Implementation of clinical pharmacy in the hospital setting in Europe

Models of care, successes and failures, thoughts for the future

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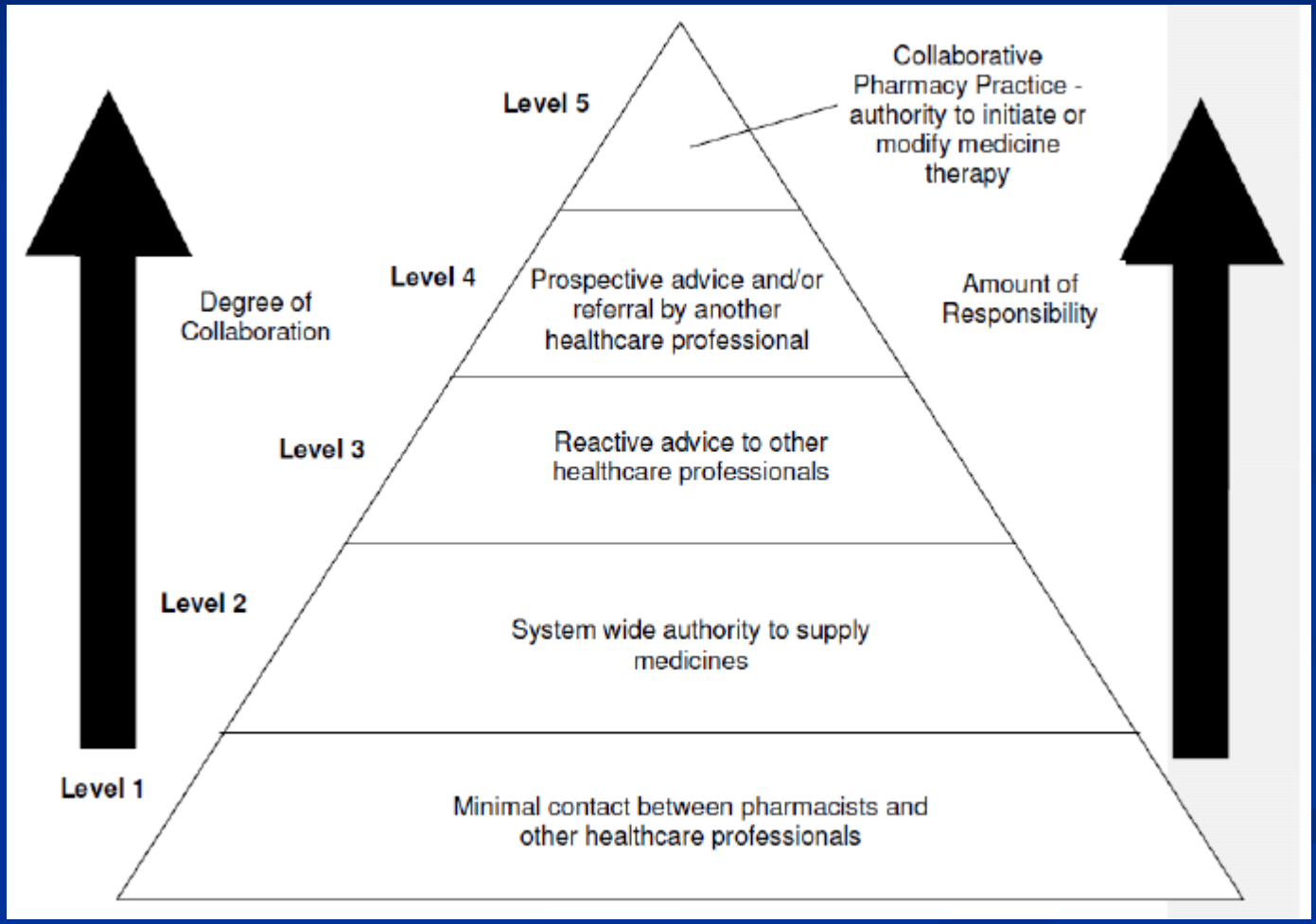
Plan

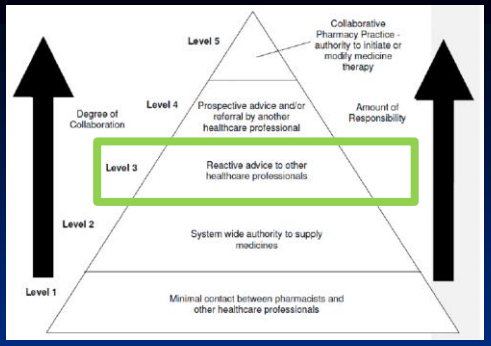
- Clinical pharmacy practice models
  - Evidence from European studies
- Scope of implementation
  - Influencing factors
- Strategic planning
- Thoughts for the future

