

Development of a 7-day clinical pharmacy service

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Barts Health NHS Trust, London

Introduction

Barts Heart Centre is the largest cardiac centre in the UK with over 6500 acute admissions per year; 20% of which admitted on Saturday or Sunday. National reports highlight increased mortality at weekends which has led to a call for the NHS to provide a consistent service throughout the week¹.

Method

Additional resources allowed for expansion of existing cardiac services to be delivered, with changes to working hours and shift patterns for front-line staff. Expansion of ward-based pharmacy technicians role to include ward based dispensing led to timely access to medicines. An increase in visibility of pharmacy staff at a ward level facilitated a patient facing pharmacy service over the 7 days and allows for review of all new admissions, coronary care, intensive care and discharges at weekends.

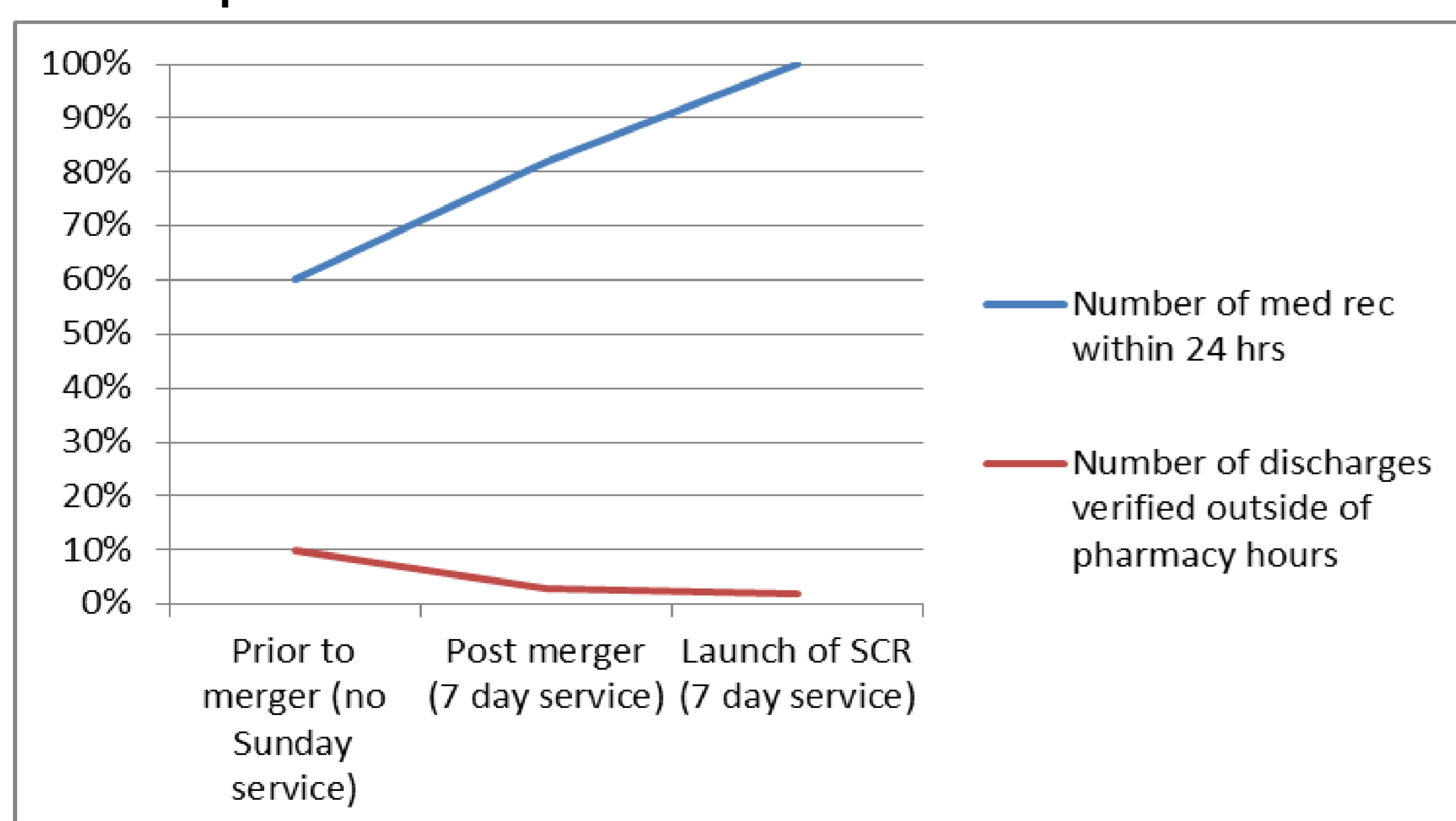
Results

A recent snapshot of pharmacy activity was collected over a weekend in January 2016. Findings are as follows:

Table 1. Weekend pharmacy activity

Total number of in-patient's	271
Number of patient's seen by pharmacy	269 (99%)
Number of new patient's admitted	36
Number of medication reconciliation within 24 hours	36 (100%)
Number of discharges screened by pharmacy	44
Number of items supplied	165
Number of drug charts to reboard	20
Number of prescriptions to validate post discharge	0

Figure 1. Activity and out of hour discharges pre and post 7-day service implementation



Discussion

- ❖ A number of potential causes have been recognised for increased mortality at weekends; one of which being weekend availability of staff and services². Expanding clinical pharmacy service across 7 days aims to address this, ensuring high risk patient groups have clinical pharmacy input. 99% of patients were reviewed by pharmacy at the weekend, allowing for clinical interventions to be made 7 days a week.
- ❖ Medication errors occur most frequently on transfer between care settings and on admission to hospital. NPSA recommends that pharmacists should be involved in medicines reconciliation as soon as possible after admission³. By extending pharmacy service across 7 days, 100% of weekend admissions had their medication reconciled within 24 hours of admission. Access to summary care record has facilitated this, allowing faster access to key clinical information out of hours and for emergency admissions.
- ❖ Feedback from patients, nursing and medical staff has been extremely positive. By extending clinical pharmacy service across 7 days there has been a reduction in the number of incidents reported at point of discharge, with increased patient satisfaction through timely access to discharge medication. Though outside the scope of this service evaluation, one could hypothesise that a 7-day clinical pharmacy service may impact positively on patient length of stay and translate to increased activity and potential revenue.

Conclusion

7-day clinical pharmacy service has been implemented successfully at the Barts Heart Centre and welcomed by all. A 7-day service is currently only provided for patients admitted within cardiac services, offering a two tiered service for patients within other specialities located on site. In view of successes within cardiac services, a review is underway to consider staffing requirements to implement across the whole site and the trust.

References

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2. Department of Health (2015). Research into the 'weekend' effect on hospital mortality. <https://www.gov.uk/government/publications/research-into-the-weekend-effect-on-hospital-mortality>
3. NICE NPSA (2007). Medicines reconciliation adults hospital. <http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59878>

Is it possible to “*turn around the trend*” of an increasing number of medicine backorders* – even at the national level?

*Backorders are orders that are not delivered on-time

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What

In 2014 we developed and applied a LEAN and Supplier Collaboration program, that we named “**TOP6-backorder program**”

It is a close follow-up program with the “TOP6-backorder suppliers” focusing on continuous improvements.

Our “TOP6-backorder program” operates on 3 levels:

- **Weekly selection** of this weeks “TOP6-backorder suppliers”, at LEAN BOARD MEETINGS.
- **Weekly TOP6 mails:** “Today, You have the most critical- or highest number of backorders. Please, explain the supply situation.”
- **Face-to-face meetings** with the suppliers with the poorest level of improvement. Agenda: Supply status and actions to improve.

Why

Globally we are facing an increasing number of medicines shortages, even though international regulatory authorities take initiatives to improve this situation.



In Denmark we have a national medicine set-up where all tenders and orders are collected and centralized. This enables us to create a full overview of medicine backorders to all hospital pharmacies.

Denmark:

- 6 million people
- 180 suppliers
- 50 public hospitals
- 8 hospital pharmacies
- One national set-up for backorders
- One point of contact for backorders

Our national medicine set-up includes one-point-of-contact to all suppliers and to all hospital pharmacies. This makes it possible to act and react with the suppliers, and focus on the backorders at the national level.

