treating physician in case of a severe adverse drug event



# What has been achieved

- 79 specific algorithms, covering 5 pharmacotherapeutic areas of interest, were developed
- 14 hospital pharmacists involved in CMA, covering 0.5 FTE, were educated
- During an 18-month period,
  92,050 prescriptions were checked

Drugs with restrictive indications

Evaluation of overruled interventions raised by CDSS

Medication-related biochemical changes

Sequential therapy for bio-equivalent drugs Reimbursement of drugs

Fig 3. Schematic overview of 5 pharmacotherapeutic areas covered by CMA



Fig 4. Details of amount of prescription's, electronic warnings and phone calls. \*Results without automatic warnings

During an 18-month period, 92,050 prescriptions were checked for which 24,943 (27%) electronic warnings were sent and 637 (1%) phone calls were carried out. When analysed without automatic warnings for sequential therapy, 39,481 prescriptions were checked for which 2,568 (7%) electronic warnings were sent and 637 (2%) phone calls were carried out.

## <u>Future</u>

- Evaluation of the acceptance rate of the current CMA process
- Fine-tuning the screening queries with emphasis on improving specificity
- Determining interrater validity
- Development of new algorithms, also expanding to other areas of interest
- Development of an easy access training tool for hospital pharmacists to perform CMA



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