MODELS AND EUROPEAN DATA ON IMPACT

Models of care

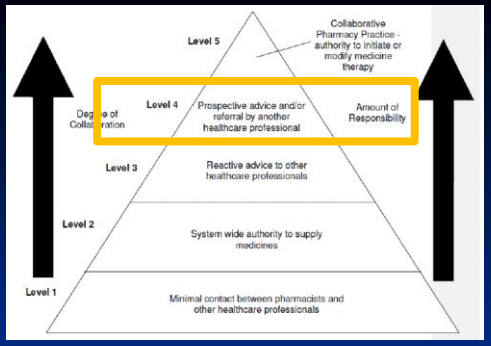


FIP reference paper collaborative practice, 2009 – www.fip.org/statements



Level 3

- Pharmacists are expected to assess a prescription before it is dispensed
- Prescription intervention occurs after a prescription has been generated → <u>reactive</u> service
- Large variability possible within this level
- Examples:
  - ward pharmacists spending 1-2 h/day per ward (UK)
  - Validation of prescriptions in France



Level 4

- The pharmacist becomes part of the decision to initiate or modify a prescription = <u>proactive</u>
  - Inclusion in the team making decisions
    - Attending ward rounds
  - or referral by the prescriber to the pharmacist for advice
    - For specific medicines (eg TPN) or medication review
- No change to the patient's treatment is made without the agreement of the prescriber

Levels 3 and 4: European data on impact?

- Publications describing interventions

Evaluation of pharmacist clinical interventions in a Dutch hospital setting

Liesbeth Bosma et al., Pharm World Sci 2008;30:31-38

- 1 junior hospital pharmacist, 24 patients
- ~20h/week for 7 weeks, 'level 4'
- 82% acceptance rate

Evaluation of clinical pharmacist recommendations in the geriatric ward of a Belgian university hospital

Annemie Somers et al., Clin Interv Ageing 2013;8:703-9

- 1 senior hospital pharmacist, acute geriatric ward
- ~2h/weekfor 4 months, level 3
- 60% acceptance rate

Levels 3 and 4: European data on impact?

- Publications describing interventions

Clinical pharmacists' interventions in a German University Hospital

Claudia Langebrake et al., Pharm World Sci 2010;32:194-99

- 2 senior clinical pharmacists; hemato-oncology and ICU
- 50 h/week for 2 yrs; ward rounds; 'level 4'
- 93% acceptance rate

Clinical pharmacy services in a London hospital, have they changed?

Gayle Campbell et al., Int J Clin Pharm 2013;35: 688-91

- 50-60 clinical pharmacists; 1100 bed-hospital (Trust)
- 4 yrs
- 47 interventions / 100 bed-days; 85-92% acceptance rate

Levels 3 and 4: European data on impact?

- Randomized controlled trials

Spinewine et al., 2007	Gillespie et al., 2009	Lisby et al., 2010
RCT, 203 patients, one acute geriatric unit, Belgium	RCT, 400 patients ≥80y, 2 internal medicine wards, Sweden	RCT, 100 patients ≥75y, one acute internal medicine ward, Denmark
Pharmaceutical care from admission to discharge	Pharmaceutical care from admission to discharge(+ after)	Medication history and treatment discussion with clinical pharmacologist
- ↑ appropriateness of prescribing (MAI, ACOVE) - 90% acceptance rate	- 16% ↓ hospital visits - 46% ↓ ED visits - 80% ↓ drug-related readmissions	- <50% acceptance rate
- Trend toward ↓ mortality and ED visits		- No ≠ in LOS, readmission, QOL

Levels 3 and 4: European data on impact?

- Comparison of effectiveness
  - « the optimal exploitation of levels 3 and 4 will be essential » (FIP) BUT…
  - **What's the most (cost)effective 'model'?**
    - « There was a division of opinion amongst chief pharmacists as to how best clinical pharmaci service can be provided withing the resource limitations:
      - provide a limited service to all wards
      - Provide a quality service to a limited number of wards (Fitzpatrick 2005)

Levels 3 and 4: European data on impact?

- Comparison of effectiveness
  - No or very limited data!

