Point of View

R. K. Dikshit

Rational education for rational therapy

A sound knowledge of pharmacology and clinical therapeutics could help future prescribers in India to master the principles and practice of rational therapy. The teaching of pharmacology in medical schools should be restructured accordingly, and greater attention should be given to the applied aspects of the subject. Practicals in experimental pharmacology and dispensing pharmacy should be discontinued and useful exercises should be introduced. Methods of evaluation should be modified.

One step that could be taken towards rational drug use in India would be to provide adequate education in the subject for future prescribers. A good knowledge of clinical pharmacology and rational therapeutics can be expected to induce better prescribing habits and less harmful drug therapy. The responsibility for achieving this lies with departments of pharmacology and therapeutics in medical schools. In India, unfortunately, as in many other developing countries, the discipline of clinical pharmacology is still at a rudimentary stage. Furthermore, it is generally felt that pharmacology curricula in medical schools are outdated. There has been a failure to keep pace with rapid changes and the requirements of clinical practice. In the interest of rational therapy, pharmacology teaching should be restructured and medical education should be improved at all levels.

Theory

Doctors are mainly concerned with the applied aspects of pharmacology. Curricula should therefore be carefully balanced as between their basic and applied content. A pharmacology teaching programme can be conveniently divided into the general principles of therapeutics, systemic pharmacology, and prescribing practices. It is desirable to adopt a largely clinical
approach to the teaching of pharmacology to medical students. Subjects such as history, chemistry and structure-activity relationships should be dispensed with. Coverage of pharmacological actions and mechanisms should be restricted to those with a bearing on important clinical uses and side-effects. A detailed discussion on the use of a drug in a clinical situation should be organized.

It is impossible even for clinical pharmacologists to know everything about every drug. Courses on systemic pharmacology should be divided into sections dealing with drugs likely to be used by all doctors, drugs usually employed by specialists, and drugs that are used only rarely; the first category should receive detailed coverage, the third only passing reference. A suggested list of drugs and other subject matter for each section is given in the box. Of course, the contents of the list can be modified according to the requirements of particular communities, but careful attention should be given to the WHO list of essential drugs when decisions are being phased out because of its irrelevance and the scarcity of animals. The continuation of dispensing pharmacy in medical curricula attracts widespread ridicule. Some practical exercises are suggested below.

- Demonstration of dosage forms.
- Demonstration and preparation of some commonly used and easily made medicaments (e.g., oral rehydration solution, powder aspirin, antiseptic solution).
- Demonstration and practice of parenteral routes of drug administration.
- Critical review of various commercial products, including combinations.
- Assessment of pharmaceutical promotional material.
- Decision-making in actual or simulated clinical situations.
- Review of actual or simulated ready-made prescriptions.
- Writing of prescriptions for common clinical conditions.
- Identification and use of various sources of drug information.
- Preparation of ideal formularies.
- Preparation and review of information sheets and package inserts.
- Interpretation of clinical trial reports.

**Teaching techniques**

Teaching methods could easily be improved if we realized that students are supposed to be trained to perform a particular skill and that they are not required to absorb excessive theoretical detail. Furthermore, it is increasingly felt that self-learning is
Course content in systemic pharmacology

- The most commonly used drugs, receiving detailed coverage
  - Analgesics, antipyretics, nonsteroidal anti-inflammatory drugs, skeletal muscle relaxants
  - Sedatives, antiepileptics
  - Ethyl and methyl alcohol; treatment of methanol poisoning
  - Clinical uses of adrenaline and atropine and their substitutes
  - Beta blockers
  - Treatment of insecticide poisoning
  - Treatment of cold, cough, bronchial asthma; antihistamines
  - Treatment of angina, hypertension and hypovolaemia; diuretics
  - Treatment of iron-deficiency anaemia
  - Treatment of vomiting, gastroenteritis, peptic ulcer and constipation
  - Antimicrobials; treatment of common infections
  - Corticosteroids, oral contraceptives
  - Vitamins, nutrients, vaccines

- Less commonly used drugs, receiving moderate coverage
  - General and local anaesthetics
  - Psychopharmaceuticals
  - Drug therapy of parkinsonism and myasthenia gravis
  - Treatment of congestive cardiac failure; antiarrhythmics; antihyperlipidaemics
  - Oxytocics, uterine relaxants
  - Thyroid and antithyroid drugs, antidiabetics
  - Sex hormones, ovulation inducers, gonadotrophins
  - Chemotherapy of malignancy

- Least commonly used drugs, receiving brief coverage
  - Central nervous system stimulants, anorexiants
  - Alpha-adrenergic blockers
  - Ganglion blockers and stimulants
  - Anterior pituitary hormones
  - Heavy metal antagonists
  - Treatment of megaloblastic anaemia.

desirable. Class lectures are rated as much less useful than tutorials, group discussions and question-and-answer sessions, particularly if these are conducted in the presence of a clinician. Audiovisual aids can be stimulating but should be used judiciously and with some expertise. The provision of notes for students reduces dependence on textbooks and lends an opportunity to teach rational therapy. Visits to wards, primary health centres and pharmaceutical laboratories, and the carrying out of hospital- or community-based drug projects, all have a place in integrated teaching. Computer-assisted teaching may also be employed.

Proper weight should be given to simple, safe and inexpensive methods of treatment. The importance of cost should be discussed with students. Teachers should not show unqualified enthusiasm for everything that is new; cost and effectiveness should always be taken into account.

Evaluation

An effort should be made to assess students’ abilities to decide on drug treatments in given clinical situations.

Total reliance on a final examination is inadvisable; equal importance should be attached to continuous assessment on the basis of objectively structured techniques.

Rational therapy cannot be developed in isolation. Reforms are also required in other areas of the medical curriculum, and in the licensing system for physicians, continuing and postgraduate medical education, the control of pharmaceuticals, and the evaluation of indigenous systems and home remedies.