

55310

WHO/HRH/95.5
English only
Distr.: LIMITED

Developing protocols for change in medical education

**Report of an informal consultation
Seattle, Washington, USA
11 to 14 August 1992**

Charles Boelen, M.D.

Jacques E. Des Marchais, M.D.

Charles W. Dohner, Ph.D.

Martin P. Kantrowitz, M.D.



**World Health Organization
Geneva**

Abstract

Medical schools should respond to the health needs of society by reorienting the education of physicians to ensure that they possess the appropriate skills and are able to practise them. For medical education to become more relevant and efficient, changes must occur in curriculum content, learning processes and the relationship of medical schools with the health care system.

This monograph offers guidelines for change in the form of steps for getting started, steps for development and early implementation, and steps for later adoption. A goal is set for each step, and specific tasks are suggested to help attain the goal; advice is offered on how to develop the tasks, and signs of progress are suggested. Also proposed are areas for future action, including action research, to improve the relevance and efficiency of medical education.

This document is not issued to the general public, and all rights are reserved by the World Health Organization (WHO). The document may not be reviewed, abstracted, quoted, reproduced or translated, in part or in whole, without the prior written permission of WHO. No part of this document may be stored in a retrieval system or transmitted in any form or by any means — electronic, mechanical or other — without the prior written permission of WHO.

The views expressed in documents by named authors are solely the responsibility of those authors.

Designed by WHO GRAPHICS

Contents

1. Educating doctors to serve people's needs	1
2. Changing medical education	2
3. Working hypothesis to steer the change process	4
3.1 The new mandate of the medical school	4
3.2 The profile of the future physician	5
3.3 The features of a cooperative dean	6
4. Action research and the change process	8
5. The change process	9
5.1 Steps for getting started	9
5.2 Steps to initiate implementation	17
5.3 Steps for full implementation	21
6. Future action	26
6.1 Planning longitudinal studies	26
6.2 Improving steps in the change process	26
6.3 Role model of a medical school for health care reform	27
6.4 Evaluation of mission fulfillment	27
6.5 Changing medical education and medical practice	28
7. Conclusions	29
References	30
Annex A. List of participants at the informal consultation on "Preparing protocols for change in medical education", Seattle, Washington, USA, 11 to 14 August 1992	31

Table 1. Mean (SD) age, height, weight, and body mass index (BMI) of the 100 children in the study

Age (years)	Height (cm)	Weight (kg)	BMI (kg m ⁻²)
7.0 (0.2)	120.5 (6.5)	22.5 (5.5)	15.6 (2.5)
8.0 (0.2)	130.5 (7.5)	30.5 (8.5)	18.5 (3.5)
9.0 (0.2)	138.5 (8.5)	38.5 (11.5)	20.0 (4.0)
10.0 (0.2)	145.5 (9.5)	45.5 (14.5)	21.5 (4.5)
11.0 (0.2)	152.5 (10.5)	52.5 (17.5)	22.5 (5.0)
12.0 (0.2)	158.5 (11.5)	60.5 (20.5)	23.5 (5.5)
13.0 (0.2)	164.5 (12.5)	68.5 (23.5)	24.5 (6.0)
14.0 (0.2)	170.5 (13.5)	76.5 (26.5)	25.5 (6.5)
15.0 (0.2)	176.5 (14.5)	84.5 (29.5)	26.5 (7.0)
16.0 (0.2)	182.5 (15.5)	92.5 (32.5)	27.5 (7.5)

3.1. Prevalence of overweight and obesity

Figure 1 shows the prevalence of overweight and obesity in the study population. The prevalence of overweight increased from 10.0% at age 7 to 25.0% at age 16.

The prevalence of obesity increased from 2.0% at age 7 to 10.0% at age 16. The prevalence of obesity was significantly higher in boys than in girls at all ages (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to overweight parents than in children who were born to non-overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children who were born to obese parents than in children who were born to non-obese parents (Table 2).

3.2. Prevalence of overweight and obesity in children of overweight and obese parents

Figure 2 shows the prevalence of overweight and obesity in children of overweight and obese parents. The prevalence of overweight and obesity was significantly higher in children of overweight and obese parents than in children of non-overweight and non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of overweight parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of non-obese parents (Table 2).

The prevalence of overweight and obesity was significantly higher in children of obese parents than in children of overweight parents (Table 2).

1.

Educating doctors to serve people's needs

Education has a social purpose. Medical education, for example, should aim to serve the health needs of society by producing physicians who possess appropriate competences and by ensuring that graduates are able to practise these competences in their future work environment.

In their quest for improvement in the health care system, health care policy-makers, health professionals and health consumers may not necessarily have the same motives. Consumers want good access to quality health services; health professionals want to expand the knowledge base and exercise independent judgement; health care policy-makers want cost-effective protection of all citizens. But a health care system can be reformed and smoothly run only if the main stakeholders decide to work together and agree on a system that is affordable and acceptable to all in a given sociopolitical context.