Improving medication management for patients: the effect of a pharmacist on post-admission ward rounds

M Fertleman, N Barnett, T Patel

Qual Saf Health Care 2005;**14**:207–211. doi: 10.1136/qshc.2004.011759

  - Comparison level 3 (routine care) vs level 4 (new intervention)
  - 3 ward rounds, 53 patients, 109 recommendations
  - Nearly all medication histories modified
  - Lower increase in medication costs

Level 5

- Pharmacist given the authority to initiate or modify medicine therapy rather than to advise on the initiation or modification of therapy
  - Within bounds agreed within the team
- Responsibility and accountability
- Requires a system-wide change in national or state/provincial law

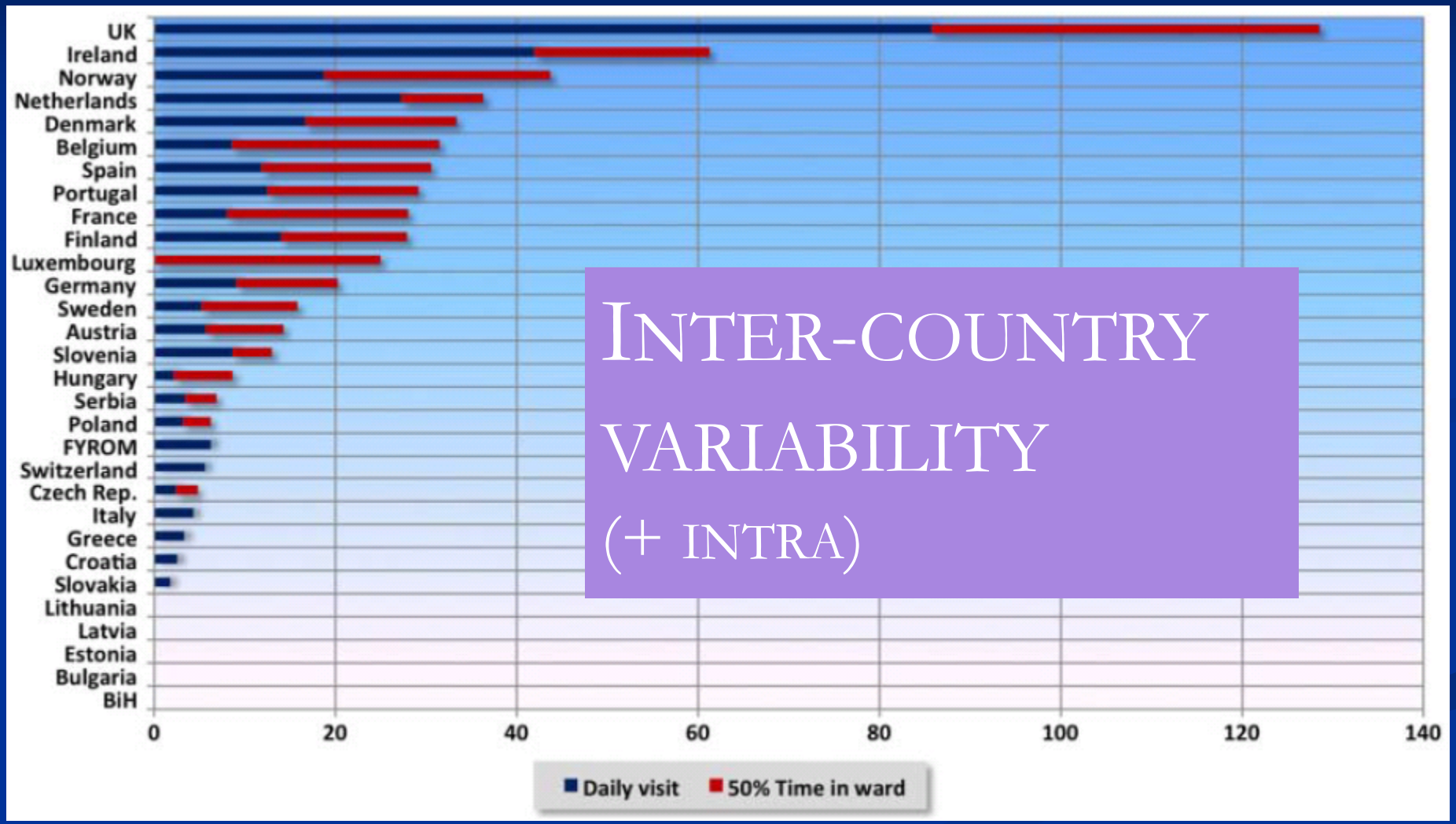
SCOPE OF IMPLEMENTATION OF CLINICAL PHARMACY IN EUROPEAN HOSPITALS

Scope of implementation

- EAHP survey 2010 on hospital pharmacy in Europe
  - Respondents: 1283 hospital pharmacies from 30 countries (27% response rate)
    - France and UK under-represented (<10% RR)
    - >50% response rate in several Eastern countries

