Pharmacy education supporting pharmaceutical healthcare delivery settings

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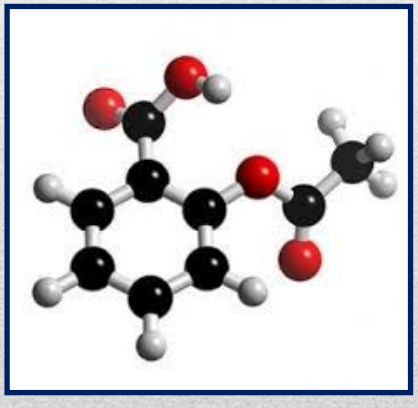
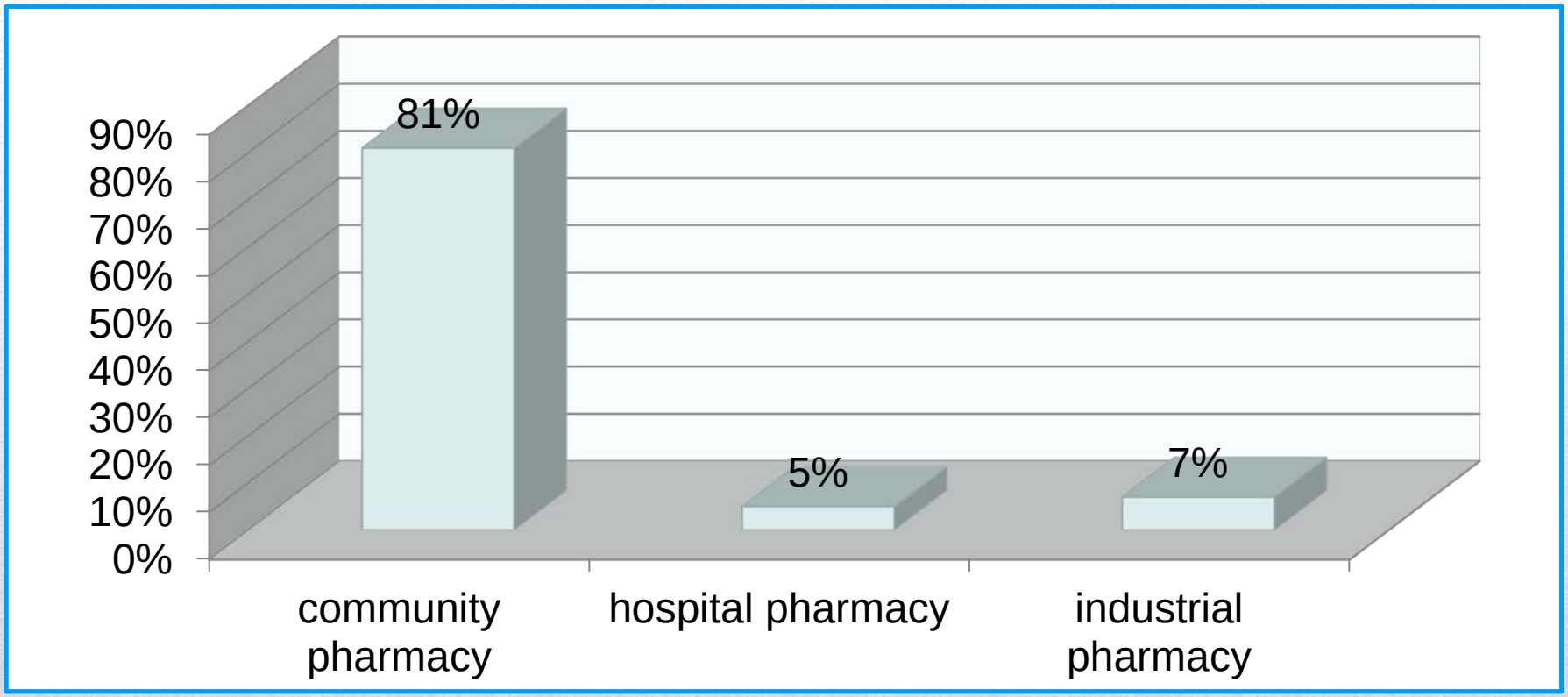


"All professions evolve over time in response to societal needs or external economic, regulatory, or other forces. Failure to respond or adapt will likely spell the profession's inevitable diminution or doom. Certainly, pharmacy in 2009 is much different from what existed 100 years ago…."

