Building research and development in hospital pharmacy

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EAHP Congress
Vienna, March 2011

Conflict of interest

Nothing to disclose
Why?

- To solve problems in a structured manner
- To develop new activities (make the proof of a concept)
- To collaborate with others (interdisciplinary)
- To communicate with others (congresses, publications)
- To educate young pharmacists
- To finance projects

In which fields?

- All fields of hospital pharmacy !!!

  - Make choices, determine a research strategy
    - Target relevant topics in your context
    - They will represent the domains of recognition of your research group
Dedicated human resources

- PhD
  \(\approx 4 \text{ years}\)
- Specialisation research projects (MAS)
  (1 year)
- Master research projects
  (3 months)

Team work - network

- **Build a team work**
  - Investigator(s)
  - Supervisor(s)
  - Interdisciplinary collaborations
    (physicians, nurses, ...)
  - Other supporting persons
    - Methodological conception
    - Statistical analysis
    - English editing

- **Create a network, inside and outside of your hospital**
## Financing

### Institutional

- Existing positions
  - hospital
  - university
- Internal grants
  - quality projects
  - R&D projects

### Public

- National research funding (FNRS)
- European projects (FP7)

### Private

- Professional associations
- Pharmaceutical industries
- Other institutions

**Variable effort … … combine sources …**
Professional associations

- National research projects

  Started in 2009 to the initiative of the Swiss association of public health administration and hospital pharmacists (GSASA)

Objectives

- To promote research activities in swiss hospital pharmacies
  - To value the role of hospital pharmacists by scientific studies
  - To develop benchmarking tools
  - To improve the visibility of hospital pharmacy
  - To promote collaborations in the context of multicentric research projects
Financing

- One project per year,
- Selection through a **call for project process**
- 4 x CHF 20'000.-, during 3 years

= CHF 80’000.-/year
(≈ Euros 60’000/year)

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First call for projects

- **2010: Quality and safety of drug use in hospital**
  - 3 submitted projects
  - Selected project:
    - Evaluation of the chemical contamination during the preparation of cytotoxics
      (S. Nussbaumer, HUG, Geneva)

- **2011: Optimization of patient therapeutic management**
  - Submission deadline: March 31, 2011
  - Selection by May 31, 2011 (research working group, GSASA board)
From the question to the answer

- Have an idea!
- Build a research team
- Formulate an hypothesis
- Write a research protocol (if needed, submit it to an institutional review board)
- Perform the research
- Analyse results and make conclusions
- Communicate (poster, oral, publication)
- Apply the new knowledge to the practice

CIVAS: you have an idea!

- You would like to develop a Centralized IntraVenous Additive Service (CIVAS) to provide *ready-to-use syringes* for anaesthesiology.
- You are convinced this could improve the safety, by eliminating selection and dilution errors.
- Physicians consider the preparation in the operating rooms as being safe, but they agree you to make an evaluation.

- How do you organise the protocol?
CIVAS: research protocol

- Select 4 model drugs
  - No dilution: lidocaine
  - Dilution: fentanyl and atracurium
  - Reconstitution and dilution: thiopental
- Develop and validate 4 analytical methods
- Collect unused syringes at the end of the day (500 syringes)
- Quantify the drug content
- Analyse results

CIVAS: results

> ± 10%: 29%
> ± 50%: 8%
> ± 100%: 4%

Stucki C, EAHP congress, 2010

n=500
mean = 114%
CIVAS: communication

ACCURACY OF SYRINGES PREPARED IN ANAESTHESIOLOGY
Estud M1, A.M. Smut, S.Fleury-Souvenir1, A. WolP, P. Bonnaby2
1 School of Pharmacological sciences, University of Geneva, University of Lausanne
2 Anaesthesiology and Surgery University Hospitals Geneva, Switzerland

Best poster award!

Publication submitted

CIVAS: next steps

- Discuss the results with the anaesthesiologists
  → decision to progressively implement CIVAS
- Decide priority of development
- Develop products
  - Stability indicating analytical methods
  - Stability studies
- Produce and distribute products

New research ideas!
Chemical contamination: you have an idea!

- You would like to investigate operator-related chemical contamination during cytotoxic preparation.
- The objective is to implement a routine test during the initial and continuing training programme.
- You need to use a non-cytotoxic tracer
  - To differentiate from external vials contamination
  - To work safely

How do you organise the protocol?

Chemical contamination: research protocol

- Select a non-cytotoxic tracer → quinine diHCl
  - Soluble in water
  - Invisible to the naked eye
  - Visible under UV rays
  - Easy to quantify
- Develop an operators’ validation protocol
- Develop and validate a recovery procedure and a quantitative assay (fluorimetry)
- Measure the contaminations with a pool of operators
- Analyse results and make recommendations
Chemical contamination: results

Chemical contamination: next steps

- Implement the quinine test in the routine training programme
- Develop a method to quantify traces of cytostatics in the environment
  ▶️ New research ideas!
- Develop a global evaluation protocol
  - Quinine testing
  - Cytostatics measurement
  - Structural / organisational questionnaire
- Conduct a national evaluation   ▶️ Funding!
Conclusion

- Structured research activities are essential to the development of hospital pharmacy
- Topics can be selected in the daily practice of any field of activity of any hospital (teaching, non-teaching)
- Professional associations have a role to play in the funding of research activities, to help moving from the local to the global (national, international)
- Research is a key activity of medical staff ... and we are...

Thank you for your attention

This presentation can be downloaded:
http://pharmacie.hug-ge.ch/ens/conferences.html

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