Frontini et al. Eur J Hosp Pharm 2012;19:385-7

EAHP survey 2010 on hospital pharmacy in Europe: parts 4 and 5. Clinical services and patient safety



Frontini et al. Eur J Hosp Pharm 2013;20:69-73

EAHP survey 2010

- Only 6% of pharmacies have pharmacists spending at least 50% of their time on the ward
  - 34% of US hospitals have pharmacists working on the ward for 8h/day
- 40% of hospital pharmacies offer clinical services occasionnally (range by country 3.6-79.2%)
- Only small changes since the 2005 survey

EAHP survey 2010

Table 1 Patient oriented activities by country (percentage of pharmacies with)

Country	TDM n=1061	Drug information	Patient visits at admission	Patient counselling at discharge	Pharmacokinetic consultation (n=966)		Patient care service on ADR (n=966)	
					Inpatients	Outpatients	Inpatients	Outpatients
All countries	25.0	54.6	16.9	22.1	18.7	5.5	50.1	23.4

- Main clinical counselling activities
  - Enteral nutrition (31,9%)
  - Cytotoxic-induced nausea (19,6)
  - Antibiotics (16,1%)
  - Anticoagulation (13,6%)

EAHP survey 2010

- Additional limitations
  - « clinical activity »: perceptions might differ
  - « ward pharmacist »: likely to be heterogenous
    - Which « model » of practice?

Influencing factors

- Type of hospital
  - Teaching status
    - Facilitating factor in many countries; Barrier in others
  - For-profit or not: EAHP survey 3.3% vs 10%

- Methods of financing health care / drugs
  - (+) Fixed payments linked to patients' diagnoses and severity of illness
  - (-) Revenues related to the number of prescriptions dispensed

Influencing factors

- Cost of pharmacists
  - (-) Similar to physicians in France, Suisse = barrier
  - (+) Lower in other countries
- Champions
  - (+) Leadership = critical factor in the rate of adoption of an innovation
- Resources and role of trainees
  - Trainees do the daily work on the ward in several countries

Additional influencing factors

- Education
- Research

Session L3. Clinical pharmacy in Europe: education, research and management: future directions

- Accreditation

Session L1.7 Ensuring patient safety in JCI accredited hospitals – requirements on clinical pharmacy services
Session L1.8 Clinical pharmacy and Qmentum