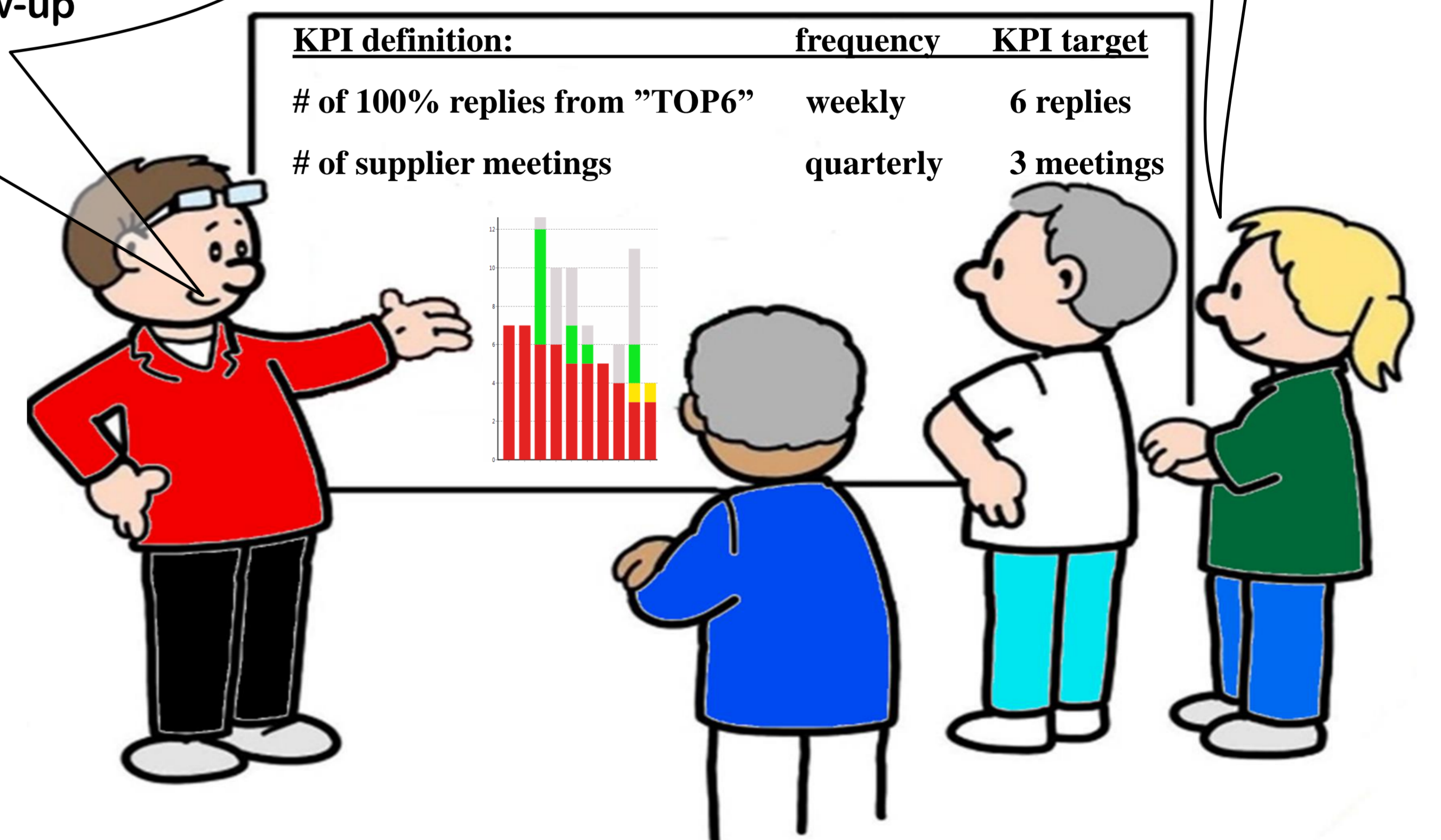
How

- By focusing on the problem and putting it in a framework by developing a program.
- Dedicate the resources.
- Develop **leading KPIs** (Key Performance Indicators).
- Reporting and celebrating improvements.
- Patience, it takes time to create improvements.

Here is this weeks overview of the number of medicine item numbers in backorders per supplier. Let's select the TOP6 for our weekly follow-up

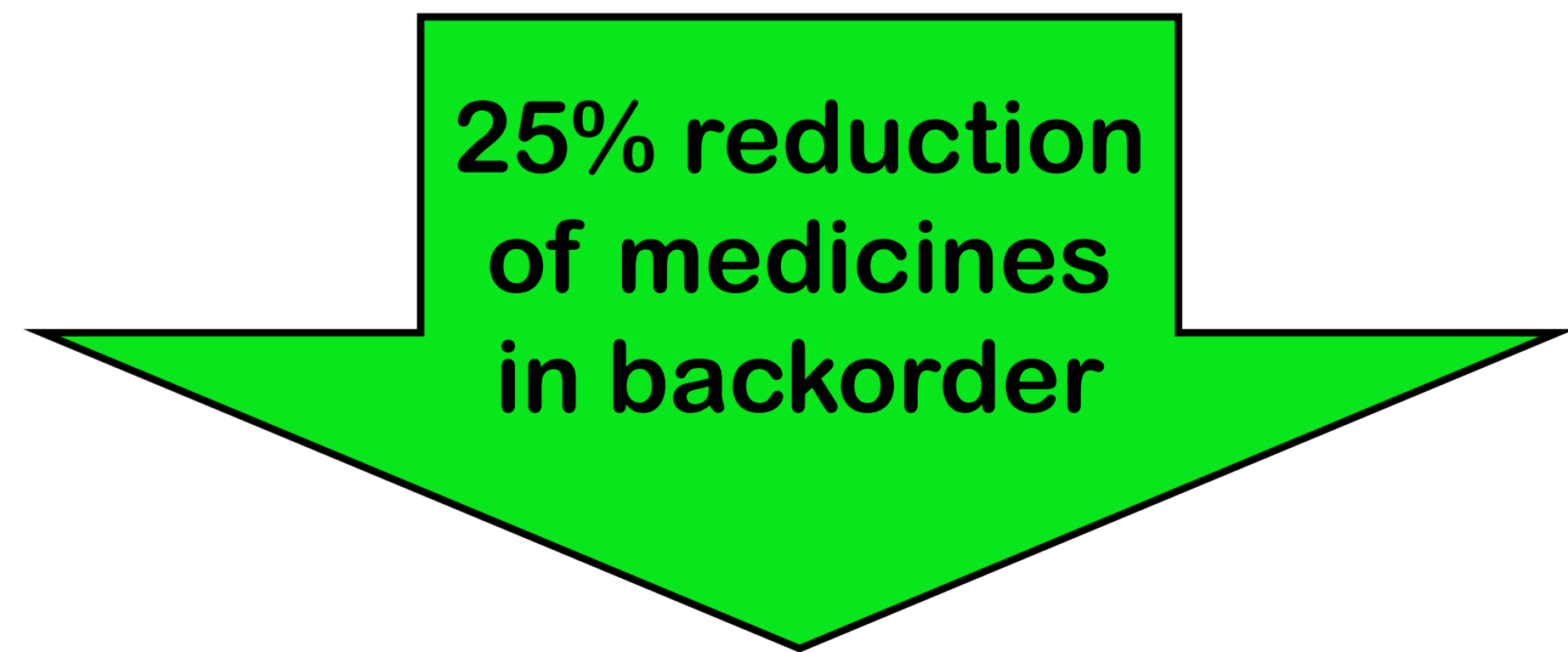
Leading KPIs, help us to focus on influencing the problem and hereby drive continuous improvements

KPI definition:	frequency	KPI target
# of 100% replies from "TOP6"	weekly	6 replies
# of supplier meetings	quarterly	3 meetings



Achieved results

- The number of medicine item numbers in backorder decreased by 25% from Q3 2014 to Q3 2015.
- **Before:** Often the same suppliers who had the most backorders. **Now:** +30 suppliers have been in our TOP6 scope.
- Number of long backorders decreased. Now >60% of all backorders last <14 days.
- Improved collaboration with the suppliers helps to solve and prevent problems.



Next

- Start an international network group to share best practices regarding improvements in medicines supply
- Let's team up, get started and together achieve further improvements on medicines supply to hospital pharmacies.
- Are your job to improve supply to hospital pharmacies and do you want to share experiences – please join our **LinkedIn group:** “Supply Chain Management for Hospital Pharmacies” or send an **e-mail** to “amgros@amgros.dk” att.: Lars Munck
- Come and hear more at **EAHP 2016: Oral presentation on the 17th of March, 12:00 to 13:30 in Hall 0.93**

DEVELOPMENT OF A COMPUTER APPLICATION TO REDUCE THE RISK OF ERRORS IN RECONSTITUTION OF CYTOTOXIC DRUGS

VIE15-0185

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What was done ?

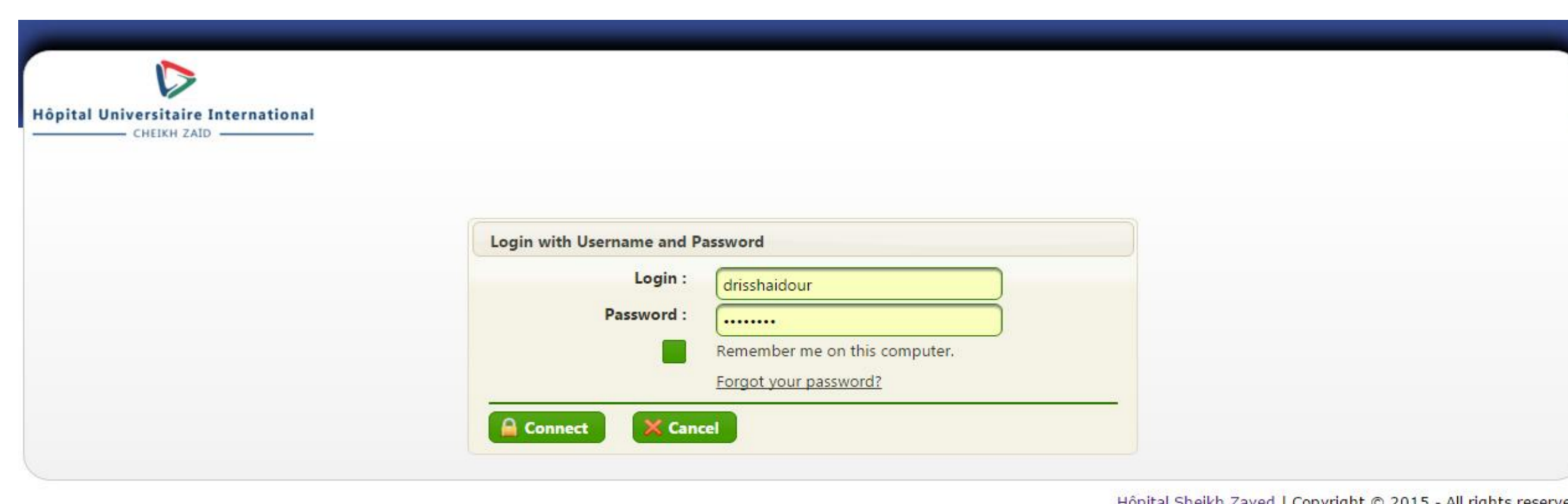
We present a simple and effective method that we have developed in our hospital to solve the problem of reconstitution errors.

Why was it done ?

The cytotoxic drugs account for 15,6% of the medication errors rate¹. Cytotoxic drugs represent the second drug class whose errors lead to death^{2,3}.

A study of S. limat on 30,819 preparations made in chemotherapy reconstruction unit of the French Hospital of Besançon reported 140 faulty preparations or an error rate of 0.45%⁴.

The preparation of cytotoxic drugs perfusions can be accompanied by errors that can be fatal to some patients. Several methods were tested to minimize the risk of errors associated with reconstitution of cytotoxic perfusions (camera, HPLC, analytical balance, the presence of a second technician to monitor his colleague). All these methods can be expensive and not available to all hospital pharmacists.