Elenbaas RM, Worthen DB. Clinical Pharmacy in the United States: Transformation of a Profession. Kansas: ACCP. 2009

Principal occupation (n=25 countries)



419 353 pharmacists practise in 25 EU countries

Atkinson J, Rombaut B. The 2011 PHARMINE report on pharmacy and pharmacy education in the European Union. Pharmacy Practice 2011; 9(4): 169-187.

Key points

1. Healthcare delivery settings
2. Pharmacist interventions
3. Curricula development
4. Integration of science and practice
5. Education to support new pharmaceutical services

1. Healthcare delivery settings

Society

Access to information

Lifestyle changes

Medicines

Innovative

Risk

CHANGES

access

safety

cost

quality

1. Healthcare delivery settings

- **Community Pharmacy**
- **Hospital Pharmacy**
- **Ambulatory care**
- **Pharmaceutical Regulatory Bodies**
- **Pharmacy Administration and Policy**

Key points

1. Healthcare delivery settings
2. Pharmacist interventions
3. Curricula development
4. Integration of science and practice
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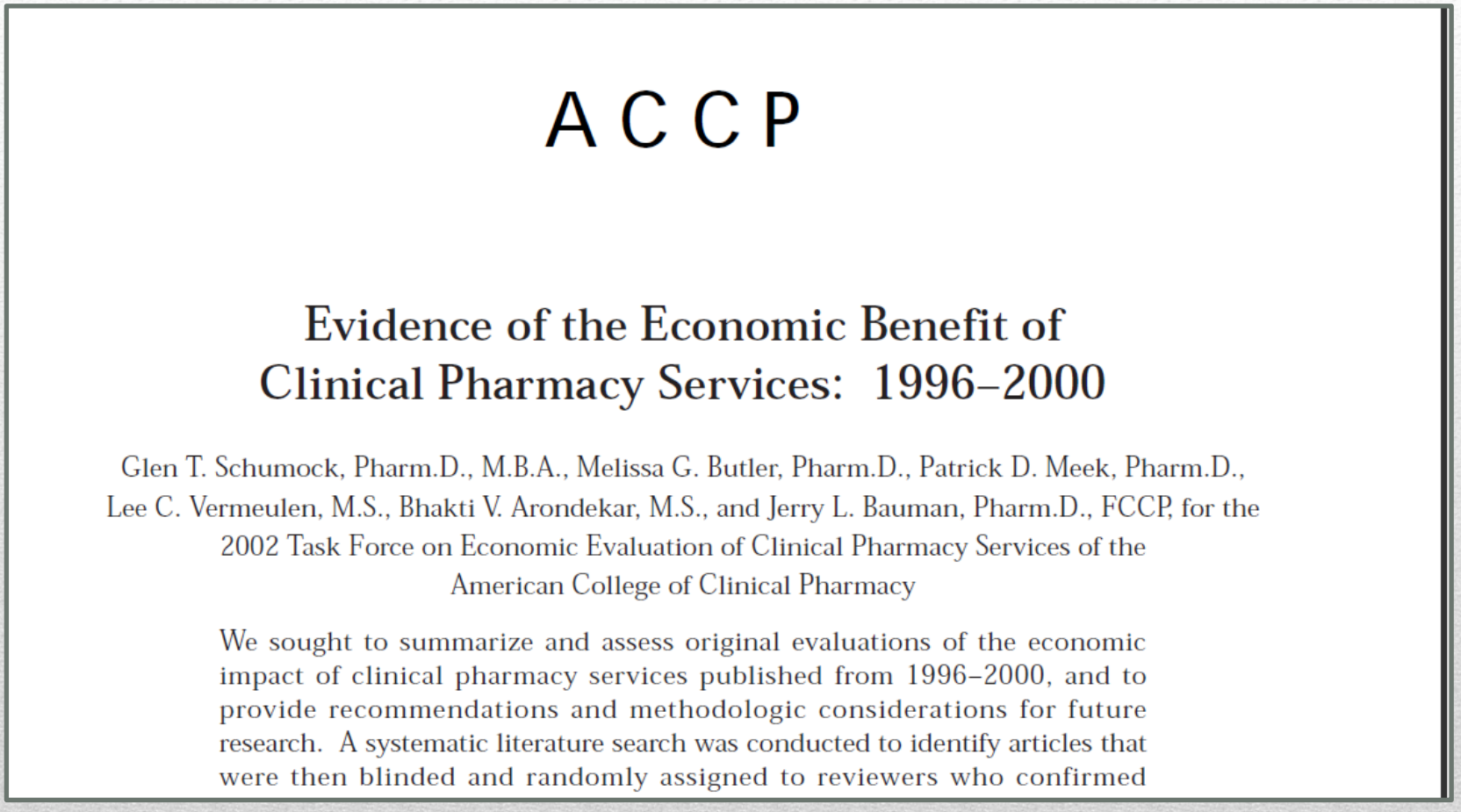
2. Pharmacist interventions