EAHP survey 2010

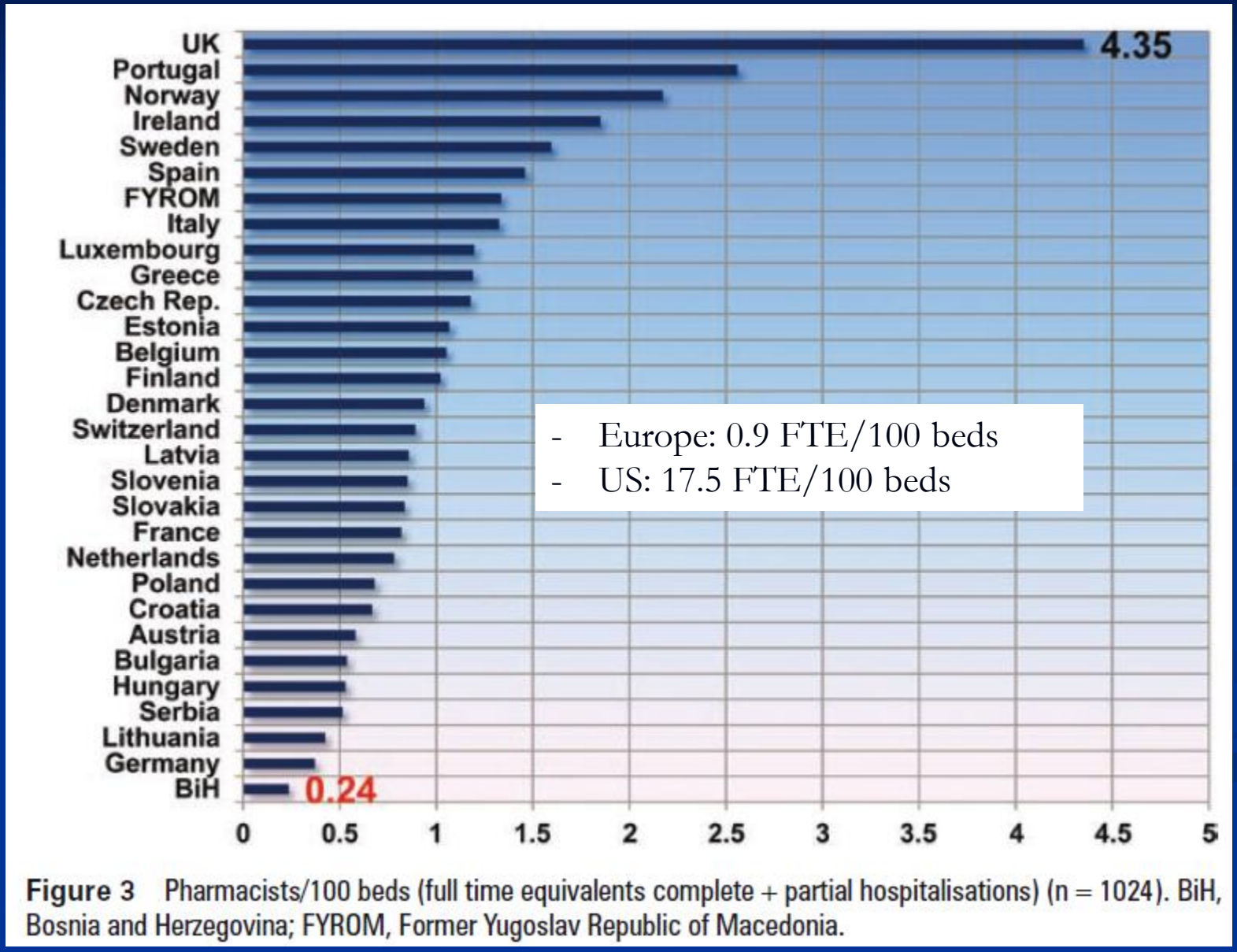


Figure 3 Pharmacists/100 beds (full time equivalents complete + partial hospitalisations) (n = 1024). BiH, Bosnia and Herzegovina; FYROM, Former Yugoslav Republic of Macedonia.

