

Workshop 4: Practice and Science  
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Malta, European Association of Faculties of Pharmacy



## Integrating Science into Practice in Malta



## Clinical Pharmacy origins in Malta



Practice of clinical  
pharmacy dates  
back to the late  
1530's in the Sacra  
Infermeria

*Knights of St John (1529-1798)*

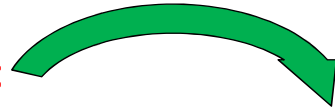
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# Paradigm Shift



Product oriented



Patient-centred practice

Pharmaceutical compounding

Clinical Pharmacy

1972

Pharmaceutical Care

Regulatory aspects

2004

Industrial Pharmacy

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# Workforce Report 2012

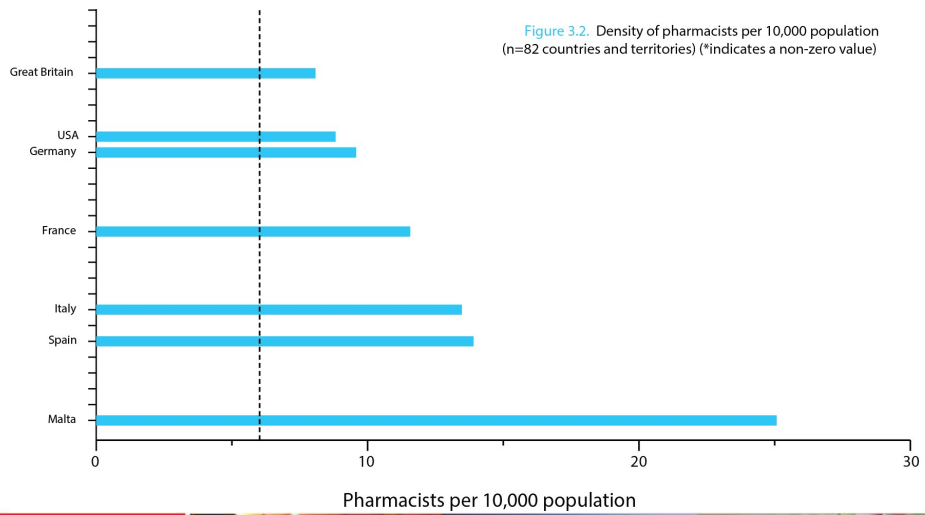


Figure 3.2. Density of pharmacists per 10,000 population (n=82 countries and territories) (\*indicates a non-zero value)

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## Paradigm Shift



**Product oriented**

**Patient-centred practice**

**Pharmaceutical compounding**

**Clinical Pharmacy**

1972

**Pharmaceutical Care**

**Regulatory aspects**

2004

**Industrial Pharmacy**

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## Pharmacy Education in Malta



**Bachelor of Science in Pharmaceutical Science**

**Master of Pharmacy**

**Total 5.5 years**



**Pharmacist**

**Master of Science in Pharmacy**

**Doctorate in Pharmacy**

**Doctor of Philosophy**

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RESEARCH

**A Comparison of Patient-Centered Care in Pharmacy Curricula in the United States and Europe**

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Submitted April 23, 2015; accepted August 27, 2015; published June 25, 2016.

**Objective.** To compare United States and European Higher Education Area (EHEA) undergraduate pharmacy curricula in terms of patient-centered care courses.

**Patient-centred curriculum (maximum 72 points):**

- United States 63 points
- Malta and Netherlands 59 points

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**Pharmacy Education in Malta**



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**Total 5.5 years → Pharmacist**

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**Doctorate in Pharmacy**

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## Examples of PhD Theses – Integrating Science into Practice



- Genetic influence on clopidogrel metabolism and its effect on the occurrence of stent restenosis
- Distribution of ciprofloxacin in peripheral artery disease
- Risk in antibiotic prescribing by pharmacists compared to prescribing by physicians



