



Nanjing
China

Global Conference on
Pharmacy &
Pharmaceutical Sciences
Education
7-8 November 2016



Reforming pharmaceutical education: The imperative for change

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Pharmacy and the Pharmaceutical Sciences



- Drug discovery
- Manufacturing
- Distribution/supply chain
- Prescribing
- Transcribing
 - Medication administration records
 - Pharmacy records
- Compounding
- Dispensing/distribution
- Administration
- Monitoring/pharmacovigilance

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We need new medicines



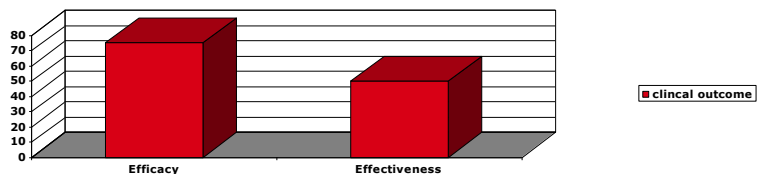
- Many fatal diseases cannot currently be cured
 - Cancer
- Many non-fatal diseases can only be treated symptomatically
 - Diabetes
 - Rheumatoid arthritis
- New medicines will be personalized for individual patients
 - Genomics



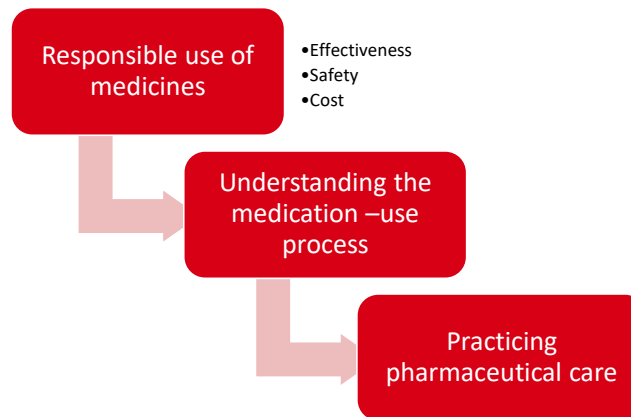
We need better USE of medicines



- **Efficacy** – Treatment effect shown by randomized, controlled trials
- **Effectiveness** – Does treatment effect transfer to “real world” populations



Responsibilities and obligations of pharmacists



Pharmaceutical care



- **Responsibility** and **accountability** for the outcome of drug therapy
- Identifying, preventing, and resolving drug-related problems
 - Needing pharmacotherapy but not getting it
 - Needing pharmacotherapy but getting the wrong drug
 - **Not** needing pharmacotherapy but getting it
 - Needing and getting pharmacotherapy but:
 - Dose is too high
 - Dose is too low
 - Interacts with another drug or food
 - Results in a preventable adverse drug event



Reference: Helper, D.D. & Strand, L.M., Opportunities and Responsibilities in Pharmaceutical Care, *Am. J. Pharm. Educ.*, 53, 75-155(1989).

Science informs practice



- Evidence-based medicine based on science
 - Case reports (“evidence in not the plural of anecdote”)
 - Randomised controlled trials
 - Meta analyses/systematic reviews
- Examples
 - Anticoagulant therapy following aortic valve replacement or atrial fibrillation
 - Cholesterol management to prevent cardiovascular disease
 - Managing high blood pressure to prevent complications (RF, Stroke, blindness)
 - Managing blood glucose in diabetes to prevent complications



Practice informs science



- Can we find an anticoagulant that is easier to use than warfarin?
 - Wider therapeutic range?
 - Fewer complications/bleeding?
 - Fewer interactions (food/drugs)?
 - Requires less monitoring?
- How can we use genomic information to personalized the use of medicines?
 - Will it work at all?
 - Should the dose be adjusted?
 - Is a medicine with fewer side effects be used (if available)?



Bridging the gap at FIP



Science ↔ Practice



Kamal Midha
FIP President
2006 – 2010

“A molecule becomes a medicine when it passes through the hands of a pharmacist.”

“The pharmacist is the scientist in the community.” (Past BPS chairman Mitsuru Hashida)

• FIP efforts

- Science and practice co-chairs, Congress Programme Committee
- BPP/BPS leadership meetings twice a year
- Integration of Pharmacy Practice Research into BPS
- Formal recognition of FIPeD in the new FIP bylaws



Some challenges to address



- How to narrow the gap between pharmaceutical sciences and pharmacy practice?
 - Each should relate to and benefit from the other
 - Improving the USE of medicines is as important as drug discovery.
- How to integrate the increasing importance of the biological sciences into pharmaceutical education and the balance with the physical sciences?



Some challenges to address



- What new curriculum content is needed and how to incorporate it?
 - Social determinants of health
 - Communication and teamwork
- How much can reasonably be taught in an entry level pharmacy program and the need for post-graduate education and/or training?