Until recently, doctors have "driven" the health care system; they are seen to be largely responsible for the challenges in health care delivery that society now confronts. If the medical profession is to continue to play an influential role in health policy-making and to be respected by society, it must adapt to the new health requirements being expressed by political decision-makers and health consumers.

Physicians must now address fundamental issues such as equity of access to health care; quality of care; consumer satisfaction; rationing of resources; individual versus community rights; environmental determinants of health; technology assessment; cost containment; and competition with other health care providers. The search has begun for a new model that integrates all these factors.

2.

Changing medical education

Medical education must be made more relevant and more efficient (1), which implies the need for significant changes in curriculum content and learning processes. To provide the best possible service to society, it is equally important to train adequate numbers of physicians, who should in addition have a profile congruent with the projections of health planners.(2) Graduates must be able to find jobs that make full use of their skills, and they should be adequately distributed within the health care system.

These exigencies can be met only through good coordination and consistent policies within and between the health care delivery sector and the education sector. In summary, medical schools must develop new approaches and new alliances with health authorities, health professional associations and communities not only to provide relevant education, but also to ensure the optimal use of their graduates.

Neither magic nor a unique formula is required to successfully plan a fundamental change in the mission and organization of a medical school. The dynamics of change in medical schools have been described (3) and a fair analysis has been made of how to use internal and external forces to serve the cause of reformers.(4) But the literature is short of guidelines on how to develop and implement a process of change by using protocols — that is, propositions describing in detail a process of action that is agreed to by the faculty and administration and embodied in a formal project for change.

This monograph offers such guidelines. It is the result of a consultation jointly organized by the World Health Organization and the Department of Medical Education, School of Medicine, University of Washington, Seattle, Washington, USA, in August 1992. The list of participants appears as Annex A to this monograph.

This activity was part of a major initiative launched by WHO and

2. Changing medical education

described in its document *Changing Medical Education: an agenda for action*, which suggests a coordinated series of activities intended to facilitate change in medical education to meet the current and future requirements of society.⁽⁵⁾ Also relevant to this initiative is the WHO document *Towards the assessment of quality in medical education*, the subject of which readers may find closely related to this monograph.⁽⁶⁾

3.

Working hypothesis to steer the change process

It is the responsibility of a medical school to anticipate the challenges that a society will face and to plan its programmes to provide adequate responses to these challenges. In doing so, the medical school must define its mission by anticipating the essential features of the future health system and the essential aptitudes that health professionals, particularly the medical practitioner, must possess in the new health care delivery environment.

Such forecasting implies change and risk, but reluctance to adopt a scenario for the future is charged with even greater risk for an educational institution, whose task is precisely to prepare graduates to function effectively in society for the next three or four decades.

In encouraging institutional change, planners should envision and use as a reference guide a scenario of the future that can accommodate evolutionary trends. This monograph proposes three starting points for reform of medical education:

1. the new mandate of the medical school
2. the profile of the future physician
3. the features of a cooperative dean.

3.1 The new mandate of the medical school

Medical education can be defined as the science and art of preparing future physicians to function properly in society; this should imply responsibility for influencing the circumstances and conditions under which they practice.⁽¹⁾ Thus medical education should go beyond the mere teaching and learning of medicine to incorporate accountability for the product of education: the graduates. The medical school should look into the working environment of future graduates and ensure that the skills it wishes to impart to the future doctor will be fully used and rewarded in reality, to

the greatest satisfaction of health consumers, health authorities and the graduates themselves.

To fulfil this responsibility and obtain the best possible returns from its educational investment, a medical school should enlarge its mandate to incorporate new areas of responsibility in health care development and engage in partnership with other institutions and groups in the health and social sectors. Medical schools should be prepared to contribute to health policy formulation through health services research, especially with respect to developing and testing new and different practice patterns, guided by principles of relevance, quality, cost effectiveness and equity in health care. The new mandate of the medical school should include responsibility for designing, implementing and assessing population-based health programmes that target priority health problems.

3.2 The profile of the future physician

Health systems are being reformed to better meet society's health needs and promote optimal use of the available resources in the health sector. These changes require a new profile of the "ideal" physician of the future.⁽¹⁾ This physician would be expected to fulfil at least five essential functions:

Care-giver	Assess and improve the quality of care by responding to the patient's total health needs with integrated preventive, curative and rehabilitative services, and by considering the patient as an integral part of a family and a community.
Decision-maker	Make optimal use of new technologies, bearing in mind ethical and financial considerations and the ultimate benefit of the consumer.
Communicator	Promote healthy lifestyles by skilfully communicating with individuals and groups and empowering them for their own health protection.
Community leader	Reconcile individual and community health requirements, striking a balance between patients' expectations and those of society at large, both short term and long term.
Manager	Work efficiently in multiprofessional and multi-

disciplinary teams, both within the health sector and across the health sector and other socioeconomic sectors influencing health.