- Preparing and dispensing medications
- Ensuring appropriate therapy and outcomes
- Promoting health and disease prevention
- Health-systems management

access	cost
safety	quality

2. Pharmacist interventions



A C C P

Evidence of the Economic Benefit of Clinical Pharmacy Services: 1996–2000

Glen T. Schumock, Pharm.D., M.B.A., Melissa G. Butler, Pharm.D., Patrick D. Meek, Pharm.D., Lee C. Vermeulen, M.S., Bhakti V. Arondekar, M.S., and Jerry L. Bauman, Pharm.D., FCCP, for the 2002 Task Force on Economic Evaluation of Clinical Pharmacy Services of the American College of Clinical Pharmacy

We sought to summarize and assess original evaluations of the economic impact of clinical pharmacy services published from 1996–2000, and to provide recommendations and methodologic considerations for future research. A systematic literature search was conducted to identify articles that were then blinded and randomly assigned to reviewers who confirmed

Pharmacotherapy 2003; 23 (1): 113-132

2. Pharmacist interventions

“The body of literature from this 5-year period provides continued evidence of the economic benefit of clinical pharmacy services.”

2. Pharmacist interventions

Studies were conducted across a variety of practice sites that consisted of hospitals (52%), community pharmacies and clinics (41%), health maintenance organizations (3%), and long-term or intermediate care facilities (3%).

Key points

1. Healthcare delivery settings
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3. Curricula development: Target

Provide pharmacy education that prepares graduates who can function within a diverse and complex pharmaceutical setting

3. Curricula development: Focus

"Pharmacists are experts on the action and uses of drugs. There are may facets to this expertise, including the chemistry of drugs, the formulation of medicines and the way in which drugs are used to manage disease."

Winfield AJ, Cromarty JA, Richards RME et al. The contribution of pharmacy to today's health care provision. In: Winfield AJ, Richards RME, editors. Pharmaceutical Practice. Edinburgh: Churchill Livingstone; 1998: 2.

3. Curricula development: Outcome

- **Development of critical thinking and problem-solving skills**
- **Transition from dependent to active, self-directed lifelong learners**

Objectives of the Experiential Learning Module

- Utilise the principles of experiential education and engagement of students in “real-life” activities.
- Describe the importance of workplace skills
- Instill the importance of competence through lifelong learning habits
- Provide basic understanding and utility of continuous professional development
- Provide appropriate leadership skills through example

Active Learner during Experiential Learning Module

- Reflecting on your strengths and what you want to learn and improve
- Identify SMART learning objectives which are:
  - specific
  - measurable
  - achievable
  - relevant
  - timed

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4. Integration of Science and Practice

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Pharmacy Practice module

- **Connects to real-world contexts eg. visits, observation sessions, placements**
- **Involving teacher practitioners**
- **Based on encouraging grounding of basic science into practice science**

