The Hospital Pharmacist 2020: 
a changed profile?

EAHP congress
Barcelona 2014

Conflict of interest

No commercial conflict of interest to disclose
The Hospital Pharmacist 2020: a changed profile?

Outline

- History
- The role of pharmacists
- Some challenges
  - Personalised medicine
  - The informed patient
  - The art of communication
No future without reflecting the history

St. Damian and St. Cosmas († ca 287) patron saints of Pharmacy and Medicine

Seal of the Faculty of Medicine University of Leipzig, ca 1415

The martyrdom of Saints Cosmas and Damian by Fra Angelico († 1455, Musée du Louvre, Paris)

The challenge to speak about the future is not to re-invent the past

Statute of the Ospedale Maggiore della SS Annunziata di Savigliano 1762

Hospital pharmacists should be an integral part of all patient rounds to assist with therapeutic decision-making and advise on clinical pharmacy and patient safety issues

FIP 2008 Basel statement #30

„The pharmacist must accompany the physician in all rounds...and more he will make daily additional rounds to judge the pain of the most worsening patients and their immediate needs.„

* By courtesy of Prof. Giuseppe Ostino, Turin, Italy
The challenge to speak about the future is not to re-invent the past.

Agreement between the Ospedale Maggiore della SS Trinità di Fossano and Gino Stefano Bertolo, speciale (pharmacist) 1741

„Dovrà preparare li medicamenti prescritti... E portarli lui agli infermi mettendo sopra ogni bicchiere o carafina il billetto in cui sia espresso il numero d'ogni rispettivo letto del malato o malata esortando caritatevolmente e con piacevolezza a prenderlo, se presente e fagli predere almeno nell'ora della Messa del Duomo....“ *

„... he has to prepare the prescribed medicines... and bring them personally to the patients labelling every cup or decanter with the number of his or her bed and compassionately and gently inviting to take them either immediately or at least at time of the mass in the cathedral... “

* By courtesy of Prof. Giuseppe Ostino, Turin, Italy

A definition of the role of pharmacists in the treatment of patients

The pharmacist is the healthcare professional in the care team who seeks to ensure that pharmacologically active ingredients achieve the best possible benefit for the individual patient.
The pharmacist's to-do-list

- We have to provide the right medicine either by **procurement** or by **production**
- We have to seek the balance between expected effects and drug related problems

**Pharmaceutical competencies**

- We have to deal with individual patients
- We have to work in a team

**Social competencies**
**The team and the individual patient**

Given clinicians’ often-limited time, patient education may be delivered and reinforced by **other members of the clinical care team in a collaborative care model**.

Interventions are often designed to incorporate multiple components with the goal of providing synergistic effects and an additive if not multiplicative effect, but components must be personalised to the patient’s situation. The intensity of resources and technology used should be scaled to meet an individual patient’s needs.

* Leah L. Zullig, PhD, MPH; Eric D. Peterson, MD, MPH; Hayden B. Bosworth, PhD. Ingredients of Successful Interventions to Improve Medication Adherence. JAMA. 2013;310(24):2611-2612

* Health Care Professional
The challenges 2020

- **Medicines**
  - More complex
  - Targeted
  - Personalised
  - More expensive
  - More effective?

- **Dependency from industrial production**
  - Globalisation and supply chain
  - Small scale production for special patients groups

Pharmaceutical competencies

- Patient
  - Informed
  - Different perception of harm
  - Interested in the outcome and not in the disease
  - More questioning rather than listening

- More complex treatment pathways
  - Communication between teams

Social competencies
"We are on the leading edge of a true revolution in medicine, one that promises to transform the traditional ‘one-size-fits-all’ approach into a much more powerful strategy that considers each individual as unique and as having special characteristics that should guide an approach to staying healthy”*

While genetic risk assessments can be useful to health planning in many contexts, they can also obscure more effective approaches to common complex disorders by eclipsing environmental and epigenetic factors that are actually more important than many genetic factors.*


Distribution of time in the therapeutic range of Warfarin*

personalised medicine

Conclusions
Genotype-guided dosing of warfarin did not improve anticoagulation control during the first 4 weeks of therapy. There was, however, a significant interaction between dosing strategy and race (P=0.003). Among black patients, the mean percentage of time in the therapeutic range was less in the genotype-guided group than in the clinically guided group.*


Genome sequencing is now sufficiently cost effective to be offered clinically…

Nevertheless, interpretation of individual genomic variation remains challenging and the importance of incidental findings is unclear

Our ability to generate data now far outstrips our ability to interpret it.