This ideal practitioner could be referred to as a "five-star doctor". This image may remain a mirage, however, unless there is serious reflection on the political, financial and sociocultural feasibility of new practice patterns that can realistically incorporate all the above functions.

New working patterns should be designed to allow a shift of responsibilities among health managers, care providers and consumers. New slots for this ideal practitioner should be made available in the health care system, taking into account functions of other health professionals. Moreover, to ensure sustainability, legislation and remuneration schemes will have to be adapted.

In summary, a new culture is needed in the health sector. It is under this assumption that a medical school may wish to consider the profile of a "five-star doctor" as a reference in planning and directing its educational programmes.

3.3 The features of a cooperative dean

One of the most important factors for successful implementation of change in a medical school is the support given by the school's leadership to new ideas and the strategies required to put them into practice. By leadership, we mean principally the dean, the faculty council and heads of departments. The participants in the consultation concentrated on the attributes of the dean.

The directives proposed in this monograph are based on the assumption that the dean supports important institutional change. This fictitious dean could be called "Dean Willing". He or she is indeed a person of good will, whose portrait displays the following traits:

- **Intellectual curiosity.** Dean Willing is fully aware of the need for the medical school to adapt to changing health needs. He/she understands what is meant by the new mandate of a medical school, as described above, and accepts that a new mandate is needed. But the dean is also curious about the implications of change, such as technical, financial and administrative feasibility.

The dean realizes that important changes must occur, not only in the

medical school but in the academic world in general, and wonders how changes in the medical school would relate to changes in other components of the health sector. Dean Willing is progressive and is not afraid to take risks.

- **Experience.** Dean Willing has long experience as a clinician and researcher and a well-established reputation as an outstanding scientist. Before becoming a dean, he/she knew about the importance of innovations in education, visited several medical schools that are community-oriented and use problem-oriented and student-centred approaches in education, and attended international symposiums on medical education. Not a newcomer to the world of education, the dean knows the language and the arguments used by educators.
- **Scepticism.** Dean Willing may be motivated and committed to change, but holds the opinion that change in the medical school will not result from the beliefs and the action of only a few enthusiasts. The dean believes that the whole faculty must be concerned and active in the change process, and favours negotiation with reluctants rather than authoritarian measures. In addition, the dean regards change in the medical school not just as an adventure but as an action research project that requires rigorous planning and monitoring.

In a way, the scepticism that Dean Willing may manifest to enthusiastic reformers is not a constraint but an asset, as in consequence the dean demands evidence of the appropriateness of any innovative action and requires that progress in the change process be assessed. Such healthy scepticism can reinforce the determination for the reorientation of the institution.

With a view to having change be guided by science more than by intuition, the dean accepts the idea of using protocols to steer the change process. Understandably, the dean is sceptical about any pre-determined course of action, particularly for a project that aims to transform the medical school and carry out a new mandate. The dean is averse to dogmatism and prefers to adopt a step-by-step approach that affords the flexibility to reorient, accelerate or even stop the project in the course of development, if necessary.

The working group assumed that a "Dean Willing" exists at numerous medical schools. This monograph is directed to that dean, who represents all those who will initiate and guide the process of change.

4.

Action research and the change process

What is action research and how can it support the management of change in medical education? (7, 8)

- Action research is based on the staged implementation of a new development. Each stage is analysed before the next stage is initiated.
- Action research is applied research. It leads to the solution of problems, not the development of theory.
- Action research is situational. It occurs in the same place as the object of the research — in real time, in real places. It also is tailored to local circumstances and is planned to result in developments that are locally relevant and directly applicable. The process of a managed change is about taking action in the real world. Many educational developers feel that using the real world as a laboratory is the most constructive approach to achieving lasting change in our educational systems.
- Action research is conducted by the practitioners (in this case, the teachers, trainers and administrators of medical education as well as persons in the community who will become involved), often with the help of a research facilitator, to solve their own problems and to improve their own practice.
- Action research is based on rigorous, repeated reflection on actual changes being made. It must be objective and properly conducted, using methods that ensure reliability and validity. This is why, at least in the beginning, an experienced action researcher can provide useful guidance.

The basic principle of providing evidence of progress during the project to promote change (with a spirit of rigour and yet flexibility) seems to fit the particular ambiance of a medical school that has decided to embark on fundamental reform. With respect to the starting points given earlier, project managers interested in the action research approach are invited to consult specialized articles and experts in this subject.

5.

The change process

This section proposes a list of steps, or activities, that the school's leadership may want to consider as it moves along the path of change. They are grouped in three subsections: steps for getting started, steps for development and early implementation and steps for later adoption.

Within a given subsection, the order of steps can be changed. Each medical school will develop its own "recipe" by using some or all of these ingredients, combined with others that are unique to its own setting.