IPP	Firstname	Lastname	Actions
127.858	Said	BENNANI	Protocol
127.859	Nihad	AZZOUZI	Protocol
127.860	Mohamed	NAIM	Protocol
127.861	Byass	CHIBANI	Protocol
127.862	Ziad	HAMDOUNI	Protocol
111.111	hamid	Radouss	Protocol
2.222.222	rachida	hammou	Protocol

NB: The names listed in the table above are indicative and not the names of real patients

How was it done ?

Errors of cytotoxic drugs reconstitution can have catastrophic consequences for patients. Some studies have found that incidence of major and minor errors were respectively 0,19% and 0,26%. Reconstitution control methods are numerous but not always accessible to all hospital pharmacists and technicians, particularly in developing countries.

This work involves the development of a computer application developed from an Open Source voice recognition software. The daily chemotherapy protocols are entered in the application that dictates to the technician the protocol prescribed by physician product by product for all patients. The technician performs the cytotoxic preparations in the order in the centralized pharmaceutical unit for the preparation of cytotoxic drugs and he communicates with the application manually or by speaking.

The application begins with the patient's ID, name and surname, the first drug, the dosage, the dilution solution and the volume of this solution. Then, it passes to the second product and so on. In case of an observation, the application warns the technician to take this observation into account.

What has been achieved ?

This application has helped to provide better assistance to the technicians and pharmacists in the reconstitution of cytotoxic drugs and no event or error was detected until now.

What next ?

Making a large number of reconstitutions using this application to assess its effectiveness and install it in other hospitals who handle cytotoxic drugs.

Drug	Dosage	Dilution	Volume	Actions
CARBOPLATINE DBL	250 mg	Glucose solution	500ml	Play
CASODEX	500 mg	Glucose solution	250ml	Play

Key words : Computer application, Risk, Reconstitution of cytotoxic drugs

Acknowledgements to all the staff at the pharmacy of the Cheikh Zaid Hospital for their dedication and exemplary commitment.

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2: Phillips J, Beam S, Brinker A, Holquist C, Honig P, Lee LY, Pamer C: Retrospective analysis of mortalities associated with medication errors. Am J Health Syst Pharm 2001; 58: 1835-41

3: Muller T: Typical medication errors in oncology: analysis and prevention strategies. Onkologie 2003; 26: 539-44

4: Limat S, Drouhin JP, Demesmay K, Tissot E, Jacquet M, Woronoff-Lemsi MC: Incidence and risk factors of preparation errors in a centralized cytotoxic preparation unit. Pharm World Sci 2001; 23: 102-6

DEVELOPMENT OF AN INTERACTIVE PLATFORM FOR PROVINCE CLINICAL PHARMACEUTICS WHO ARE IN CHARGE OF THE TREATMENT OF HEPATITIS C INFECTED PATIENTS

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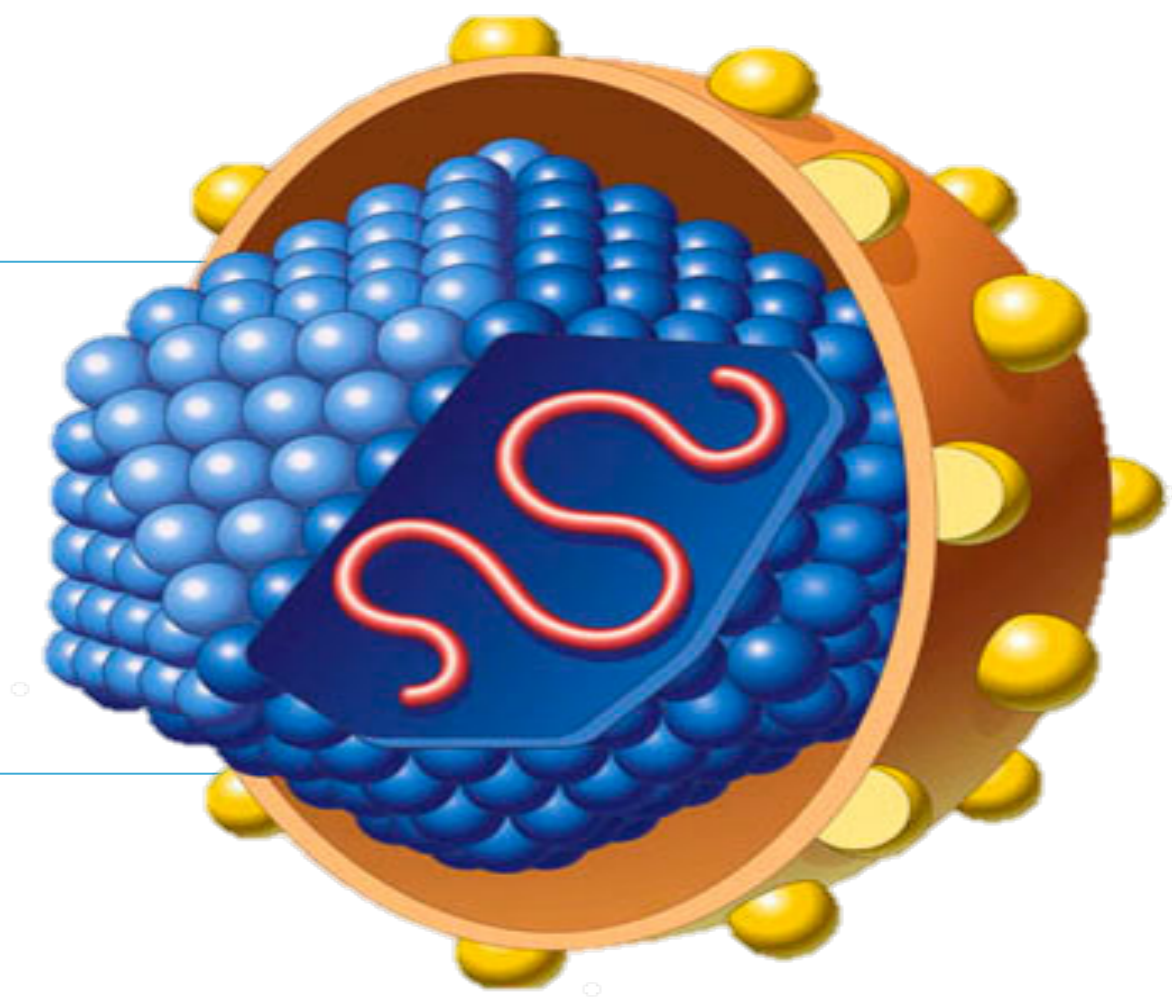
Correspondence to Marta Martín Marqués: martamartin.hj23.ics@gencat.cat

What was done?

- ✓ To create an online platform to make inquiries, resolve doubts and establish a shared database among clinical pharmacists within the province.

Why was it done?

- ✓ The constant development of therapies against Hepatitis C and the lack of experience in their management require health professionals to work together.

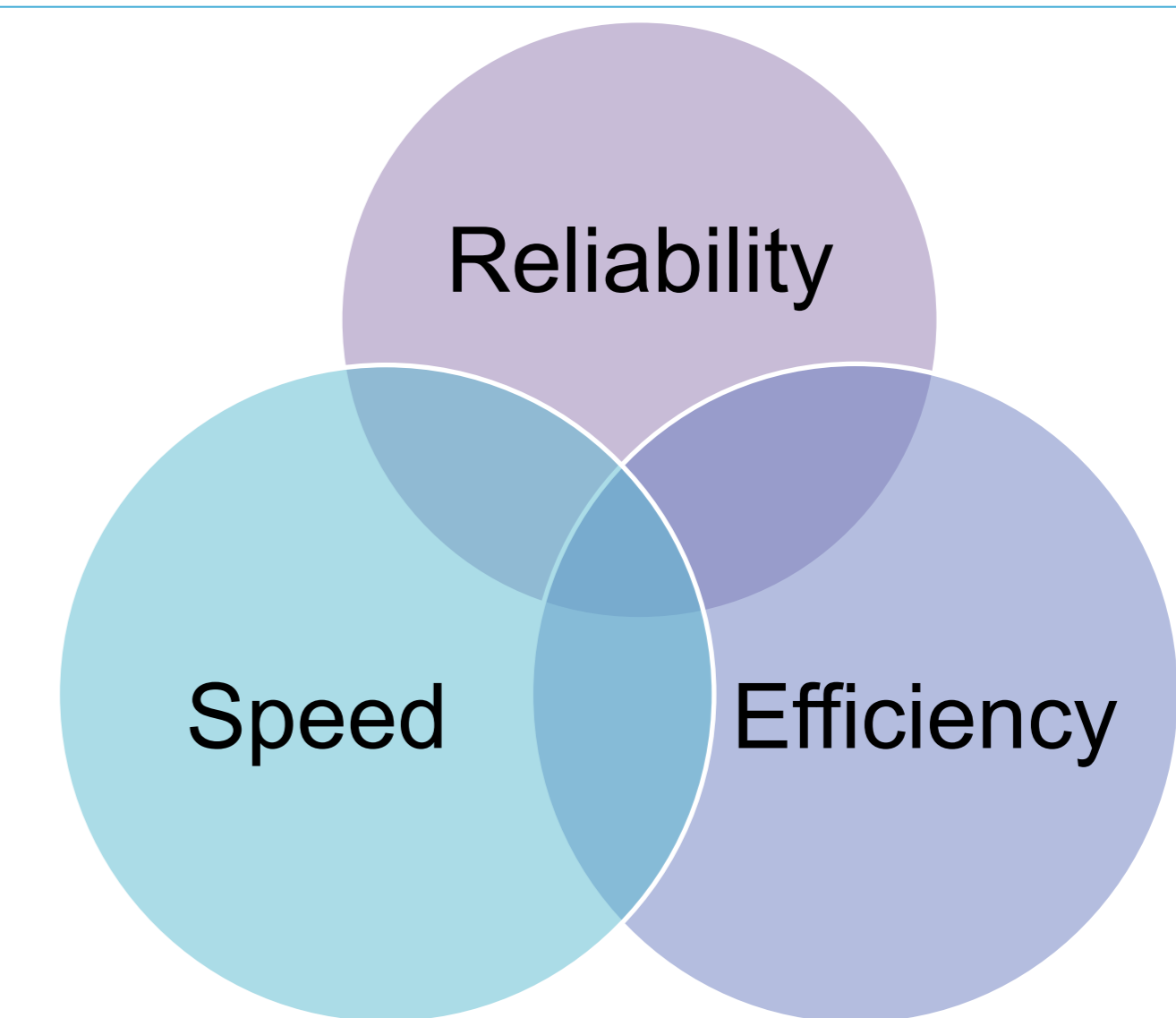


How was it done?