Aims

- **to introduce areas of practice for pharmacy**
- **to develop skills in handling pharmaceutical and medical literature**
- **to develop skills in pharmaceutical calculations**
- **to familiarize with principles in the safe and effective use and handling of medicinal products**
- **to present classification of medicinal products**
- **to provide students with practical experience in a community pharmacy**

4. Integration of Science and Practice

Package Leaflet: Information for the User

GSK (logo) **GlaxoSmithKline**

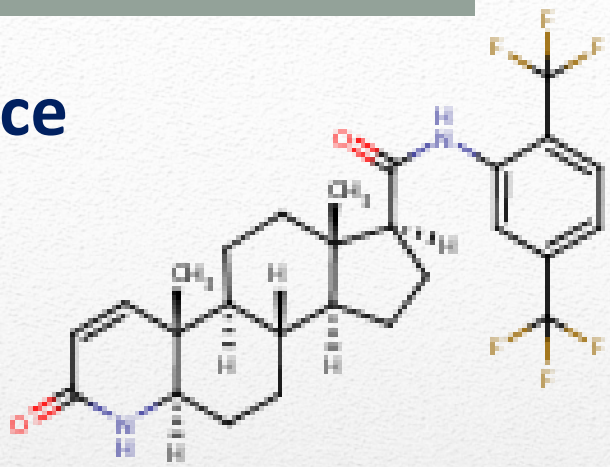
Avodart® (logo) **0.5 mg soft capsules**
dutasteride

Read all of this leaflet carefully before you start using this medicine.

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor or pharmacist.
- This medicine has been prescribed for you. Do not pass it on to others. It may harm them, even if their symptoms are the same as yours.
- **If any of the side effects gets serious, or if you notice any side effects not listed in this leaflet, please tell your doctor or pharmacist.**

In this leaflet:

4. Integration of Science and Practice



The active ingredient is dutasteride. It belongs to a group of medicines called 5-alpha reductase inhibitors.

As the prostate grows, it can lead to urinary problems, such as difficulty in passing urine and a need to go to the toilet frequently. It can also cause the flow of the urine to be slower and less forceful. If left untreated, there is a risk that your urine flow will be completely blocked *(acute urinary retention)*. This requires immediate medical treatment. In some situations surgery is necessary to remove or reduce the size of the prostate gland. Avodart lowers the production of dihydrotestosterone, which helps to shrink the prostate and relieve the symptoms. This will reduce the risk of acute urinary retention and the need for surgery.

4. Integration of Science and Practice

Food and drink with Avodart

Avodart can be taken with or without food.

Pregnancy and breast-feeding

Women who are pregnant (or may be) must not handle leaking capsules. Dutasteride is absorbed through the skin and can affect the normal development of a male baby. This is a particular risk in the first 16 weeks of pregnancy.

4. Integration of Science and Practice

The usual dose is one capsule (0.5 mg) taken once a day. Swallow the capsules whole with water. Do not chew or break open the capsule. Contact with the contents of the capsules may make your mouth or throat sore.