A combination of these steps with methodological aspects of the action research approach should lead to the development of protocols for change. A goal is set for each step. Specific tasks are suggested to help attain the goal. The comments offer guidelines and advice on how to develop the tasks. Finally, the suggested signs of progress can help in assessing the extent to which the goal has been met.

These lists are by no means exhaustive. Furthermore, the steps and their components have not yet been submitted to field testing. The reader thus should think of this section as a source of inspiration rather than a rigid prescription. It is hoped that the reader will find these steps useful and will contribute to their improvement in the course of working on an action research project.

5.1 Steps for getting started

Step One: Develop a mission statement.

Goal: Draft a statement that explains how the medical school intends to serve the needs of society through its education, research and health service delivery programmes, and that sets the course for the development and implementation of change. The leadership of the school should guide the development of this mission statement with the assistance of the faculty and staff.

Tasks:

- Form a steering committee from among leaders of the administration, faculty and staff, as well as representatives of the health authorities, the medical profession and the community, to draft the mission statement.
- Send drafts of the mission statement to faculty and staff not on the steering committee, and provide a mechanism — such as a discussion group — for accommodating their suggestions.
- Identify the beneficiaries of new programmes in education, research and health service delivery that would result from a change in the school's mission.

Comments: It is useful to refer to basic documents issued when the institution was founded and that describe its purpose. Interpreting these documents, making terms more explicit and filling gaps in their text — while referring to current and future challenges in the health system — is usually a good start.

Sign of progress: A mission statement is developed for adoption with the general agreement of the administration, faculty and staff of the medical school.

Step Two: Work with other concerned parties.

Goal: Collaborate with local health authorities and other important groups in the health sector (e.g. local physicians, other health professionals, local communities). It is important to ensure that the medical school is developing relevant programmes to adequately serve the needs of individuals and local communities, and that health-related activities are coordinated at the community level.

Tasks:

- Identify institutions, groups and persons in the community with whom collaborative links should be established.
- Share information with these institutions, groups and persons as to the medical school's current and planned major activities and encourage collaborative arrangements.

- Identify activities that could be carried out: health services research, quality assurance initiatives and continuing medical education, for example.

Comments:

- Indicate what a medical school does or can potentially do to contribute to health development in the community.
- Inquire about ongoing and planned activities in the communities with which the medical school could be associated.
- Work in a spirit of true cooperation and mutual support.

Signs of progress:

- Discussions are initiated and sustained about linking the medical school with other important groups in the health sector to promote a population-based health programme.
- Faculty members sit on boards of other important groups in the health sector.

Step Three: Plan the curriculum according to health needs.

Goal: Gather data regarding the health status and health needs of the population as a baseline for rational decision making, in order to establish that present and projected needs will be a major factor in determining curriculum content.

Tasks:

- Identify sources of data.
- Prepare a plan (who, where, when) for collecting the data.
- Develop and administer a survey.
- Collate information and develop conclusions.

Comments:

- These data will offer qualitative and quantitative evidence to convince others of the need for change.
- Data sources may consist of already developed demographical and epidemiological data, surveys and interviews of doctors, other health care providers and educators, and consumers of health care.

Sign of progress: Baseline data are collected and collated, and conclusions are developed.

Step Four: Develop the profile of the "future doctor".

Goal: Determine the essential characteristics of the "future doctor", using the information collected (e.g. "The future doctor will be able to do the following . . .") and in consonance with the requirements of the national health plan.

Tasks:

- Collect data regarding health needs of the population to be served.
- After identifying the priority health issues that must be addressed by the health care delivery system (see Step Two):
 - Identify which aspects of the priority health issues will be the responsibility of the doctor and which ones will be the responsibility of other health care providers, from the perspectives of curative and preventive care and individual and community health care.
 - Ensure that as the new curriculum is developed, the "end product" of the process — i.e. the "future doctor" — has acquired the knowledge, skills and attitudes to be able to meet the newly defined responsibilities. These responsibilities will form the core of the profile of the "future doctor".

Comments:

- The profile of the future doctor as defined on page (the "five-star doctor") may be considered as a reference.
- By defining the end product, the medical school will be able to determine how the curriculum can orient the student towards becoming that kind of doctor.
- The definition of the doctor must be stated in behavioural terms (e.g. "The doctor must be able to . . .").
- Input for this activity must come from a representative sample of medical school faculty and administrators.

Sign of progress: A behaviourally stated profile of the "future doctor" is developed.

Step Five: Assess the usefulness of the present curriculum.

Goal: Determine which portions of the present medical school curriculum — both content and methodologics — will best serve to train the “future doctor” and which must be modified.

Tasks: Answer the following questions:

- In light of the need to produce a future doctor, what is appropriate about the present curriculum and should not change?
- What is acceptable about the present curriculum but should be improved?
- What is inappropriate about the present curriculum and must be changed?

Comments: This analysis is best carried out by a group of representatives from the faculty, staff, administration and students of the medical school, with input from consumers and their representatives (e.g. ministry or departments of health).