Meetings of the provincial pharmaceutical association

- ✓ To identify necessities jointly
- ✓ To determine the best communication system



What has been achieved?

Pharmaceutical association creates



Interactive platform (virtual campus)

Sending inquiries and comments about side effects and interactions

Debate forums to answer questions, and promotes knowledge

Creation of drug interactions database

Written information (patient brochures, bibliography and scientific societies links)

- ✓ Knowing specific combinations of drugs have been used and which was the hospital's own experience, even if no official studies exist.
- ✓ Updating the previously introduced interactions and shows who has done it (this participant can be asked if it is necessary).



What next?

- ✓ The equal treatment of all patients independently of the hospital where they are located.
- ✓ To work together for the same cause and overcome individual knowledge and resources constraints.

- ✓ It will be used for other illness for which a special pharmaceutical attention is required.
- ✓ It will be expanded by inviting other provinces.

Acknowledgements

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No conflict of interest.

Hospital Pharmacists taking the lead –partnerships and technologies

21st Congress of EAHP
16-18 March 2016, Vienna, Austria

IMMPaCT: A THERAPEUTIC EDUCATION PROGRAM (TEP) TO SUPPORT SEAMLESS CARE FOR PATIENTS LIVING WITH CANCER

VIE15-0683



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Why ?

Cancer is a major public health issue:

- Cancer treatment is long and complex
- Impacts on patient's today life are still poorly addressed all along the clinical pathway
- Need a significant mobilization of the healthcare team and caregivers.

Objective:

- Adapt support to allow the patient to understand and control his disease and the treatment consequences
- Develop patient empowerment

PROJECT START: 2012



2014-2016 : RESULTS

31 COLLECTIVE WORKSHOPS

83 PATIENTS

- **Different types of cancer**
 - ✓ 50% breast cancer
 - ✓ 34% digestive cancer
 - ✓ 16% other
- **Therapeutic care**
 - ◆ 58% Under current treatment
 - ◆ 42% in remission

SATISFACTION RATE of patients > 92%

Patients have experienced collective and individual sessions depending on their respective needs

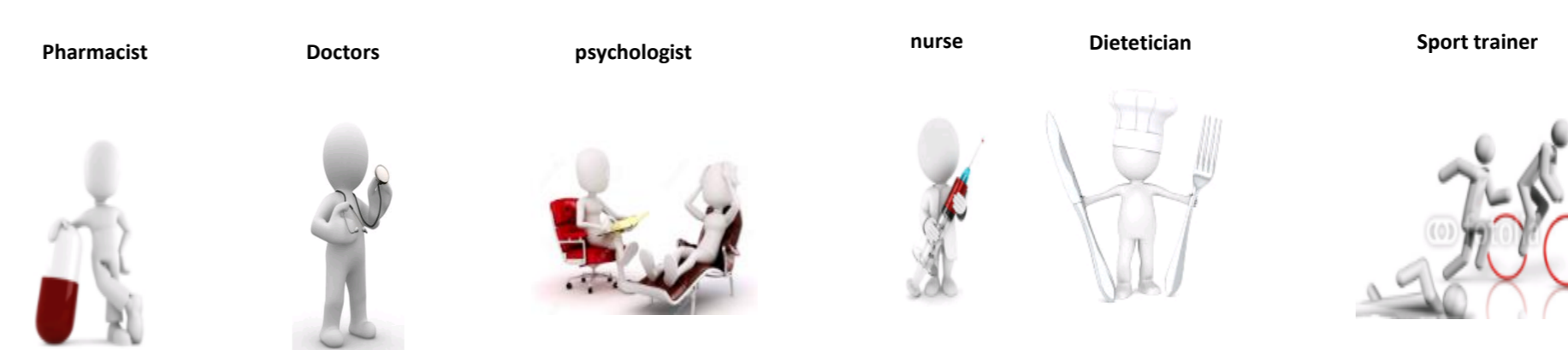
Achievements

What was done?

TEP trans Hospital Group

A pluridisciplinary team was built to achieve a comprehensive patient's support.

This team is composed of :
psychologist, nurses, pharmacist, oncologist, hematologist, pharmacist technician, sport coach and dietetician, social worker



Program certified N° ETP 13/30 in August 2013 by the public health authority (Regional Health Agency)

A "PATIENTS NEEDS SURVEY":

- Conducted in October 2013
- Including 41 amulatory patients
- Leading to 3 main themes identification:
 - Asthenia
 - Digestive disorders
 - Haematological toxicity

The **EDUCATIONAL SESSIONS** have been created according to these themes and a set of tools have been **COLLABORATIVELY DESIGNED**

A partnership between the hospital and the district healthcare network **OSMOSE®** was built to facilitate the **DEVELOPEMENT of SEAMLESS CARE**

How is done?

Before **Diagnosis** After

Employee **4545** **4545** Employee

Homebody **4545** **4545** Homebody

CancerTypeCards **4545** **4545** Mood cards

EncourageCards **4545** **4545** Highlights cards

Mosaic characters as a mirror
« How do you see yourself? »

Cost/Benefit
Brighta (Paris) did diagnosed breast cancer. In the same cancer program laboratory. She began her chemotherapy treatment ago. She is very tired and has lost weight. She has lost her hair. She has lost her appetite. She has lost her energy. She has lost her ability to work. She has lost her ability to study. She has lost her ability to do anything else.

With her
1. Make her children do the homework
2. Prepare her dinner
3. Ask her ex-husband to take care of her
4. ...

Effect of pain
1. Negative result
2. Positive result
3. ...

Barrows map are situations scripted to observe patients dealing with their

Sport sessions aim to reduce fatigue sensation and give keys to patients to have adapted physical activity to their disease.

Photolanguage are designed to help patients expressing feelings

Medical Analysis Laboratory

Dummy medical analysis helps the patients to learn how read their own check-up

Workshops to help patients to compose their menu regarding their digestive disorders

Tools

What's next ?

TO MEET GROWING PATIENTS EXPECTATIONS:

- Involve patients to co-create educative sessions
- Designing (currently) new educational sessions (Neurotoxicity, Pain)
- Developing a serious game

REINFORCE PARTNERSHIP WITH COMMUNITY PRACTITIONNERS (pharmacist, GP, healthcare network)

EXTENDING IMMPaCT PROGRAM TO COMMUNITY PHARMACISTS to further sustain patient's empowerment and continuity of care.

Influence of integration of a pharmacist in medication errors in critically ill patients

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WHAT WAS DONE?

A clinical pharmacist was integrated on a full-time basis in the multidisciplinary team of an intensive care anesthesia unit.

WHY IT WAS DONE?

To determine the incidence of medication errors in our environment and implement enhancement systems trying to prevent them, which is a priority for the improvement of the drug treatment process in critically ill patients.

HOW IT WAS DONE?

The project was carried out in 3 different stages:

•**First stage:** a prospective observational study was carried out during one month, in order to detect medication errors in Anesthesia ICU and to determine the baseline situation before the pharmacist's intervention. In this stage, **36.27% errors** were detected, being Category C of the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) a 61.63% of them.

•**Second stage: (Intervention stage)** During 10 months, the pharmacist reviewed the prescriptions of all patients admitted in the Anesthesia ICU unit performing the appropriate interventions over medication. Furthermore, to educate physicians and nursing staff, we organized educational meetings, and also pharmacotherapeutic protocols and guidelines of medication administration were created to standarize clinical practice. Finally, a system for reporting medication errors was introduced.

•**Third stage:** a prospective observational study was carried out for a month in order to detect medication errors after pharmacist's intervention. In this stage, **5.9%** of errors were detected, 68.4% of them of Category C NCCMERP.

WHAT WAS ACHIEVED?

- Medication **errors** were **reduced by more than 30%**.
- A pharmacist is now part of the **multidisciplinary team** in a critical care unit.
- The experience has been broadcasted at the national level to promote the implementation of clinical pharmacists activities in our environment.

WHAT IS NEXT?

We are still working on the same areas to improve safety in drug therapy in critically ill patients.

Currently, improvement measures that are being developed are: new pharmacotherapeutic protocols specifically for this unit, drugs and drug-diluent compatibility guidelines, performing new training sessions, standarize medication kits in operating rooms and implementation of the computerized prescription and a new labeling system of syringes.