4. Integration of Science and Practice

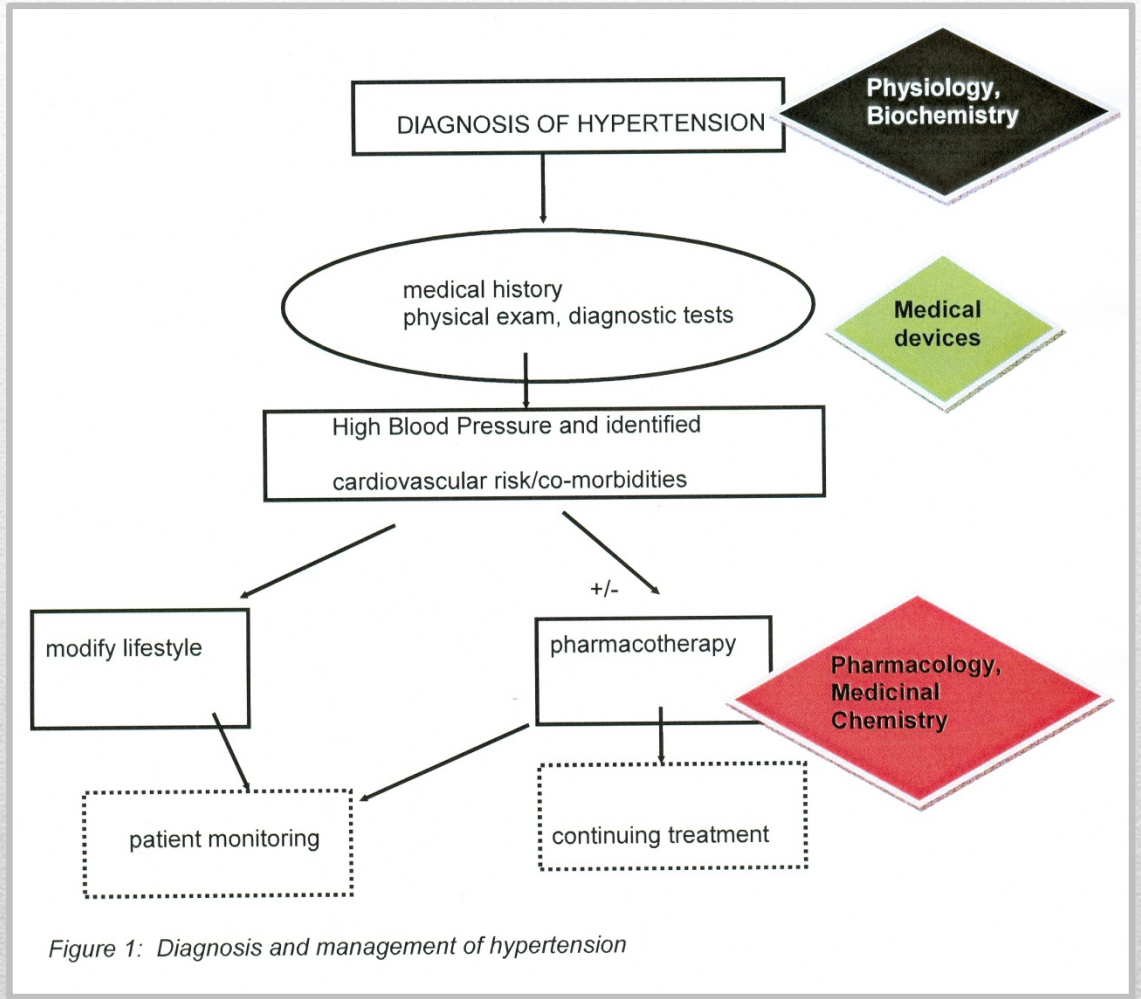


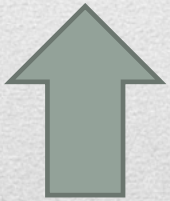
Figure 1: Diagnosis and management of hypertension