Sign of progress: The present curriculum is reviewed and suggestions are made for its modification (both of content and educational methodologies).

Step Six: Assess the student evaluation system.

Goal: Determine which portions of the present student evaluation system will best serve to evaluate the knowledge, skills and attitudes expected in the “future doctor” and which must be modified.

Tasks: Answer the following questions:

- In light of the need to produce a future doctor, what is appropriate about the present evaluation system and should not change?
- What is acceptable about the present evaluation system but should be improved?
- What is inappropriate about the present evaluation system and must be changed?

Comments: The system by which students are evaluated is the greatest single determinant of where they will put their efforts. Therefore it is

essential to review the evaluation system and make suggestions for its modification.

Sign of progress: The present evaluation system is reviewed and suggestions are made for its modification.

Step Seven: Assess the faculty and staff.

Goal: Assess the ability of the present faculty and staff to train the "future doctor", and determine whether additional or different staff will be needed to meet the objectives contained in the mission statement of the medical school.

Task: Review the actual and potential skills of the present faculty and staff to determine whether they possess the qualities necessary to train the "future doctor".

Comments:

- The "future doctor" may require mentors who are not presently available among the faculty of the medical school.
- If this is the case, either existing faculty must be trained to fill that role or the confines of the medical school must be expanded to include community physicians who could serve as mentors.

Sign of progress: Faculty and staff assessments are completed and areas of concern are noted.

Step Eight: Assess the organizational structure.

Goal: Determine whether the present organizational structure can initiate and sustain the curricular, evaluation and faculty changes necessary to train the "future doctor".

Task: Determine how decisions are actually made and whether the existing system allows for the development and implementation of innovative ideas.

Comments:

- The organizational structure must allow for the optimal flow of ideas, activities and rewards for faculty and staff who are participating in the change.

5. The change process

- It may be important to modify the departmental structure.
- The establishment of a department of medical education may be indicated.

Signs of progress:

- Opportunities for an open debate on the need for organizational change have been used.
- Assessment of the organizational structure is completed and modifications are suggested.

Step Nine: Assess the reward system.

Goal: Determine whether the present structure for faculty and staff rewards is appropriate. If changes in behaviour on the part of the faculty are needed to reflect the values of the institution, the reward system must be modified to support the expected new behaviour.

Tasks:

- Clearly delineate the behaviours expected of the faculty and staff as they train the "future doctor".
- Determine whether the existing reward system provides incentives or disincentives for faculty and staff to support change.

Comments:

- These determinations may best be made by an outside observer.
- This issue is one of the most commonly mentioned barriers to curricular change.

Sign of progress: Assessment of the reward system is completed and modifications are suggested.

Step Ten: Estimate the chances for successful change.

Goal: Estimate the chances for successful change through determining whether existing circumstances are appropriate for change.

Tasks:

- Assess the forces for change within the medical school.
- Assess the barriers to change within the medical school.

- Assess the forces for change external to the medical school.
- Assess the barriers to change external to the medical school.

Comments: Using the approach described under Tasks, the institution can determine:

- the magnitude of the forces for change
- the magnitude of the barriers to change
- the places from which allies can be recruited
- the places where efforts must be increased to overcome significant barriers.

Signs of progress:

- An objective list of forces for change and barriers to change is collected.
- The chances for successful change are determined.

Step Eleven: Prepare appropriate leaders.

Goal: Create a climate for change by identifying appropriate persons to serve as leaders in the change process.

Task: Assess those at the top and middle of the organization, as well as from the ranks of junior faculty and staff, for:

- qualities of leadership
- support by colleagues within the institution
- perspective regarding the need for change.

Comment: Key associate deans and assistant deans, as well as department chairpersons, will enhance the change process by contributing their prestige and experience to the project.

Sign of progress: Leaders are identified and agree to participate in the change process.

Table 1.

Protocol for change — Phase 1: Steps for getting started

1. Develop a mission statement.
2. Work with other concerned parties.
3. Plan the curriculum according to health needs.
4. Develop the profile of the "future doctor".
5. Assess the usefulness of the present curriculum.
6. Assess the student evaluation system.
7. Assess the faculty and staff.
8. Assess the organizational structure.
9. Assess the reward system.
10. Estimate the chances for successful change.
11. Prepare appropriate leaders.

5.2 Steps to initiate implementation

The new medical school mission has been formulated, and the baseline data from the assessments on all levels have been gathered. This section addresses techniques required to maintain the momentum towards change.

Step One: Seek financial support.

Goal: Investigate various potential internal and external sources of financial support for implementing innovations.

Tasks:

- Explore reallocation of internal resources.
- Explore government support.
- Explore support from nongovernmental organizations.
- Explore support from philanthropic organizations.
- Explore support from intergovernmental organizations.

Comments:

- Shifts in priorities may free some internal resources for use in supporting changes.

- Government support is often available, as the concept of the "future doctor" is usually compatible with the mission of the ministry or department of health.
- Financial support also shows that the funders affirm the validity of the innovations.