Documenting activities

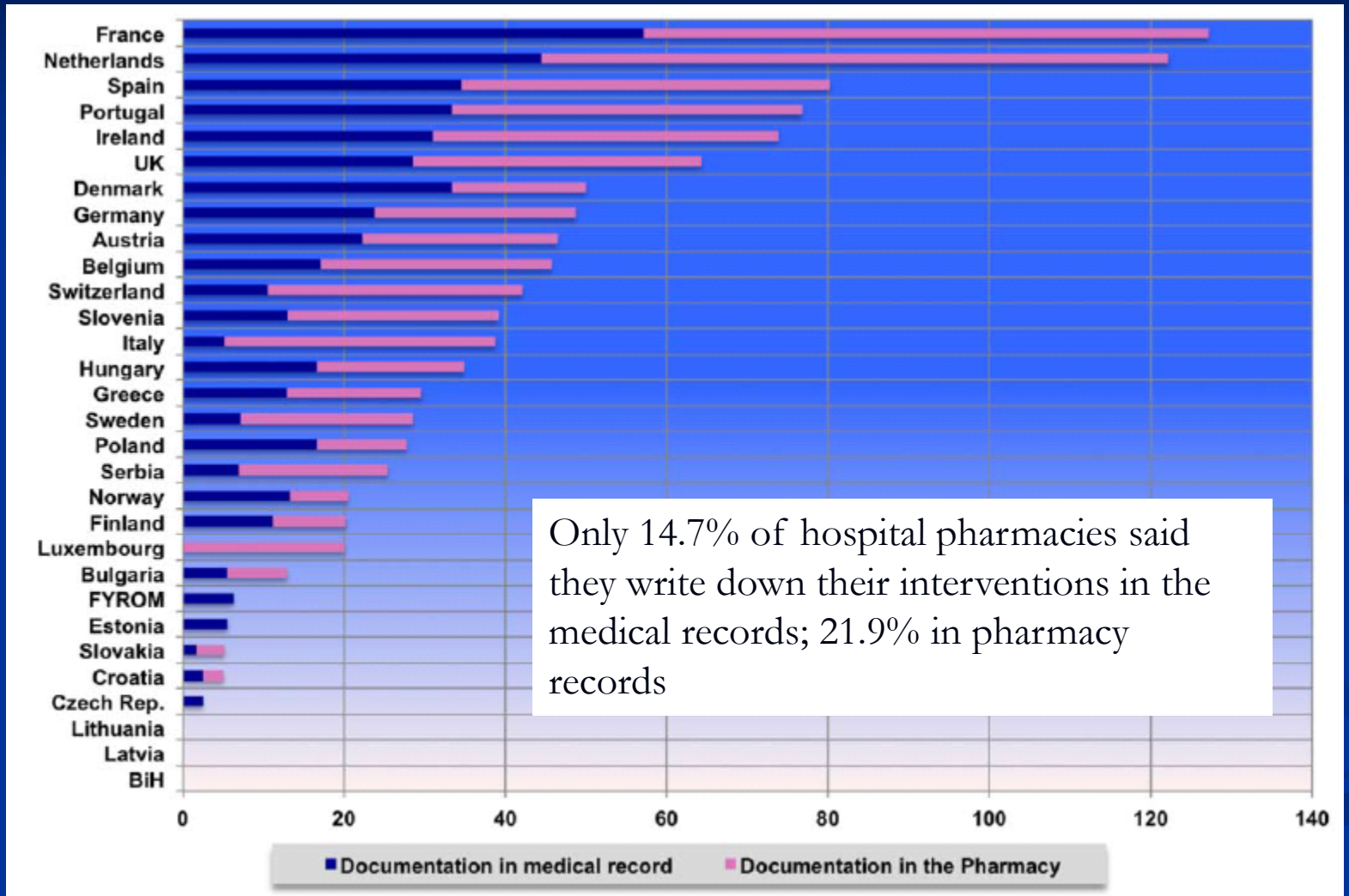


Figure 2 Percentage of pharmacies documenting their clinical activities (inpatients) in medicals records or in the pharmacy (n=950 and n=935, respectively). Total may be >100% as some pharmacies use both documentation systems. BiH, Bosnia and Herzegovina; FYROM, Former Yugoslav Republic of Macedonia.

STRATEGIC PLANNING

- Vision for the future?
- Standards of practice? Metrics?

Please raise you hand if…

- In your country you are aware of any recent document/white paper describing
  - A vision for clinical pharmacy
  - Clinical pharmacy standards/ metrics

Please raise you hand if…

- You work as a clinical pharmacist in a hospital
  - There is a vision on the development of clinical pharmacy for the next 5 years in your hospital
  - You have defined clinical pharmacy metrics / standards of practice
  - There has been internal/external audit of your practice

« Hospital pharmacy manufacturing is subject to strict (inter)national standards »

« However, there has been very little attention focused on standards in relation to clinical pharmacy practice.

Fitzpatrick 2005

Northern Ireland

- Clinical pharmacy standards, 2009
  - Basic standard requirements & advanced requirements

Acute

1	Medicine History Interview
2	Medicine Therapy Monitoring
3	Prescription Monitoring and Review
4	Prevention, Detection, Assessment and Management of Adverse Drug Reactions
5	Prevention, Assessment and Management of Drug Interactions
6	Therapeutic Drug Monitoring
7	Prevention, identification, management and reporting of medication incidents
8	Multidisciplinary Working
9	Provision of Medicines Information Advice by Pharmacists
10	Discharge
11	Patient Medicine Education

General Support

12	Education and Training
13	Resources
14	Staffing Levels and Structure
15	Documentation
16	Quality of Clinical Pharmacy Services
17	Health Promotion
18	Pharmacoeconomic Evaluation of the use of Medicines

Northern Ireland

STANDARD 3
Prescription Monitoring and Review

Basic Standard Requirements

All patients' prescription charts are monitored and reviewed in conjunction with the patient's medical notes and relevant medical laboratory results by a pharmacist at regular intervals. The recommended intervals are:

- Acute wards — once daily
- Intermediate stay wards — once weekly
- Rehabilitation wards, community hospital wards — once weekly
- Long stay psychiatric/ learning difficulties — once a month

3.1 A local SOP exists for prescription monitoring and review.

3.2 All patients' prescription charts are monitored and reviewed by a pharmacist by the next working day after admission.

3.3 Prescription monitoring and review is repeated at regular intervals as defined above throughout the patient's admission.

3.4 The patient's administration record is reviewed to determine non-administration and to resolve any issues e.g. patient nil by mouth.

3.5 Pharmacists endorse prescriptions to add clarity to the original prescription, if applicable.

3.6 A local SOP exists for prescription endorsement by pharmacists.

3.7 If a medication incident or a near miss has occurred it is reported according to the local policy/ procedure for reporting medication incidents or near misses.

Advanced requirements

3.8 A pharmacist reviews all prescriptions for 'high risk' drugs (except in emergency situations) before the first dose is dispensed or administered.