Pharmacotherapy: ensuring appropriate therapy

4. Integration of Science and Practice

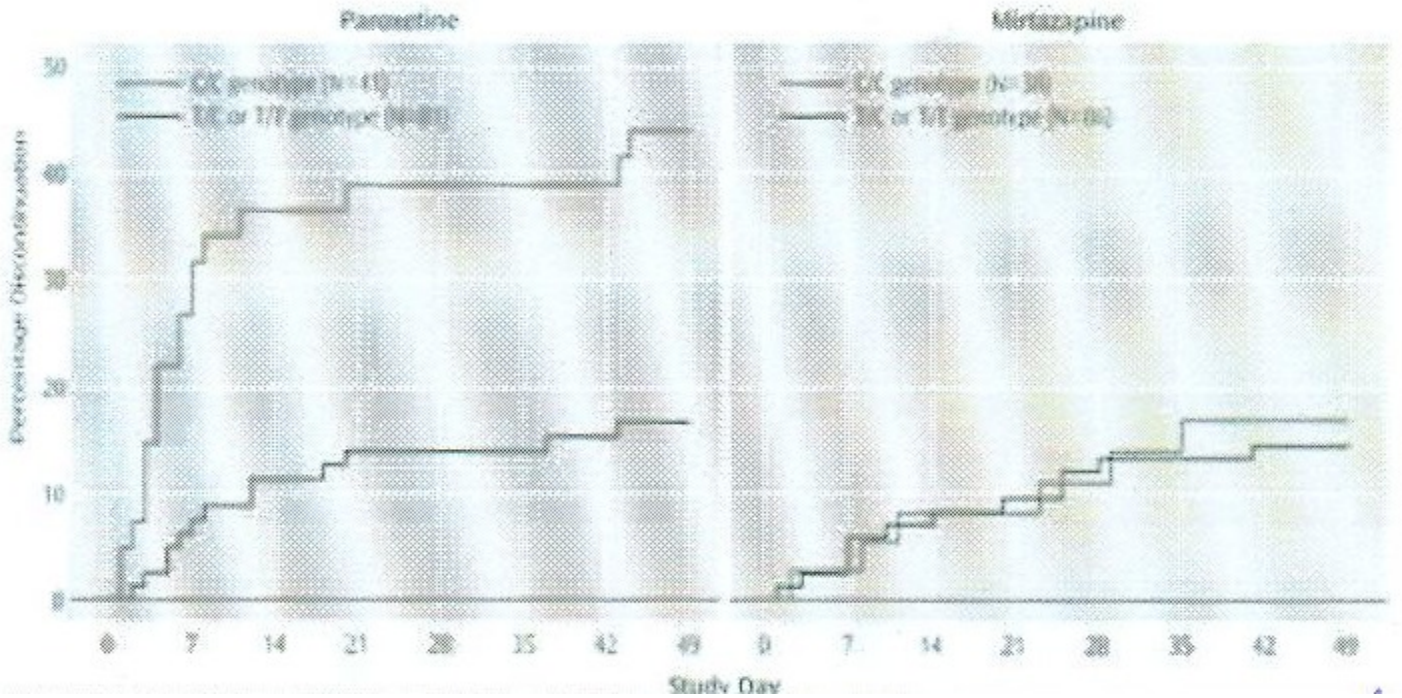
- **Selecting drug therapy to improve patient**

  adherence to treatment



Pharmacodynamics

Pharmacodynamics: 5HT2A receptor

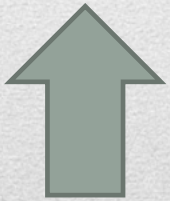


Am J Psychiatry 2003; 160: 1830-35

Increased risk of stopping treatment for paroxetine in CC genotype for 5HTA receptor (probably due to higher risk of side effects especially GI)