No conflict of interest to disclose

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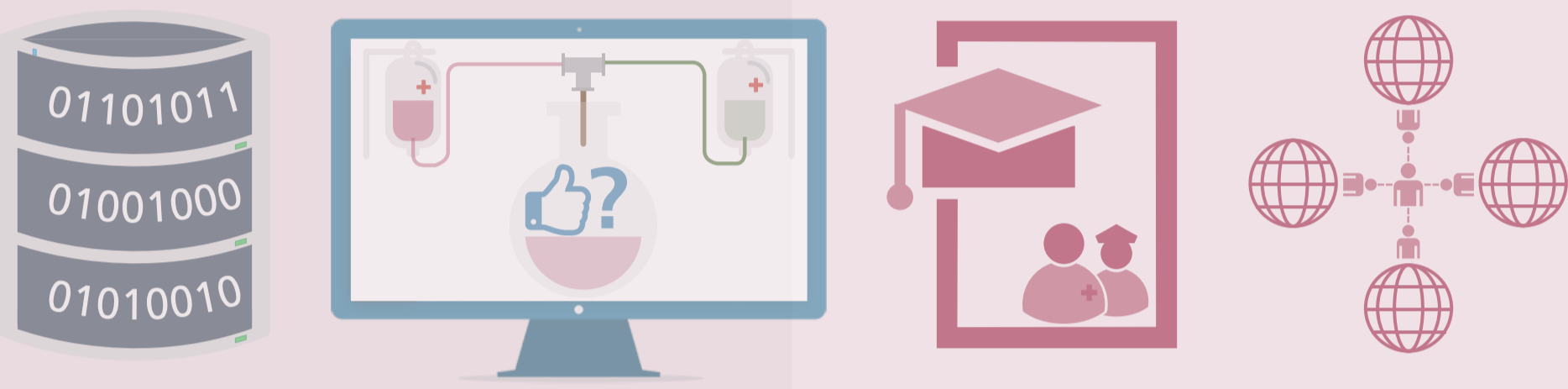
EASE OF ACCESS TO INTRAVENOUS DRUG COMPATIBILITY INFORMATION FOR CLINICAL PRACTITIONERS

A Good Practice Initiative by: [Kaveh Teimori](#), Hannah Colldén and Reza Asadian  Sahlgrenska University Hospital, Gothenburg, Sweden  kaveh.teimori@vgregion.se

Rx

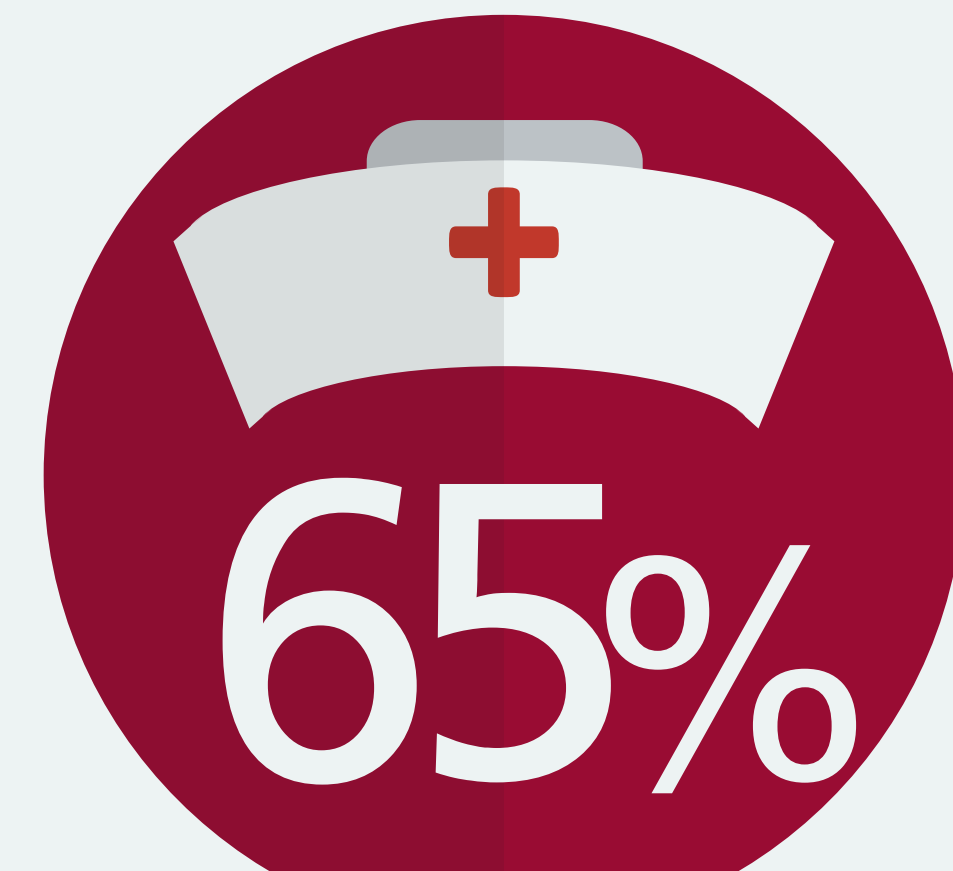
WHAT WAS DONE?

- Created IV-compatibility database & web application
- Developed education & information plan for healthcare personnel
- Identified international pharmacists interested in collaborating



WHY WAS IT DONE?

- Coadministration of **incompatible** IV drugs put the patient at risk

 of nurses **uncertain** of drug compatibility (local survey from 2012)
65%

- Point-of-care drug compatibility information **fitted** to local traditions needed
- International compatibility information **need evaluation** of applicability



Rx

HOW WAS IT DONE?

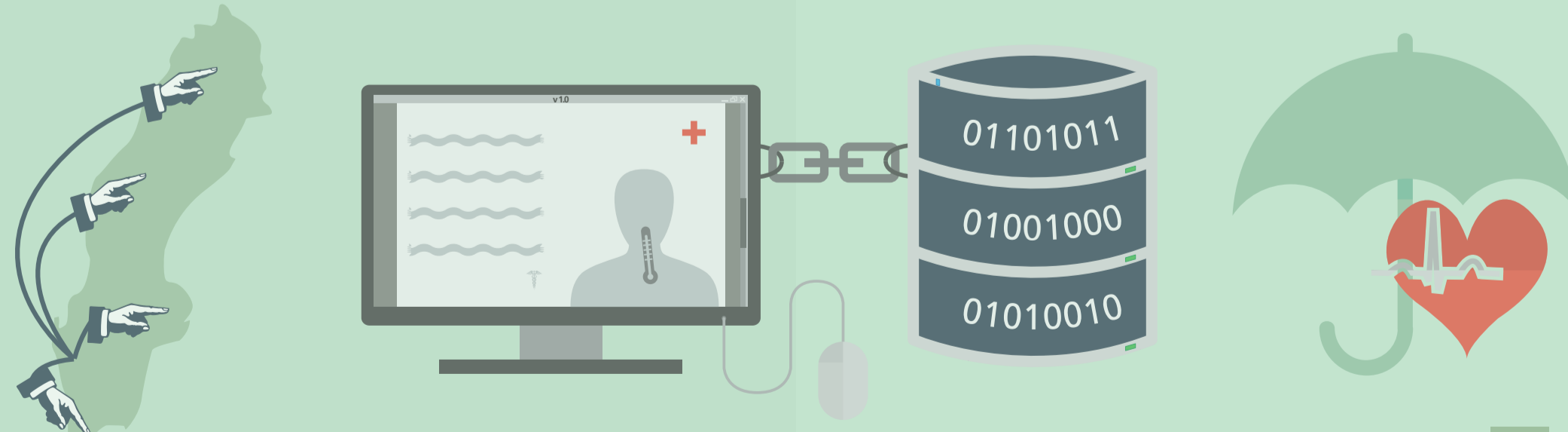
- Drug compatibility & physicochemical data **assessed** for applicability to local clinics
- Support & guidance** offered to clinical practitioners



Rx

WHAT NEXT?

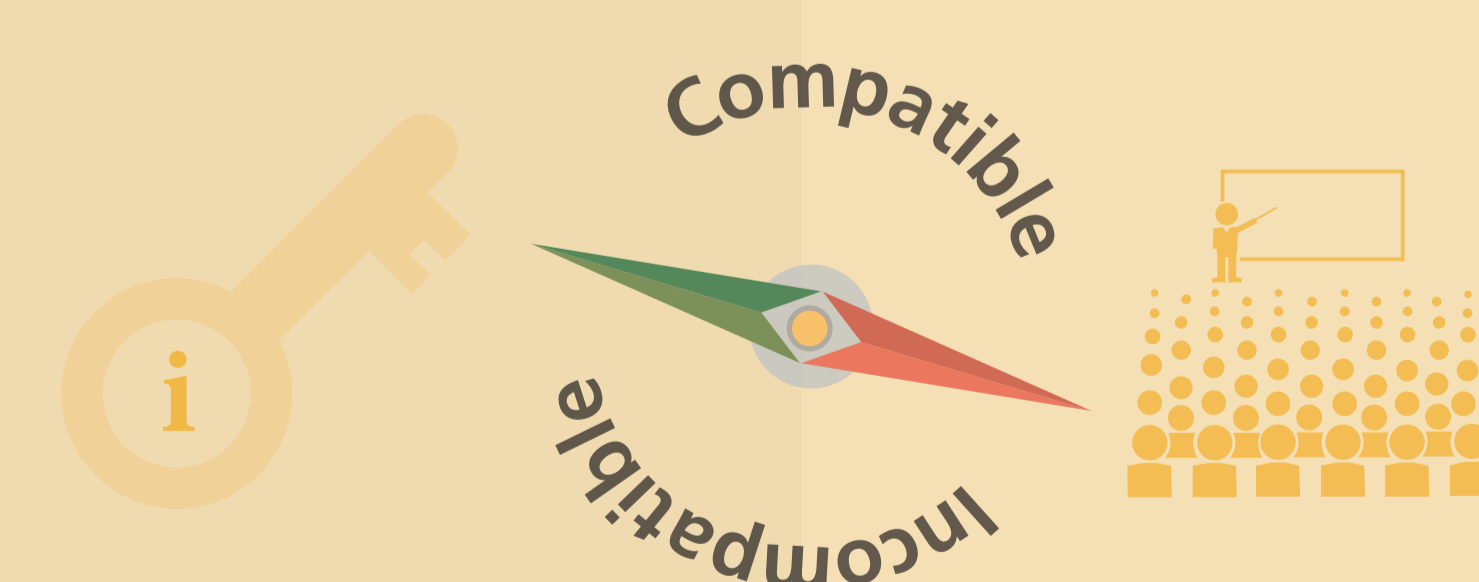
- National implementation
- Electronic journal system **integration**
- Doctors consider compatibility at **prescribing stage**
- Further improving patient safety**



Rx

WHAT HAS BEEN ACHIEVED?