STANDARD 13
Resources

Table 1: Clinical Pharmacy Staffing Levels to Provide a Clinical Pharmacy Service

Hospital Area	Pharmacist Ratio	Technician Ratio
General Medicine Cardiology Paediatrics Acute Psychiatry Acute Elderly Care General Surgery Oncology Inpatients Haematology Inpatients Other comparable specialities	1 pharmacist per 40 beds (± 10 beds)	1 technician per 40 beds (± 10 beds)
Maternity / Obs & Gynae ENT Orthopaedics Long stay Psychiatric Long stay learning difficulties Long stay Elderly Care Other comparable specialities	1 pharmacist per 60 beds (± 10 beds)	1 technician per 60 beds (± 10 beds)
ICU / ICCU / HDU PICU / Neonatal Renal Haemodialysis Other comparable specialities	0.1 pharmacist per bed/ cot station	0.1 technician per bed/ cot station
Accident and Emergency	1 pharmacist per 100,000 attendances	1 technician per 100,000 attendances
Cystic Fibrosis Patients HIV Patients Other comparable specialities	0.3 pharmacist per 50 registered patients	0.3 technician per 50 registered patients
Pharmacy led Clinics	0.2 pharmacist per clinic	-
Specialist Teams	0.5 pharmacist per team	-
Clinics - STD	0.1 pharmacist per 1000 patient visits	-

United Kingdom

Belgium

- Pilot projects 2006-2013
- Implementation and evaluation at the national level
- Vision
- No official standards
- Wide variability remains present

Vision sur le développement de la pharmacie clinique au sein des soins pharmaceutiques dans les hôpitaux belges

Développer par le groupe de travail Pharmacie clinique (2009-2010)

La pharmacie clinique vise à promouvoir des soins pharmaceutiques au sein desquels le patient est le sujet central et où la qualité, la sécurité, l'efficience et l'efficacité de la pharmacothérapie sont pleinement assurées via une approche multidisciplinaire et dans le cadre d'une politique de soins globale.

Le réseau des CMP est convaincu que les projets pilotes de pharmacie clinique mis en place dans les hôpitaux belges contribuent à la réalisation de cette vision.

A partir des projets pilotes, les pharmaciens cliniciens sont en mesure :

- d'acquérir les notions nécessaires à l 'exercice de la pharmacie clinique à l'hôpital ;
- d'acquérir, de développer, d'entretenir et d'adapter les compétences scientifiques de base du pharmacien clinicien, nécessaires pour optimaliser et sécuriser la pharmacothérapie ;
- d'acquérir les compétences en matière de communication indispensables pour recueillir et transmettre des informations adaptées aussi bien intra qu'extra muros.

Objectifs

- Etendre l'implication du pharmacien clinicien dans les différentes unités de soins dans un contexte de multidisciplinarité
- Préciser un cadre légal
- Offrir aux candidats pharmaciens hospitaliers une formation adéquate en pharmacie clinique
- Disposer des moyens et de l'espace nécessaires pour pratiquer la pharmacie clinique en collaboration avec les Directions hospitalières, les Conseils Médicaux et les Comités Médico- pharmaceutiques
- Réaliser en collaboration avec les soignants concernés un transfert optimal des données relatives à la pharmacothérapie à l'admission, pendant le séjour et au moment de la sortie de l'unité de soins du patient
- Evaluer et documenter les activités et interventions du pharmacien clinicien en termes d'efficience et d'amélioration de la qualité
- Intégrer les données relatives au traitement médicamenteux, dans le dossier électronique du patient, afin de pouvoir mettre à disposition – y compris de la première ligne de soins – des moyens de communication plus rapides et diversifiés
- Permettre au patient de solliciter et d'obtenir une consultation pharmaceutique, tant lors de son admission qu'à sa sortie, afin d'obtenir les informations nécessaires à l'obtention d'une bonne compréhension de son traitement et ainsi améliorer sa compliance thérapeutique

Les groupes-cibles

Tous les hôpitaux belges universitaires, généraux, psychiatriques et catégoriels.

Denmark

- National definition of clinical pharmacy
- Three levels
  - Patient
  - Ward
  - Management
- National strategy 2012-2015

Kjeldsen and Nielsen. Eur J Hosp Pharm 2012;19:539-40

Australia

- **Standards of practice for clinical pharmacy services**

- Medication reconciliation
- Assessment of current medication management
- Clinical review, TDM and ADR management
- Medication management plan
- Providing medicines information
- Facilitating continuity on transition between settings
- Interdisciplinary care planning
- Prioritising clinical pharmacy services
- Staffing levels and structure
- Training and education
- Participating in research
- Pharmacy technicians supporting clinical pharmacy services
- Documenting clinical activities
- Improving the quality of service
- Clinical competency assessment tool

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Table 9.1. Pharmacist staffing levels for provision of clinical pharmacy services based on 'overnight beds'