4. Integration of Science and Practice

- **Selecting appropriate drug therapy to improve outcomes and reduce risks**



Pharmacokinetics

PHARMACOKINETICS

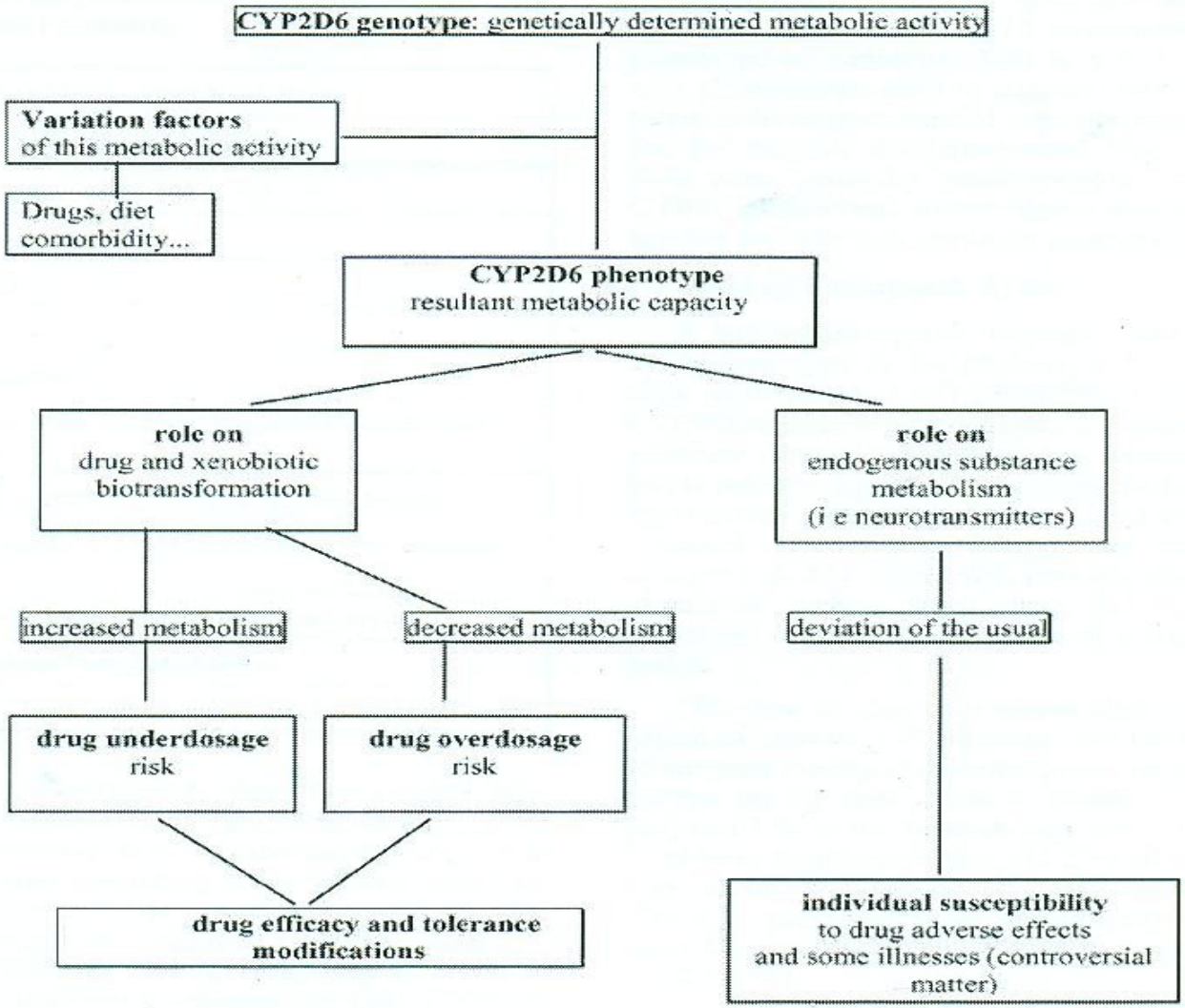


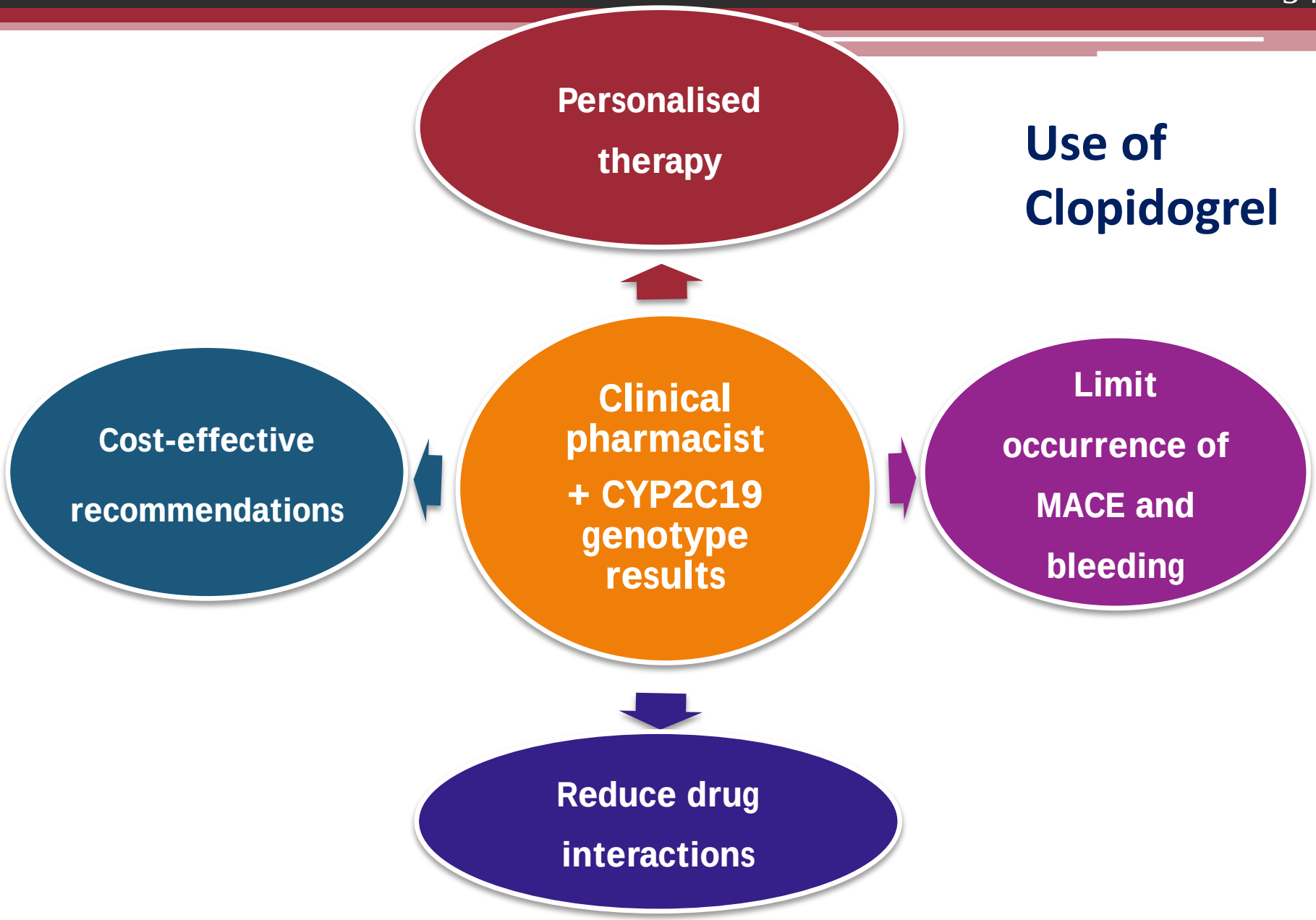
Fig. (1). rational background of the clinical implications of CYP2D6 genetic polymorphism.

P.Vandel, JM Talon, E.Haffen and D.Sechter. Pharmacogenetics and Drug Therapy in Psychiatry – The Role of the CYP2D6 Polymorphism. *Current Pharmaceutical Design*, 2007, 13, 241-250

CASE STUDY: CLOPIDOGREL

- **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**

Use of Clopidogrel



Slide credit: Wirth F, Azzopardi LM. Pharmacogenetic implications in clopidogrel therapy: A pharmacist-led management approach

Key points

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Postgraduate professional doctorates

- **Level 8 academic degree- equivalent to PhD**
- **Develop advanced professional skills in clinical pharmacy**