- IV compatibility **data** for more than **2500** drug combinations **produced** and **stored** in the database
- Readily **accessible** information for nurses, doctors & pharmacists
- Support** when deciding which drugs to coadminister
- Procedure documents based on this database **implemented** in relevant clinics
- Lectures given to nurses and doctors on a continuous basis

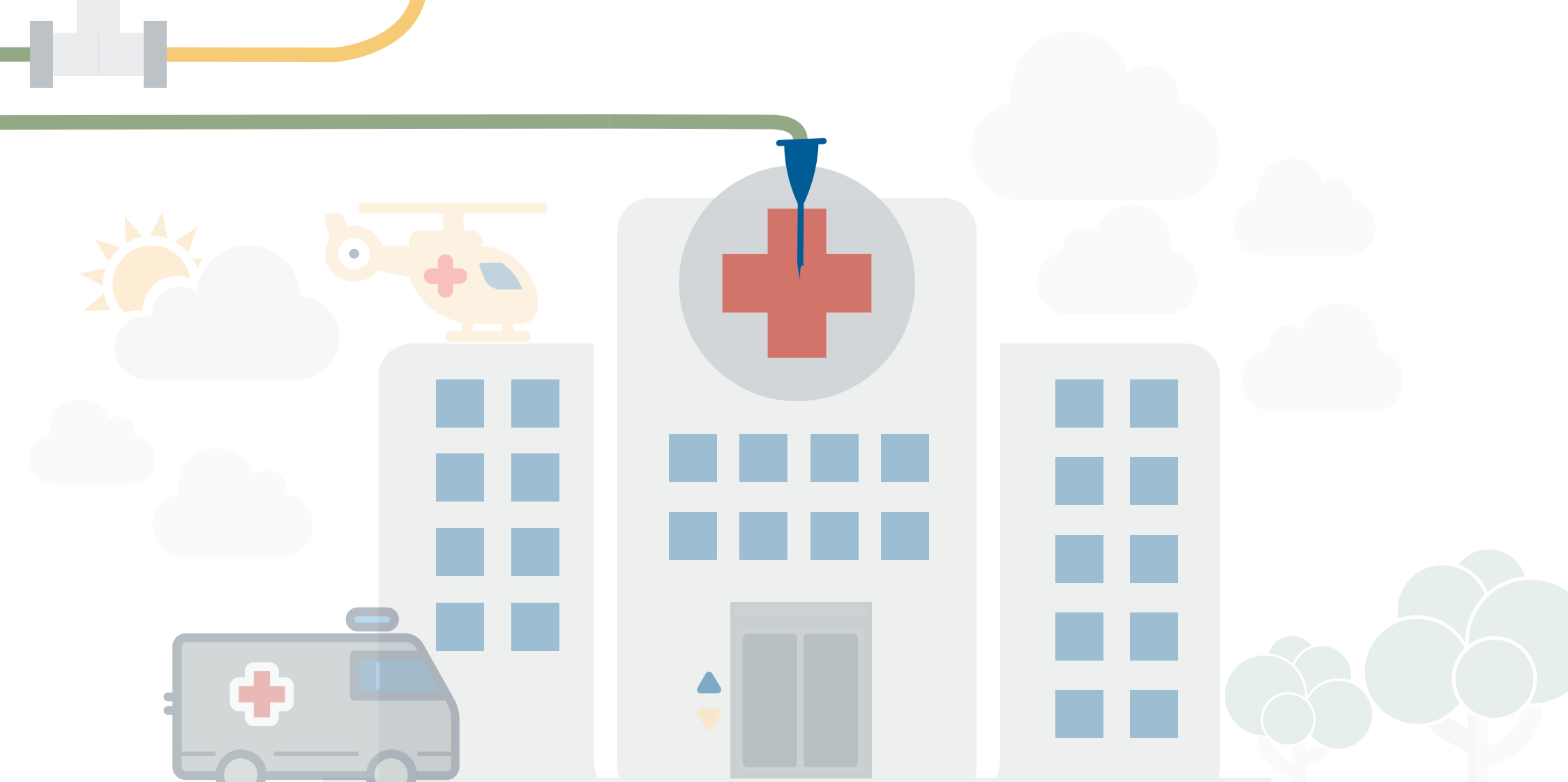


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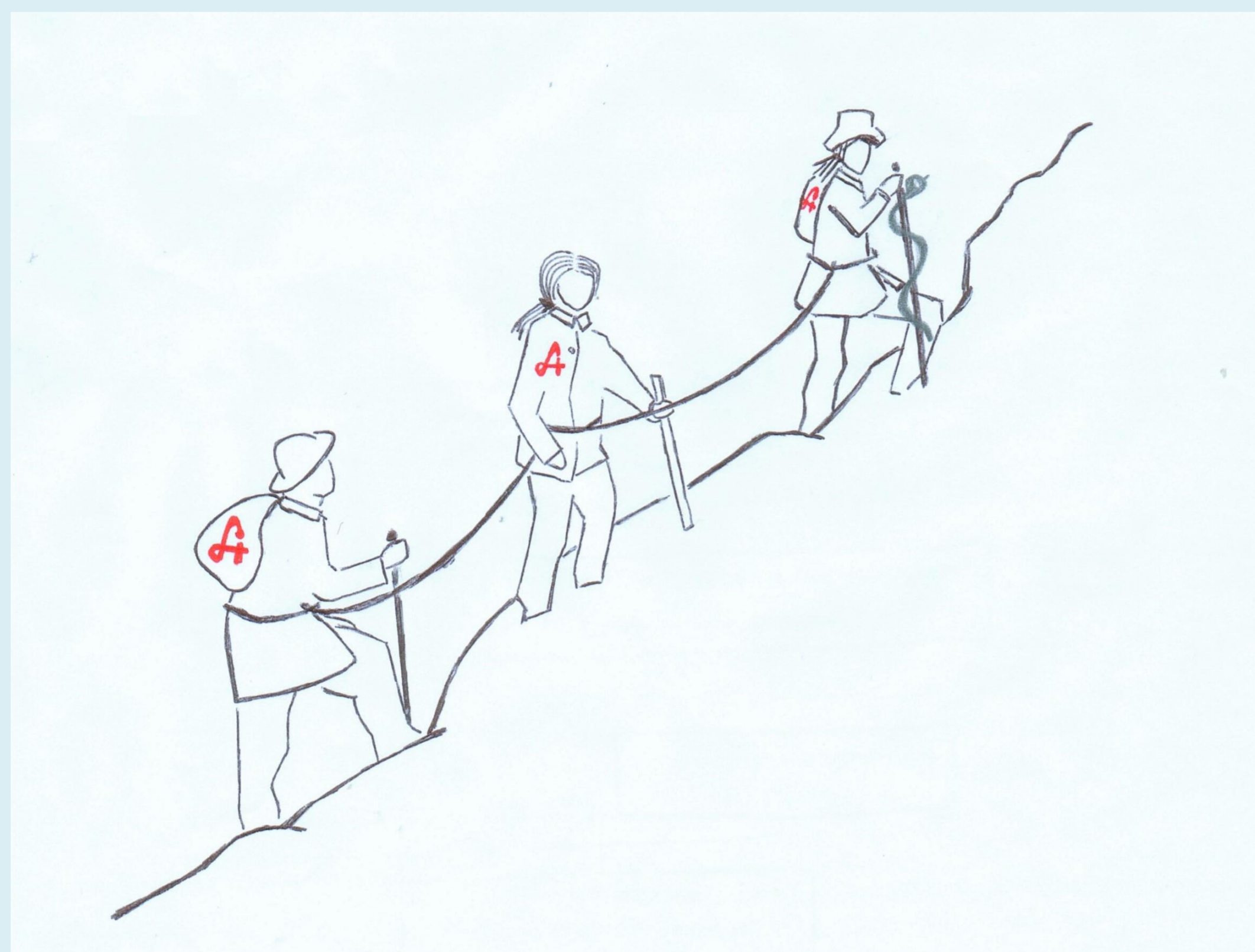
INTRODUCTION OF A PATIENT-CENTRED CLINICAL PHARMACY TRAINING SCHEME IN A LARGE UNIVERSITY HOSPITAL PHARMACY

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«Stronger together»

How was it done ?

Two main drivers:

- 1) Pharmacists' willpower to become more clinically-orientated
- 2) The prospect of being able to offer new clinical services

Not to be taken for granted...

The instructors squeezed the preparation of the educational activities into their routine work load. There were no monetary incentives. Each workshop lasted for one hour with any further discussions to be held after work, a challenge for busy parents. Instructors presented newest insights of the respective clinical area alternating with group activities.

Also...

Continuous evaluation led to a stronger focus on real-world patient cases. This approach was also adopted in our monthly coffee-break case studies. Incorporation of bed-side teaching into the rota was a challenging task.



What was done ?

A clinical pharmacy training scheme was founded for and by the pharmacists of the medicines information (MI) department. Over one year, four members of the team with clinical pharmacy degrees facilitated:

- 10 workshops on clinical topics
- Monthly discussions on real-world patient cases
- Bed-side teaching on two wards

Why was it done ?

- An increasing demand for clinical pharmacy services
- The will of the MI pharmacists to expand their roles
- There is no formal clinical pharmacy education in our country
- Studying abroad is costly & often incompatible with private life
- For the head of our department, the programme was a form of quality assurance for new clinical services

What has been achieved ?

We have put three new projects into practice:

- ✓ Regular medication reviews on an intensive care ward
- ✓ Post-operative pain management on a neuro-surgery ward
- ✓ Medicines reconciliation at the surgical admissions unit

What next ?

For another setting, you will need as essential prerequisites: some idealistic and formally trained clinical pharmacists combined with highly-motivated colleagues wishing to take on more responsibility and willing to learn from their peers. Workshops, a journal club and bed-side teaching are ongoing in our pharmacy department.

Systematic Approach for Training Hospital Pharmacists to Practice Clinical Medication Management

Walk-Fritz SU, Hoppe-Tichy T

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What was done?

A training framework for clinical pharmacists practicing medication management was developed and implemented. The area of activity includes face-to-face Medication Reconciliation on patients' hospital admission, participation in medical rounds, Discharge Counselling, etc.

The novel curriculum was designed in order to:

- 1. Support junior hospital pharmacists** in acquiring
 - clinical pharmacy skills (e.g. assess drug-drug interactions)
 - communication skills (e.g. interprofessional collaboration)
 - personal skills (e.g. identify his/her limitations and be able to refer and hand over to others)

- 2. Help senior clinical pharmacists** to maintain and improve their skills.



Why was it done?

For improving drug safety, it is crucial to **develop and maintain core competencies in a multidisciplinary medical team.**



Current clinical pharmacy education may provide some exposure to ward-based clinical pharmacy, but so far there is **no structured prerequisite training** for pharmacists practicing clinical medication management.

How was it done?