Signs of progress:

- Funding sources are identified and reviewed.
- Applications for planning and implementation grants are prepared and submitted.

Step Two: Gather materials to develop a new curriculum.

Goal: To meet the goals of the new curriculum but to avoid "reinventing the wheel", gather guidelines and educational resources from other innovative medical schools and adapt them.

Tasks:

- Contact institutions and organizations with experience in the change process, including WHO and WHO collaborating centres in medical education.
- Contact innovative medical schools.
- Contact nongovernmental organizations with experience and expertise in the change process in medical education and medical practice.

Comments:

- Curricular syllabuses, educational materials and health service research protocols have already been developed and field-tested by other institutions.
- A school undergoing change can better use its energy by learning from the experience of others and modifying their educational material, instead of devising its own. Faculty who are actively involved in modifying the material will develop a sense of ownership.

Signs of progress:

- Contact is established with institutions and international organizations that can offer experience and perspective.

- Exchange of materials, students and staff is anticipated.

Step Three: Develop organizational plan.

Goal: Establish roles and responsibilities for all participants in the process.

Tasks:

- Appoint committees to perform various tasks and set deadline dates.
- Develop a new organizational chart.
- Develop new job descriptions.
- Identify persons (internal and external) whose qualifications fit the job descriptions.

Comments:

- During change there is often a sense of confusion.
- An organizational plan will help give order to the process as well as alleviate the sense of confusion.

Signs of progress:

- An organizational chart is prepared.
- Job descriptions are developed.
- Qualified persons are identified for key positions.

Step Four: Maintain communication.

Goal: Develop a process for continuous input from and to faculty and staff.

Tasks:

- Issue a newsletter specifically for this purpose.
- Meet regularly with key innovative leaders and departments as well as general faculty and staff.

Comments:

- If faculty and staff receive frequent and clear communications, they will be reassured of their ongoing involvement in the project.

- Frequent dialogue assures faculty and staff that their ideas are heard and valued.

Sign of progress: Instruments of dissemination and dialogue (meetings, newsletter, etc.) are in place.

Step Five: Solidify a positive image for the change.

Goal: Obtain early support by key persons.

Tasks: Identify a core of powerful persons (the "early adopters") who accept the change and actively support it.

Comment: This identification will reinforce the trend for change for those who are "watching and waiting".

Sign of progress: Core supporters are identified and given a role in the change process.

Step Six: Deal with barriers to change.

Goal: Attempt to overcome resistance to change.

Tasks: Identify those who are resistant to the change and try to work with them.

Comments:

- Valid arguments against certain aspects of the change must be addressed.
- If resisters "convert", this will be viewed as strengthening the momentum for change.
- Involve resisters actively in the change process by providing the opportunity for their input.

Sign of progress: The resisters to change have been identified, their concerns have been heard, and their constructive criticism has been incorporated for the benefit of the programme.

Table 2.

Protocol for change — Phase 2: Steps to initiate implementation

1. Seek financial support.
2. Gather materials to develop a new curriculum.
3. Develop organizational plan.
4. Maintain communication.
5. Solidify a positive image for the change.
6. Deal with barriers to change.

5.3 Steps for full implementation

The groundwork has been established for the implementation of an innovative curriculum for preparing the "future doctor". Now the following steps are important:

Step One: Develop a curriculum schedule.

Goal: Establish a detailed schedule for the components of the curriculum (e.g. when clinical experiences begin, when certain skills will be mastered and evaluated).

Tasks:

- The various committees established earlier produce a detailed plan.
- Disseminate copies of the plan to all who will be affected by the change.
- Encourage questions, dialogue and suggestions.

Comments: The curriculum plan is presented to all, and students, faculty and administrative staff are given ample opportunity to be heard.

Sign of progress: The schedule is developed and disseminated.

Step Two: Establish an appropriate curriculum governance structure.

Goal: Establish a curriculum governance structure that supersedes departmental boundaries.

Task: Establish a "new curriculum" committee that reflects the knowledge, skills and attitudes that are part of the training for the "future doctor".

Comments:

- Decisions regarding content, time allocation and teaching methods must be determined by the definition of the "future doctor" and not by internal political forces.
- The curriculum structure could be interdepartmental in nature, matrix in nature, or could reflect yet another approach.

Sign of progress: An umbrella governance structure is formed and clearly delineated.

Step Three: Establish an ongoing evaluation plan for the short term and the long term.

Goal, short-term: Evaluate the innovative curriculum, using a relatively short-term loop.

Task: Develop questions to be answered in one to two years regarding the feasibility and effectiveness of the programme.

Comment: Most institutions will need at least preliminary feedback regarding the feasibility and effectiveness of the programme.

- Is the curriculum in place?
- Are the students successfully meeting expected standards?
- How much does the programme cost?