* Wright CF et al. Policy challenges of clinical genome sequencing BMJ 2013;347:f6845
personalised medicine: Our job

Scientific perspective

Bayesian inference

Patient’s perspective

http://de.wikipedia.org/wiki/Satz_von_Bayes downloaded 03/01/2014

personalised medicine: our challenge

The challenge for the pharmacist in 2020 is not to have sufficient knowledge on the probabilistic effect of a genotype but to make a Bayesian (subjective) estimation of the outcome based on patient’s a priori situation.

Our knowledge on interactions between medicines is a similar situation.

We have to translate precise scientific statistics that patients have difficulty in navigating, into information they can comprehend, respecting that the forecast outcome may, by nature, be imprecise.
**The informed patient**

Communication

**Send a message with a picture from Barcelona to New York and get an answer back**

- **300** communication not possible as North America had not been discovered by modern Europeans at this time.
- **1600** 4 months
- **1810** 1 month
- **1935** 2 weeks
- **1950** 1 day
- **1960** 1 minute
- **2010** immediately
- **2020** ?

* Personally estimated times, not scientific evidence!
### Patients and the Internet*

<table>
<thead>
<tr>
<th>Country</th>
<th>2007</th>
<th>Change from 2005 to 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Frequency</td>
</tr>
<tr>
<td>Denmark</td>
<td>46.1 (43.2-49.0)</td>
<td>34.1 (31.3-36.9)</td>
</tr>
<tr>
<td>Germany</td>
<td>41.3 (38.5-44.1)</td>
<td>26.1 (23.5-28.7)</td>
</tr>
<tr>
<td>Greece</td>
<td>23.6 (21.2-26.0)</td>
<td>21.0 (18.6-23.4)</td>
</tr>
<tr>
<td>Latvia</td>
<td>30.3 (27.7-32.9)</td>
<td>22.8 (20.4-25.2)</td>
</tr>
<tr>
<td>Norway</td>
<td>39.0 (36.2-41.7)</td>
<td>27.8 (25.2-30.4)</td>
</tr>
<tr>
<td>Poland</td>
<td>38.3 (35.6-41.0)</td>
<td>31.5 (28.9-34.1)</td>
</tr>
<tr>
<td>Portugal</td>
<td>18.9 (16.6-21.2)</td>
<td>15.8 (13.5-17.7)</td>
</tr>
<tr>
<td>Total</td>
<td>33.9 (32.8-34.9)</td>
<td>25.6 (24.6-26.5)</td>
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</tbody>
</table>

*95% confidence intervals (CI); differences are typed in italic when significantly different from 0 at the 5% level

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Patients and the internet

Use of the Internet for information related to specific decisions among adults 40 y and older was generally low (28%) ... Internet use was higher at younger ages, rising from 14% among those aged 70 y and older to 38% for those aged 40 to 49 y*

Respondents with mental disorders were more likely to use patient information leaflets (OR 1.47, 95% CI 1.06-1.98) and the Internet (OR 1.64, 95% CI 1.02-2.64) as sources of medicines information than respondents without mental disorders**


Celebrities and Internet* ......

Bio-identical hormones, which have the same molecular structure as the hormones produced in the body, have actually been shown to have a protective effect against some diseases, including those whose risk is increased by non-bio-identical hormones.