Senior clinical pharmacists developed a **training framework** with two key steps:

- 1. Initial skill adaption for junior hospital pharmacists**

- Participation in Drug Information Centre
- Stepwise: observe an experienced clinical pharmacist participating in medical rounds
- Patient case presentation and evaluation

- 2. Maintain and improve the skills of all clinical pharmacists performing patient-centered care**

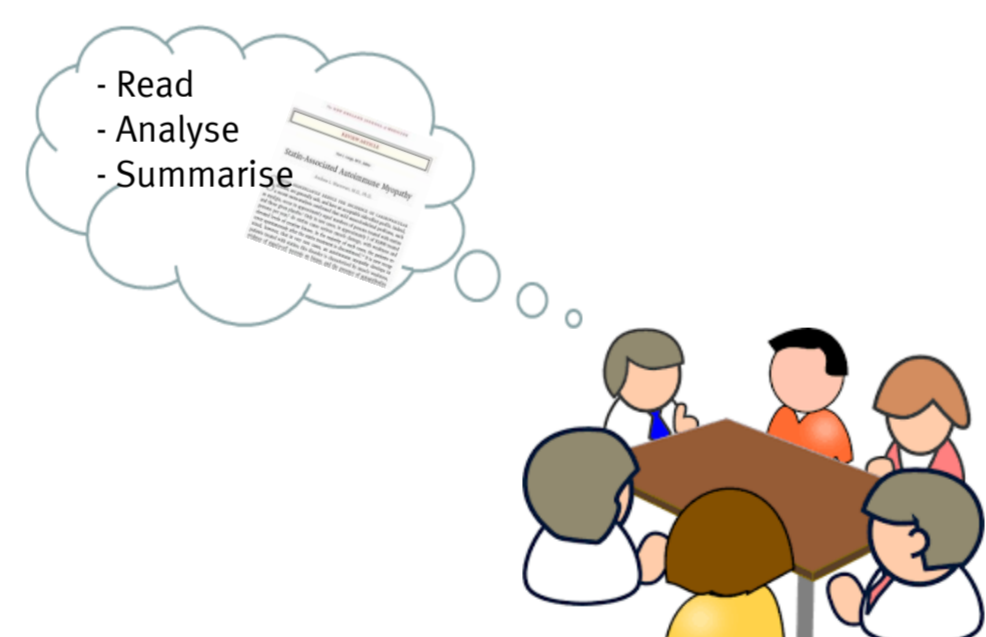
- Jour fixe (presentation and discussion of national and international clinical treatment guidelines, supported by patient case presentations)
- Journal Club
- Supervision of participation in medical rounds by senior clinical pharmacist
- Feedback discussion (patient case discussion with two senior clinical pharmacists)



Drug Information Centre



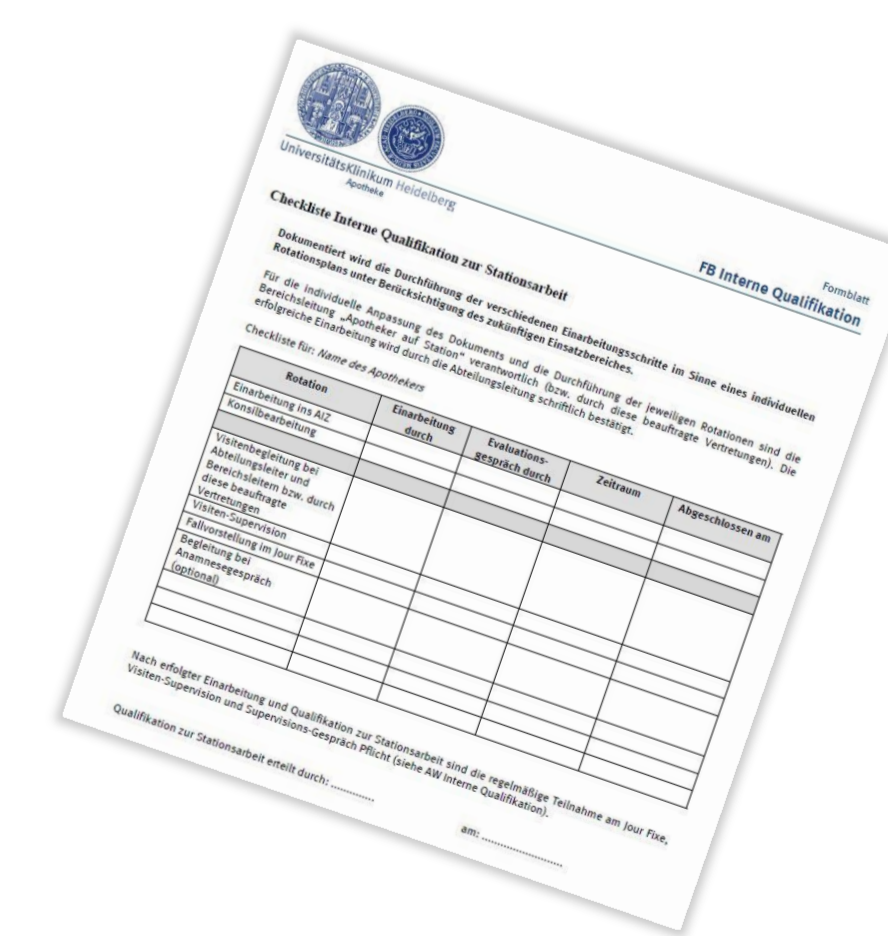
Clinical observation („shadowing“)



Journal Club

A **checklist** was designed for documenting the different training steps for junior clinical pharmacists.

- All steps can be adapted individually, depending on the future operational area and background.
- After completing all steps the eligibility for practicing medication management will be granted by the head of the department “clinical pharmacy” within the Hospital Pharmacy.



What has been achieved?

- ✓ The training framework has been **implemented successfully with a high general acceptance.**
- ✓ Particularly, the **Jour fixe** allowed junior staff to acquire appraisal skills and senior staff to achieve a continuing professional development.
- ✓ The **feedback discussion of patient cases** has also been well appreciated as a mean of developing additional skills.
- ✓ Parts of the training program have been implemented in the **training of pharmacy interns** such as performing face-to-face Medication Reconciliation on patients' hospital admission.



What next?

- The implemented training program will be **further expanded and adapted** over time.
- Future aim is to establish a model with the **German Association of Hospital Pharmacists (ADKA)** for a national systematic training module, e.g. for performing medication reconciliation.

Renal pharmacist optimises health outcomes for patients

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What was done?

Instead of visiting all patients in selected wards, the renal pharmacist focussed on patients with critical renal insufficiency across the majority of all wards.

Why was it done ?

EUROPEAN STATEMENT 1.3: Health systems have limited resources and these should be used responsibly to optimise outcomes for patients.

Due to the limited number of clinical pharmacists at the University Hospital Leipzig (4 for 1,350 beds) only a few wards profited from clinical pharmacy services in the past. We aimed to improve the effectiveness by covering selected high risk patients in the majority of wards and compared the results with a classical round visit.

How was it done ?

The central laboratory identified patients as high risk, when their glomerular filtration rate (GFR) was below 30 ml/min and alerted the pharmacy via email.

For those patients, the renal pharmacist analysed the prescribed medication at least twice weekly throughout their hospital stay for dosing, medication errors, interactions and suggested alternatives where necessary. Interventions were discussed either directly with the doctor or by written recommendations (fig.1).

What has been achieved ?

Over twenty months during 4,229 visits the renal pharmacist analysed the medication of 2,125 patients who had 11 different drugs on average. During that period 45 % of the recommendations were due to renal insufficiency. The most common interventions for renal patients were dosage adjustments to renal function (20%), contraindications (16%), no drug prescribed but clear indication (11%) and drug interactions (10%) (fig. 2). The therapeutic group that most frequently required renal pharmacist's interventions (RPIs) was that of antithrombotic drugs (fig. 3).

Overall, the number of interventions (6.1% of medication items) and their severity across all renal insufficient patients exceeded those on a visceral surgical ward (2.4%)¹⁾ in the same hospital as comparator, confirming the higher effectiveness of this prioritisation. The major obstacle initially was the fact that clinical services by pharmacists were not implemented in most wards and that some of the doctors were sceptical concerning pharmacists' skills. By intensive collaboration with the Department of Nephrology and continued pharmaceutical counselling we overcame these obstacles. This can be shown by an improved acceptance rate for RPIs (fig. 4).

The form includes fields for patient information, laboratory results, and a list of intervention categories such as dosage adjustment, contraindications, and interactions. It also has sections for the pharmacist's recommendation and the doctor's response.