## Postgraduate doctorate studies



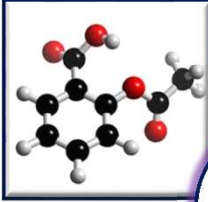
- Professional **doctorate** for pharmacists in practice
- Develop advanced skills of **patient-centred pharmacist activities** in the development, use and monitoring of drugs
- **Mobilize knowledge** to collect and critically assess clinically relevant data to facilitate innovation in use of drugs, patient monitoring and management of drug therapy plans




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**Science translating into practice: longitudinal**








**Education connecting to the real world: mobilize scientific knowledge**




**Practice informing science: bedside teaching, case-based learning, research**


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## Innovations: Bedside teaching




American Association of Colleges of Pharmacy  
*Discover • Learn • Care! Improve Health!*





EUROPEAN ASSOCIATION OF FACULTIES OF PHARMACY




**FIRST ANNOUNCEMENT**



Workshop organised by the Accreditation Council for Pharmacy Education (ACPE), American Association of Colleges of Pharmacy (AACCP), European Association of Faculties of Pharmacy (EAFP), Department of Pharmacy University of Malta

### Curriculum Design and Updating for Clinical Pharmacy Teaching

19-20 September, 2017

Venue: Malta



**Integrating science into practice is what makes a pharmacist contribution unique in any setting**

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**www.edu.mt/ms/pharmacy**





## Back up slides



## Patient-focused curriculum

*American Journal of Pharmaceutical Education* 2016; 80 (5) Article 83.

Table 2. Score of the Pharmacy Curriculum and Percentage of Patient-centered Courses in the Curriculum

Country	Score				Total	% Patient-centered Courses
	Clinical Courses	Social Courses	Experiential Courses	Other Courses		
United States	18	13	15	17	63	51.0
Malta	17	6	18	18	59	54.2
Netherlands	11	15	17	16	59	50.3
Estonia	14	17	11	13	55	34.4
France	4	16	14	14	48	36.3

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## Practice informing Science



Selecting appropriate drug therapy to improve outcomes and reduce risks



Pharmacokinetics

Clopidogrel is a prodrug that requires biotransformation to the active metabolite by CYP2C19

Genetic variation for non functional CYP2C19 has been associated with increased risk of stent thrombosis and higher risk of myocardial infarction, stroke and death

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## Models to follow



- Case-based learning
- Foster applied research
- Immerse students in practice through **structured academic methods**

Case-based learning: use of drugs, side effects, combination therapy, co-morbidities

Research Projects  
Longitudinal approach

Experientials: to apply and mobilize scientific knowledge



**Selecting drug therapy to improve patient adherence to treatment**



**Pharmacodynamics**

**Pharmacodynamics: 5HT<sub>2A</sub> receptor and psychiatric drugs**

**Increased risk of stopping treatment for paroxetine in CC genotype for 5HT<sub>2A</sub> receptor (probably due to higher risk of side effects especially GI)**

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**Pharmacy Practice oriented courses**

**Medical Sciences: Chemistry ratio (1)**

Ireland	2.61	84.1% community pharmacy
France	2.38	72.9% community pharmacy
Malta	2.0	45.0% community pharmacy 19.2% hospital pharmacy

Atkinson J, Rombaut B. The 2011 PHARMINE report on pharmacy and pharmacy education in the European Union.

Pharmacy Practice (Internet) 2011 Oct-Dec;9(4):169-187.

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## Innovations: Bedside teaching



Partnerships in Education  
Science and Practice

ESCP  
5<sup>th</sup> Course in  
Clinical Pharmacy Teaching

7-12 March 2005  
MALTA

*pre-conference activity*  
EAFP 2005 Annual Conference

EAFP EUROPEAN ASSOCIATION OF FACULTIES OF PHARMACY  
UNIVERSITY OF MALTA

Global Confer  
Pharmacy &  
Pharmaceutical Sciences  
Education  
Nanjing  
23 November

Hudson SA, McInaw JJ, Johnson BJ. The changing roles of pharmacists in society. *leJSME* 2007; 1(1): 22-34.