Signs of progress:

- Questions are developed and administered.
- Data are compiled and analysed.
- Short-term evaluation is completed.

Goal, long-term: Evaluate the long-term results of the innovative curriculum.

Tasks:

- A longitudinal evaluation of students and graduates of the programme is conducted.
- Assessment is made of the degree to which graduates match the profile of the desired "future doctor".
- Observations are made regarding health care outcomes.

Comments:

- This educational research activity will provide information that will determine future administrative support of the "new curriculum".
- Appropriate modifications to the curriculum can be made with the information collected.
- The use of an external evaluation team is useful and may further stimulate the change process.

Signs of progress:

- Baseline data are collected.
- Evaluation is completed, and curriculum modifications are made as needed.

Step Four: Participate in community-based health programmes and health service research.

Goal: Launch projects related to areas such as:

- population-based projects targeting a priority health problem and populations at risk;
- establishment of a system of continuing medical education that would allow a dialogue to benefit both the school of medicine and doctors practising in the community;
- testing innovative practice patterns with a focus on the general practitioner/family physician, with reference to aptitudes expected from the "five-star doctor" (see page 5);

- assessment of cost-effectiveness of medical procedures;
- development of a quality assurance initiative within the medical school that also can be made available to doctors practising in the community.

Tasks:

- Formulate a project.
- Explore its relevance to the local context and its financial feasibility.
- Seek cooperation and willingness to apply results to a wider scale.

Comments:

- In addition to lessons learnt with respect to their educational mission, medical schools must also address the issue of the practice environment of their graduates.
- Most medical schools may be reluctant to embark on activities over which they do not have full control and that do not appear immediately beneficial to the institution.
- Medical schools may not have all the necessary expertise (e.g. in public health, health management and public advocacy) to lead such activities and thus should link with other groups in the health sector.
- Medical schools must be shown and convinced that it is in their interest to be more active in addressing key health care issues in the community they serve. This is valuable not only as an end in itself: when they are seen to increase the relevance of their action programmes, medical schools may themselves benefit from enhanced taxpayer support.

Signs of progress:

- Several projects are planned.
- Several projects are being implemented.
- An increasing proportion of the school's funds or grants is being used to support such projects.

5. The change process

- The medical school is being asked more and more frequently for its input on important health policy and management issues.

Table 3.

Protocol for change — Phase 3: Steps for full implementation

1. Develop a curriculum schedule.
2. Establish an appropriate curriculum governance structure.
3. Establish an ongoing evaluation plan for the short term and the long term.
4. Participate in community-based health programmes and health service research.

6.

Future action

To help attain the goal of reorienting medical education with a view to optimizing society's health status, further research and development activities must be pursued by health authorities, educational policy-makers and professional associations. Examples of such research and development activities follow.

6.1 Planning longitudinal studies

A medical school committed to making important reforms to better serve the health needs of society may wish to engage in an action research project extending over several years (e.g. 5 years).

Such a study would involve preparing an adequate plan of action with protocols enabling action to be conducted appropriately; documenting the process of change (i.e. analysing the effects of positive and negative forces within and outside the institution); and refining the action research methods for changing medical education.

Collaborative arrangements may be sought with medical schools engaged in similar endeavours (e.g. twinning or multicentred study). Such studies should be monitored so that progress reports and final results can be disseminated worldwide.

Comparison between different strategies of change using different strengths or opportunities (e.g. involvement in public health action, quality assurance initiatives, continuing medical education, educational innovations) would be of particular value.

6.2 Improving steps in the change process

Individual medical schools can contribute to refining the process of change outlined in this monograph by identifying new steps; improving the con-

tent of steps proposed herein; developing instructions on how to implement activities within a step; and refining indicators to monitor progress and to assess final results for each step.

6.3 Role model of a medical school for health care reform

The improvement of relevance, quality, cost-effectiveness and equity in health care opens a whole new spectrum of action — from conceptual to interventional. A medical school can contribute to this effort in various ways and in some instances it can even lead the way. For example, it can contribute by improving cost-effectiveness of care in teaching hospitals and offering information to health authorities, hospital administrators and medical associations regarding organizing alternative patterns of care, influencing continuing medical education and making policy decisions.

The medical school can integrate tertiary care in population-based health intervention programmes (e.g. target chronic diseases). Possible contributions could be: setting guidelines for prevention, care and rehabilitation; setting guidelines for referral; epidemiological surveillance of a disease or health risk on a population scale; establishing a databank and monitoring all activities related to a health condition for a given population.

These activities have important implications for medical education at undergraduate, postgraduate and continuing education levels. The quality of education is intimately linked to the quality of research and health care delivery.

6.4 Evaluation of mission fulfillment

An individual school can participate in a wide array of actions for improving the validity and sensitivity of indicators needed to set up an accreditation system for medical schools as a whole. The assessment of the medical school's response to society's needs is of utmost importance, so research to design adequate measurement instruments in this domain should be emphasized. Particular attention should be given to the adoption of sensitive and early signals to assess how a medical school fulfils its mission, whether it be through educating doctors, conducting research or delivering health care services.