Figure 1: Form for written pharmaceutical recommendations to the doctor

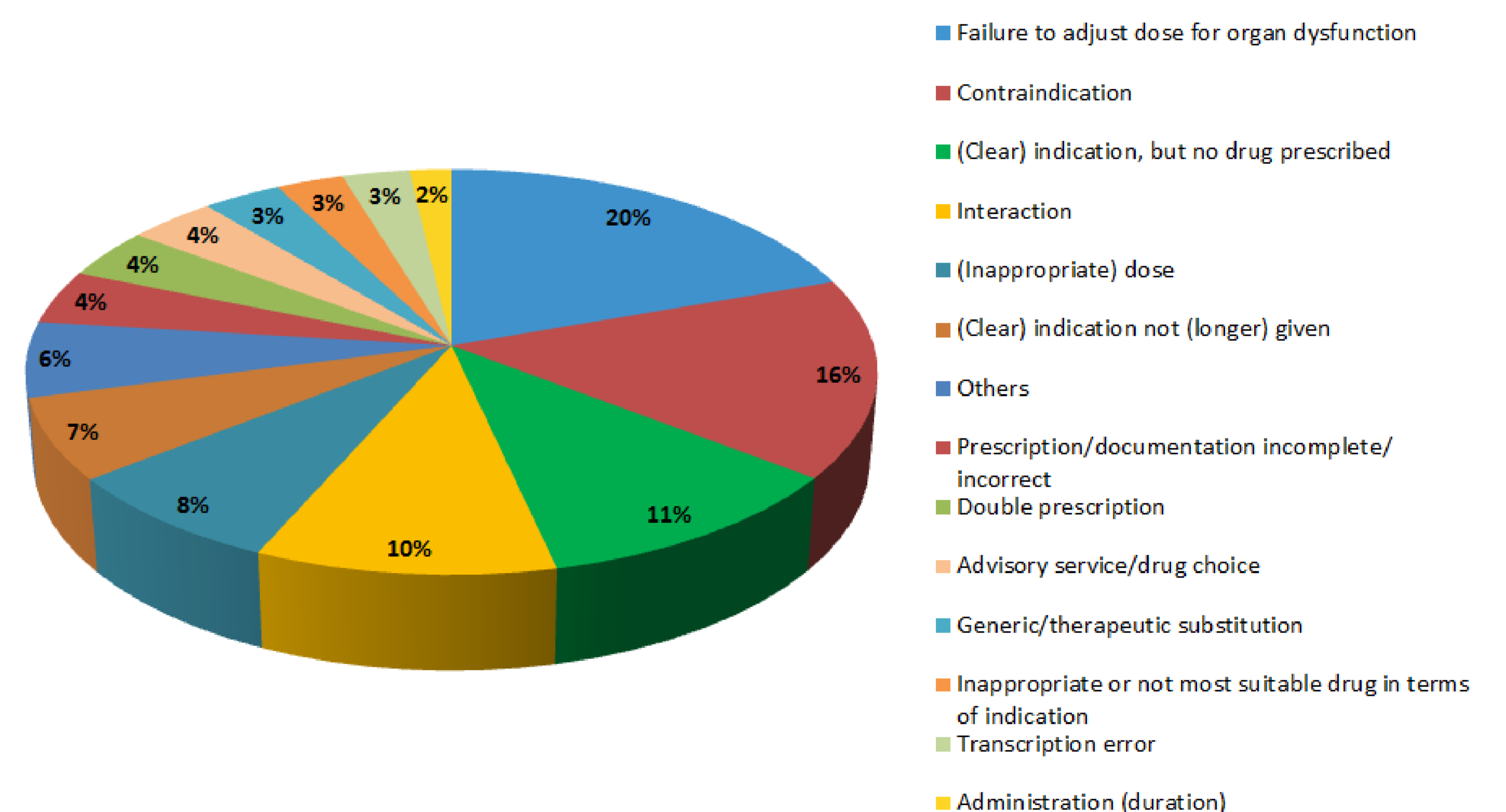


Figure 2: Reasons for renal pharmacist's interventions; n = 447 (ADKA-DokuPik) 09-11/2014

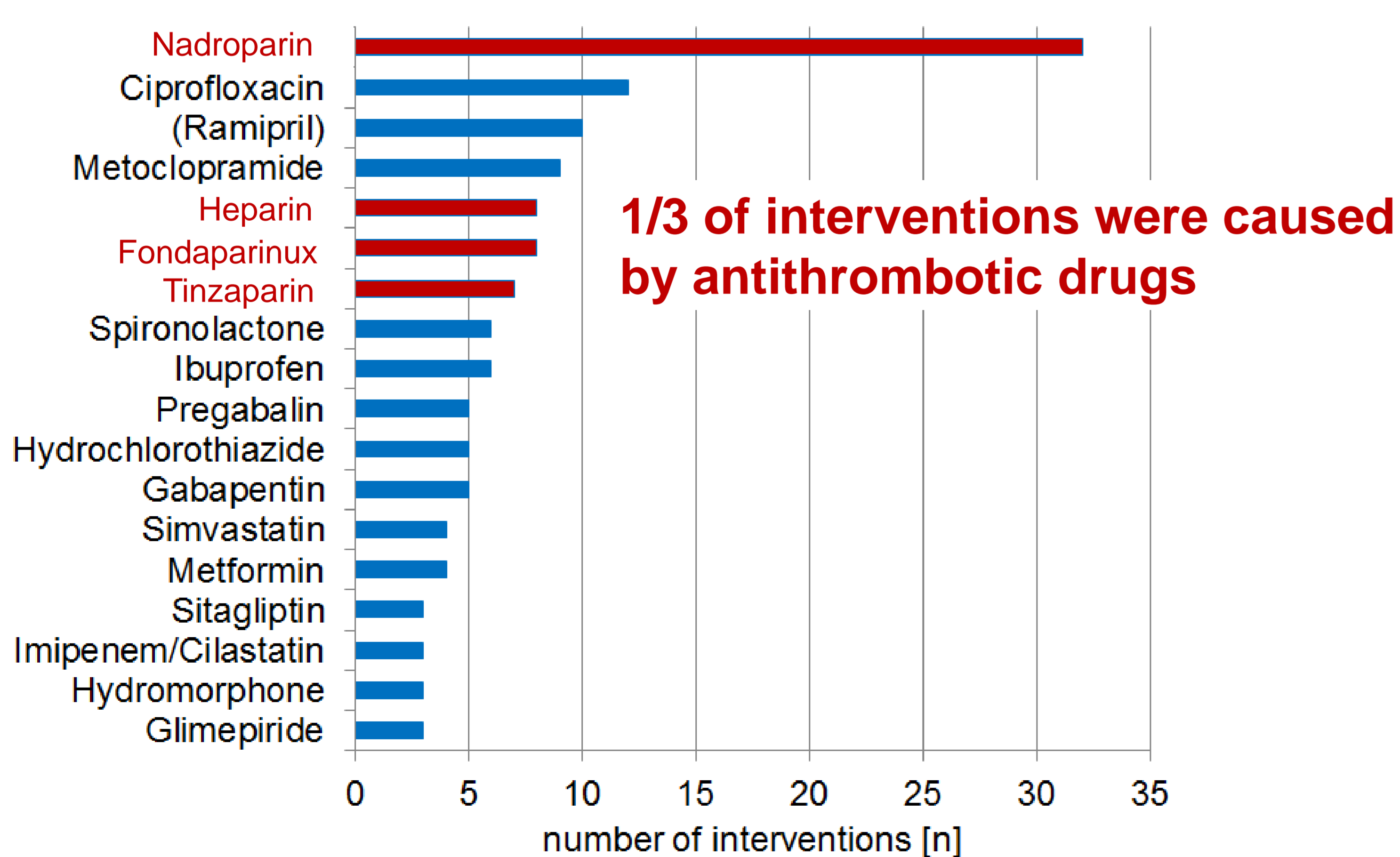


Figure 3: Frequently used drugs, contraindicated or not dose-adjusted in renal failure 02-04/2014

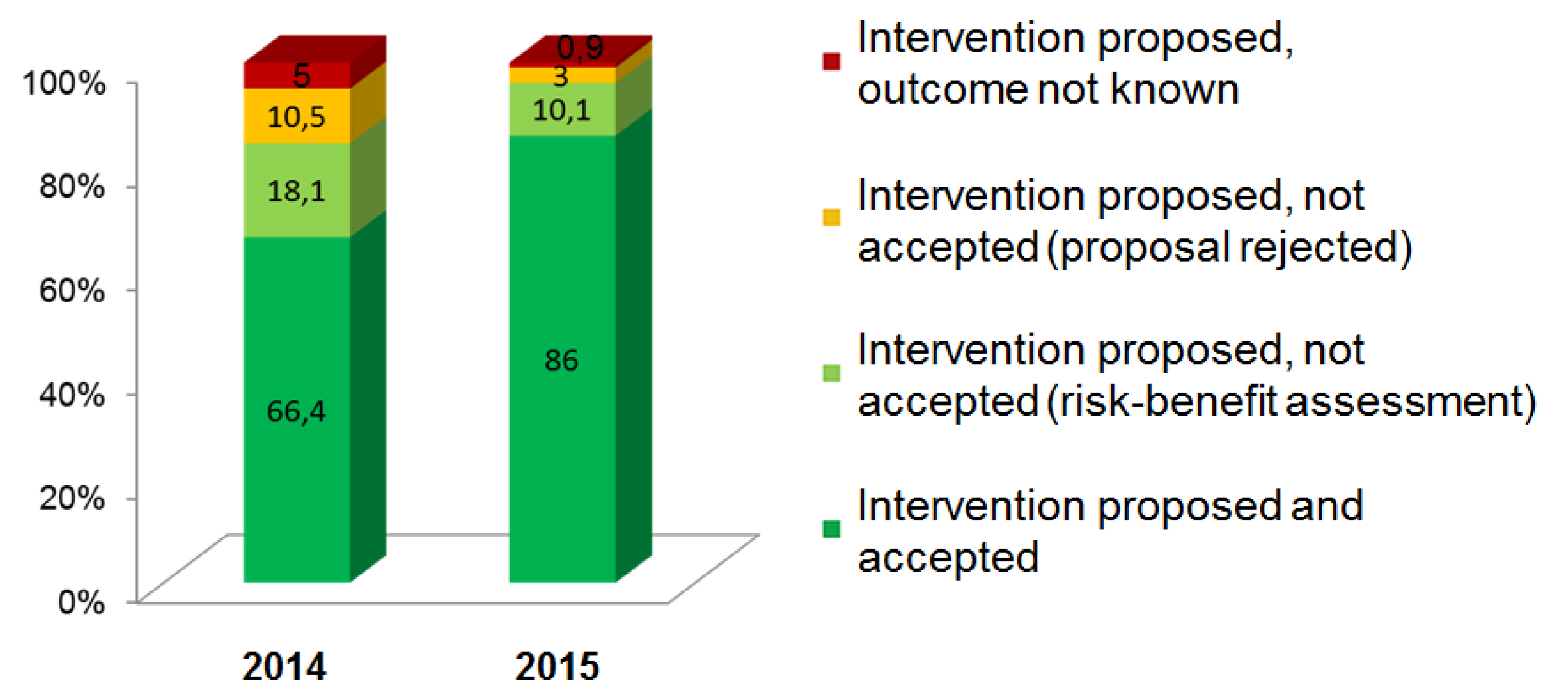


Figure 4: Acceptance rate for renal pharmacist's interventions 09-11/2014 vs. 09-11/2015

What is next ?

To conduct further studies on medication safety, we established a centre for drug therapy safety in collaboration with the faculty of pharmacy aiming to discover valid criteria for identifying other high risk patients like those with polymedication or feeding tubes.