- **Interprofessional learning at the clinical sites with consultant physicians, nurses and other healthcare professionals**

5. Education to support new pharmaceutical services

Postgraduate professional doctorates

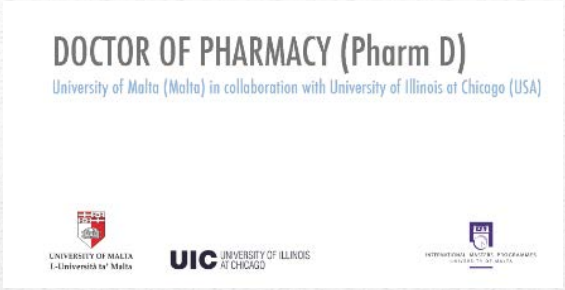
- **Pharmacy practice research: translational research, practice service development**
- **Empower pharmacists to assume leadership roles that will drive policies and developments in clinical practice and service that draws on scientific, evidence-based and innovative research**

5. Education to support new pharmaceutical services

Skills developed

- **Manage medication knowledge, mitigate errors and support decision-making based on evidence-based sources**

5. Education to support new pharmaceutical services



Skills developed

- **Collect and critically assess clinically relevant data to facilitate monitoring and management of drug therapy plans**
- **Identify opportunities for improvement of a medication-use system**

THANK YOU

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