In a study, women who used non-bio-identical estrogen and progesterin had a 69% greater risk of developing invasive breast cancer over an eight-year period in comparison with non-HRT users. Those who used bio-identical estrogen and progesterone experienced a similar risk as non-HRT users.*


Efficacy against Effectiveness*

Older adults are often excluded from clinical trials. The benefit of preventive interventions tested in younger trial populations may be reduced when applied to older adults in the clinical setting if they are less likely to survive long enough to experience those outcomes targeted by the intervention.

CONCLUSIONS and RELEVANCE: Differences in baseline risk and life expectancy between trial subjects and real-world populations of older adults with CKD (Chronic Kidney Disease) may reduce the marginal benefit to individual patients of interventions to prevent ESRD (End-Stage Renal Disease).

**Efficacy against Effectiveness**

SUNITINIB in kidney carcinoma  
Register AIFA  
(Agenzia Italiana del Farmaco)

**Evidence Based Medicine**

Today EBM is a loaded gun at clinicians’ heads. “You better do as the evidence says,” it hisses, leaving no room for discretion or judgment. EBM is now the problem, fueling overdiagnosis and overtreatment.

How many people care that the research pond is polluted, with fraud, sham diagnosis, short term data, poor regulation, surrogate ends, questionnaires that can’t be validated, and statistically significant but clinically irrelevant outcomes?

*Des Spence. Evidence based medicine is broken. BMJ 2014;348:g22*
Information society: the challenges

Patient’s perspective

The question marks

• Trustable source
• Understandable language
• Updated information
• Comprehensive information
• Proper use of apps

Pharmacist’s perspective

The challenges

• Educating patients in the use of internet sources and apps
• The patient knows more than you!
• Biased information
• Data not relevant for the individual patient

Proper communication
Portals and technology for communication: The challenges


Or better?
Non verbal communication*

Maintaining adequate facial expression (FE), using affirmative gestures (AG), and limiting both unpurposeful movements (UM) and hand gestures (HG) had a significant positive effect on perception of interview quality during this OSCE (Objective Structured Clinical Examination).

Non-verbal communication skills played a role in perception of overall interview quality as well as perception of culturally competent communication.

"Tell me so I know you understand"*

Patient comprehension of dosage instructions is an essential condition for adherence to treatment regimens, but previous studies show that **pharmacists do not generally check understanding**.

Various strategies for verifying patient understanding were identified in the data, including eliciting a demonstration of understanding, using specific questions to verify understanding, using response solicitations and monitoring patients’ verbal and non-verbal responses.

**CONCLUSION:**
These strategies for verification of patient understanding appear to be effective tools which enable pharmacists to identify misunderstandings or initiate clarification sequences.


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**The way of communication and perception**

<table>
<thead>
<tr>
<th>Results Helsinki Heart Study</th>
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<tbody>
<tr>
<td>Infarct/Stroke:</td>
</tr>
<tr>
<td>Intervention 2.73%</td>
</tr>
<tr>
<td>Control 4.14%</td>
</tr>
<tr>
<td>Death:</td>
</tr>
<tr>
<td>Intervention 2.19%</td>
</tr>
<tr>
<td>Control 2.09%</td>
</tr>
<tr>
<td>RRR = 34%</td>
</tr>
<tr>
<td>ARR = 1.41%</td>
</tr>
<tr>
<td>ARI = 0.1%</td>
</tr>
<tr>
<td>NNT = 71</td>
</tr>
<tr>
<td>NNH = 1000</td>
</tr>
</tbody>
</table>

* Bobbio M, Demicheli B, Giustetto G. Lancet 1994;343:1209-11
The pharmacist is the healthcare professional in the care team who seeks to ensure that pharmacologically active ingredients achieve the best possible benefit for the individual patient.

"Piano-Illusion" by Shigeo Fukuda (*1932-†2009)
Take home messages

- The role of the hospital pharmacist has not intrinsically changed - but the environment has
- The challenge is less about having the knowledge, and more about making the knowledge understandable to patients.
- We have to shape the medication process from patient’s perspective
- Only collaborative care can overcome the barriers hampering the effectiveness of modern medicines

Thank you very much for your attention!