Category	Service rela bed type	Beds to 1 FTE pharmacist for
1 Specialist units, high dependence on medicines	Haematology Immunology Infections, M Oncology, R Medicine, Tra Qualified Ne	
2 Medical bed type	General mec Cardiology, I cardiology, D Endocrinolo Gastroenter Chemothera Neurology, F Respiratory Rheumatolo management Paediatric m	
3 Surgical bed type	General surg units, Breast Cardiothora Colorectal s Upper GIT s Head and N surgery, Neu Orthopaedic Reconstruct Urology, Vasc	
4 Palliative care	Palliative car	

Table 13.1 Risk classification of pharmacy interventions using a consequence/probability matrix[9]

Consequence or impact		
Level	**Descriptor**	Description: assume intervention not made, pr
1	Insignificant	No harm or injuries, low financial loss
2	Minor	Minor injuries, minor treatment required, no ir financial loss
3	Moderate	Major temporary injury, increased length of st treatment/procedure. Potential for financial lo
4	Major	Major permanent injury, increased length of st for significant financial loss
5	Catastrophic	Death, large financial loss and/or threat to goc

Likelihood of occurrence		
Level	**Descriptor**	Description: likelihood of impact occurring wit future
A	Almost certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Might occur at some time
D	Unlikely	Could occur at some time
E	Rare	May occur only in exceptional circumstances

Risk (consequence x likelihood)			
Likelihood	**Insignificant**	**Minor**	**Moderate**
A (almost certain)	H	H	E
B (likely)	M	H	H
C (possible)	L	M	H
D (unlikely)	L	L	M
E (rare)	L	L	M

E = extreme risk; H = high risk; M = moderate risk; L = low risk.

Table 14.1 Some suggested performance indicators for clinical pharmacy services

Clinical activity	Performance indicator
Accurate medication history	Percentage of patients with completed medication history by a pharmacist within 24 hours of admission or presentation
Medication reconciliation	Percentage of patients with completed medication reconciliation by a pharmacist within 24 hours of admission or presentation
	Percentage of patients with a correctly completed record of prior adverse drug reactions and allergies documented within 24 hours of admission
	Percentage of patients with current medications reconciled (on presentation, transfer or discharge)
Assessment of current medication management	Number of assessments of current medication managements by a pharmacist per total patient bed days
	Percentage of patients that receive an assessment of current medication management by a pharmacist
	Quality of clinical pharmacy interventions: percentage of interventions rated > moderate (collected periodically over 2 days)
Therapeutic drug monitoring	Percentage of patients with an INR > 4 that have had their dosage adjusted or reviewed prior to the next warfarin dose
	Percentage of patients with toxic or subtherapeutic aminoglycoside concentrations that have had their dosage adjusted or reviewed prior to the next aminoglycoside dose
Medication	Percentage of patients with a documented

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United States

- In contrast with pharmacy education's thorough embrace of clinical pharmacy, grassroots pharmacy practice seems to have suffered from a lack of vision and will (Zellmer AJHP 2010)

- Goal: To significantly advance the health and well being of patients by developing and disseminating a futuristic practice model that supports the most effective use of pharmacists as direct patient care providers.

THOUGHTS FOR THE FUTURE?

- Move forward… using a stepwise approach
- Define precise clinical pharmacy practice standards
- Document, benchmark and evaluate level of practice
- Increase and optimise resources
- Research to inform strategic planning


A vision for
Europe?

european summit on hospital pharmacy

- 14-15 May 2014
- Objectives
  - to set out the future direction of the profession, how it can further serve the patient and collaboration with other health professionals
- Outcomes
  - Defining competencies
  - Highlighting best practices
  - Proposing service metrics and implementation framework

Pharmacy's future: Transformation, diffusion, and imagination

WILLIAM A. ZELLMER

Am J Health-Syst Pharm. 2010; 67:1199-204

- « The transformation of pharmacy practice **will not march in a straight line** toward some ultimate perfection. Rather, it is likely to follow a haphazard course, leading to **a variety of practice models** that have core traits in common with the early concept of clinical pharmacy. »

- The pace of change may fluctuate between exhilarating advances and disappointing setbacks, depending on the forces of the **environment** and the quality of the **profession's leadership**.

- Even if pharmacy continues to be blessed with wise and assiduous leaders, its full promise will be realized only if a perceptual transformation occurs within **individual pharmacists.**

The future has already arrived.
It's just not evenly distributed yet
- William Gibson (science-fiction writer)

Thank you for your attention

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- *1 new academic position in clinical pharmacy / pharmaceutical care open at our Faculty/research group for Sep 2014 – contact A Spinewine for information*

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- **2-** No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this presentation.