6.5 Changing medical education and medical practice

Changes in medical education cannot be made in isolation from changes in medical practice. The mutual influences between education and practice must be recognized.

Both medical education and medical practice must be geared towards the achievement of improved health for all.

Research/development at the interface between medical education, medical practice and health care must be promoted and supported, in topics such as demonstrating a relationship between quality assurance in health care and in medical education; elucidating new practice patterns for the general practitioner/family physician and the implications for medical education; and education and working in health teams — the redistribution of functions in reference to improving cost-effectiveness in health care.

7.

Conclusions

Change in medical education has always happened. Today, as many health care systems undergo a process of reform, fundamental change is required.

Medical schools will not be able to remain indifferent to the widespread quest for relevance, quality, cost-effectiveness and equity in health care. As medical practice must adapt to new requirements set by society, similarly medical education must change.

In anticipating the needed changes in the training of doctors and in defining new roles for doctors in the health system, medical schools would regain respectability on the health chessboard.

To ensure relevance, consistency and sustainability in the action for change and to guarantee that reformers in medical education will be fully in charge of the change process, change in medical education should be thought of as an action research project. Appropriate methods and tools must be developed to channel the enthusiasm of reformers towards the expected outcome.

References

1. Boelen C. Medical education reform: the need for global action. *Academic medicine*, 1992, 67(11):745-749.
2. World Bank. *World development report 1993: investing in health*. New York, Oxford University Press, Inc., 1993.
3. Bloom SW. The medical school as a social organization: the sources of resistance to change. *Medical education*, 1989, 23:228-41.
4. Mennin SP, Kaufman A. The change process and medical education. *Medical teacher*, 1989, 1:9-16.
5. *Changing medical education: an agenda for action*. Geneva, World Health Organization, 1991 (unpublished document WHO/EDUC/91.200; available on request from Division of Development of Human Resources for Health, World Health Organization, 1211 Geneva 27, Switzerland). English and French (*Changer l'éducation médicale : un programme d'action*).
6. *Towards the assessment of quality in medical education*. Geneva, World Health Organization, 1991 (unpublished document WHO/HRH/92.7; available on request from Division of Development of Human Resources for Health, World Health Organization, 1211 Geneva 27, Switzerland). English only.
7. McKernan J. *Curriculum action research*. London, Kogan Page, 1991.
8. Elliott J. Educational action research. In: Nisbet J. et al., eds. *World yearbook of education*. London, Kogan Page, 1985.

Annex A

List of participants at the informal consultation on "Preparing protocols for change in medical education", Seattle, Washington, USA, 11 to 14 August 1992

Dr Stephen Abrahamson
Professor Emeritus
Director, Division of Research in
Medical Education
School of Medicine
University of Southern California
2025 Zonal Avenue
Los Angeles, California 90033
USA

Dr Francisco E. Campos
Coordinator of Manpower Policies
and Planning
Pan American Health Organization/
WHO
525 23rd Street, NW
Washington, D.C. 20036
USA

Dr Wayne Davis
Office of Medical Education
University of Michigan Medical
School
M7300 Med. Sci. I
1301 Catherine
Ann Arbor, Michigan 48109-0624
USA

Dr Jacques E. Des Marchais
Vice-Doyen aux Etudes
Faculté de Médecine
Université de Sherbrooke
Sherbrooke, Province de Québec
Canada

Professor Charles Dohner
Department of Medical Education
School of Medicine
University of Washington
E312 Health Sciences, SC-45
Seattle, Washington 98195
USA

Dr José Roberto Ferreira
Chief, Human Resources Develop-
ment
Pan American Health Organization/
WHO
525 23rd Street, NW
Washington, D.C. 20036
USA

Dr Rodney Gale
Joint Centre for Educational
Research and Development in
Medicine
33 Millman Street
London
UK

Dr Eric Goon
Director, Division of Development of
Human Resources for Health
World Health Organization
1211 Geneva 27
Switzerland

Dr Janet Grant
Joint Centre for Educational
Research and Development in
Medicine
33 Millman Street
London
UK

Dr James P. LoGerfo
Harborview Medical Center
Seattle, Washington
USA

Dr Joseph H. Levenstein
Professor and Head, Department of
Family and Community
Medicine
The University of Illinois College of
Medicine at Rockford
1601 Parkview Avenue
Rockford, Illinois 61107-1897
USA

Dr Zohair M. Nooman
Faculty of Medicine
Suez Canal University
Ismailia
Egypt

Dr Gordon Page
Director, Division of Educational
Support and Development
The University of British Columbia
400-2194 Health Sciences Mall
Vancouver, B.C.
Canada V6T 1Z3

Dr Chaloeam Varavithya
Head, Research and Development
Faculty of Medicine
Chulalongkorn University
Bangkok 10500
Thailand