Role of Education and Training in Rational Use of Medicines

Kalle Hoppu, M.D., Ph.D.
Director, Poison Information Centre, Helsinki University Central Hospital
Docent (Associate professor) Departments of Paediatrics and Clinical Pharmacology, University of Helsinki, Helsinki, Finland
Member, WHO Expert Advisory Panel on Drug Evaluation
Chairman, Section of Pediatric Clinical Pharmacology, IUPHAR
Technical Advisor, IPA
Chair FINPEDMED - Finnish Investigators Network for Pediatric Medicines

In this presentation I will discuss

• What are rational and irrational use of medicines
• Interventions to promote more rational use of medicines
• How can training and education promote more rational use of medicines
• Experience from the rational use of medicines project ROHTO in Finland
**Definition of rational use of medicines**

“Patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.” (WHO, 1985).

**Types of irrational medicine use**

- The use of too many medicines per patient (polypharmacy)
- Inappropriate use of antimicrobials, often in inadequate dosage, for non-bacterial infections
- Over-use of injections when oral formulations would be more appropriate
- Failure to prescribe in accordance with clinical guidelines
- Inappropriate self-medication, often of prescription-only medicines
- Use of too expensive medicines
Types of interventions to promote more rational use of medicines

- Laws and regulations
- Controlling access to medicines
- Essential medicines lists based on treatments of choice
- Clinical guidelines
- Education and training of
  - Professionals
  - The public
- Avoidance of perverse financial incentives

<table>
<thead>
<tr>
<th>Type of irrational use</th>
<th>Type of intervention that can be effective</th>
</tr>
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<tbody>
<tr>
<td>Polypharmacy</td>
<td>Education</td>
</tr>
<tr>
<td>Inappropriate use of antimicrobials</td>
<td>Education, regulatory measures on availability</td>
</tr>
<tr>
<td>Over-use of injections</td>
<td>Education</td>
</tr>
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<td>Failure to prescribe in accordance</td>
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<td>with clinical guidelines</td>
<td></td>
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<tr>
<td>Inappropriate self-medication</td>
<td>Regulatory measures on availability, education</td>
</tr>
<tr>
<td>Use of too expensive medicine</td>
<td>Essential medicine lists, reimbursement policies</td>
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</table>
From inappropriate to more appropriate use of medicines

- Prescribers/users have to change their practice
- Change of practice can be reached to a limited extent with external rules, regulations and other control measures
- Real change of practice can be reached through educational interventions
- Use of evidence-based methods
- The learner has to be motivated to change
- Relapses are common

Phases of change

Pre-consideration → Consideration → Preparation → Action → Maintenance → Relapse

Prochaska JO et al 1992 (modified)
**Human needs: The motivation for behaviour**

Adults address physiological and psychological needs continually over their lifetimes

- Hierarchy of Needs (Maslow 1943):
  - Biological (e.g. the need for nutrition, sleep)
  - **Security** (e.g. the need for predictability in one’s life)
  - **Affiliation** (an individual's feeling she/he is a valued member of a group important to her/him)
  - **Self-esteem** (i.e. feeling good about oneself)
  - Self-actualization (i.e. maximizing one's potential)

**Principles of adult learning**

- Learners seek solutions to problems they recognize
- Learners want to be involved in their own learning
- Adult learners have many demands on their time
  - Learning received has to be in balance with demand on time and energy required
### Cooking story

<table>
<thead>
<tr>
<th>Bloom Level</th>
<th>Common Education Activity</th>
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</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>List the ingredients for pancakes</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Describe how I make these pancakes</td>
</tr>
<tr>
<td>Application</td>
<td>Make the pancakes</td>
</tr>
<tr>
<td>Analysis</td>
<td>Point out the importance of separating the dry and wet ingredients</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Create a healthier pancake</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Compare two recipes for pancakes</td>
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</tbody>
</table>

### Educational activities and Bloom’s taxonomy

<table>
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<tr>
<th>Bloom Level</th>
<th>Common Education Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Readings, Lectures, Online (programmed learning)</td>
</tr>
<tr>
<td>Comprehension</td>
<td>All of the above and Discussion, Small group learning</td>
</tr>
<tr>
<td>Application</td>
<td>Active learning projects, Problem-based learning, Team-based learning</td>
</tr>
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Model of educational activities to change physician’s practice (EBE*)

<table>
<thead>
<tr>
<th>Needs assessment</th>
<th>Activities designed to identify physicians’ needs addressable through CME**</th>
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<tbody>
<tr>
<td>Primary intervention</td>
<td>Instructional strategies and tactics employed to address problems noted in the needs assessment</td>
</tr>
<tr>
<td>Secondary interventions</td>
<td>Activities designed to either enable learning or reinforce learning after the initial intervention is complete</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Preferably those indicating changes in physicians practice and patient welfare e.g. reduction of morbidity and mortality</td>
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*EBE=Evidence based Education
**CME = Continuous Medical Education

From Davis D et al 1994
Quality problems of drug therapy recognized by the program organisation, such as

- Continuously increasing polypharmacy among the elderly: around 40% of those over 75 years of age use at least five different prescription drugs concomitantly
- Widespread use of psychotropics, most frequently among the elderly, both in institutions and ambulatory care
- Treatment of hypertension: only a minority of patients treated for high blood pressure reach the target level, mainly because of the failure in life-style modification
- The consumption of antimicrobials (in Finland 30% higher than for example in Denmark) causing increasing problems with bacterial resistance
- Rare generic prescribing, even though the price level of generic products is generally 25-35% below the (original) branded ones
- The educational basis of the interventions required, that the selection of topics was left to the physicians at local level

Approaches chosen for ROHTO-project

- A pilot experiment of collaboration
  The most usual outcome for an intervention study, drug expenditure, is too multifactorial to allow any meaningful conclusions on such a short intervention. The programme was seen merely as a pilot experiment, which could be expanded, if proven successful.
- Ownership
  The programme was funded by the government and administered jointly with the Finnish Medical Society Duodecim (a scientific society)
- Small group CME at local level
- Workshops at regional and national level
- Prescribing feedback
  Reflection on local prescribing practices, based on anonymised data tailored from the national register of reimbursed medicines, was an integral part of the workshops
- Publishing
Conclusions

- Effective promotion of more rational use of medicine scan only be achieved through change of practice (behaviour)
- Learners have to first recognize the problem
- Evidence based educational interventions should be used (involve learners in their learning)
- Filling learners needs for security (feeling certain how to deal with a clinical problem), affiliation (feeling of being a valued member of a peer group), and self-esteem help motivate the learner