IMCI Pre-service Education for Health Workers
What is IMCI pre-service education?

IMCI pre-service education integrates the principles and practices of IMCI into the undergraduate curriculum of health workers, including doctors, medical assistants, nurses, health assistants, midwives and paramedical health workers.

Pre-service IMCI education strengthens the public health approach by training health workers to apply the IMCI standard case management for assessing, classifying and treating sick children from birth up to five years old. IMCI focuses on the recognition of children with severe illness needing referral and provision of appropriate treatment and counselling to children with acute respiratory infections, diarrhoea, measles, malaria and ear infections as well as undernutrition. In addition to the management of the most common conditions in sick children, the IMCI approach trains health workers to screen and update immunizations, give micronutrients, promote breastfeeding and provide feeding counselling.

Introduction of IMCI into pre-service curriculum requires that key stakeholders in pre-service education have been introduced to or trained in IMCI. Decisions need to be made when planning pre-service education, including training objectives, methods for integrating IMCI into the teaching curriculum, materials and textbooks that will be used and approaches for incorporating clinical practice into IMCI training.

Key points: Benefits of pre-service IMCI education

Although in-service IMCI training is essential for building the skills of existing health workers, pre-service IMCI education has benefits in the long term, including:

- Cost-effectiveness: since it is integrated with the basic undergraduate curriculum, high costs of residential in-service training are avoided.
- Improved basic skills: since IMCI principles and practices are learnt in school, health workers do not have to unlearn alternative or outdated concepts.
- A common understanding among different categories of health workers: since all health workers are trained in IMCI principles in school, correct practices are reinforced and supported at all levels.

How widely has IMCI pre-service education been implemented?

Fourteen countries of the Western Pacific Region have implemented IMCI. Of these, 10 have begun pre-service IMCI education (Cambodia, China, Fiji, Kiribati, the Lao People’s Democratic Republic,
Mongolia, Papua New Guinea, the Philippines, Solomon Islands and Viet Nam). Countries are at varying stages of incorporating IMCI into the existing undergraduate curriculum.

Cambodia conducts block training of medical interns as they rotate in the paediatrics department and also has introduced pre-service training in their nursing schools. Viet Nam teaches IMCI in 90% of its medical schools and about one third of nursing schools, though a lack of teaching staff is a challenge. IMCI competency is required for licensure to practice for doctors, nurses and midwives in Viet Nam. The Lao People’s Democratic Republic introduced pre-service training in its medical and paramedical school and integrated IMCI in the nursing curriculum.

Fiji teaches IMCI in the medical and nursing schools. The training is conducted over three consecutive years in Fiji School of Medicine and two years in nursing schools. Since 2008, Fiji has used the IMCI Computerized Adaptation and Training Tool (ICATT) for pre-service training for both medical and nursing students. Solomon Islands has no medical school but teaches IMCI in about half of its nursing schools. Continuing work is under way to incorporate IMCI in basic nursing and postgraduate nursing curricula in Solomon Islands and Kiribati.

China conducts pre-service training in six of 50 medical schools but not in nursing schools. It is integrating IMCI materials into the undergraduate curriculum, but the process is hampered by the strong independence of teaching institutions. China is uniquely challenged by its immense size, a multitude of training institutions and the very substantial number of student trainees.

Mongolia introduced pre-service training to all three medical schools in 2002 and all nursing schools in 2003. IMCI is also taught at paramedical schools in Mongolia. Each year, 270 medical students and 900 paramedical students are trained.

The Philippines has 37 medical schools, 451 nursing schools and 205 midwifery schools. There are 19 nursing schools recognized as IMCI training sites and one centralized training site for midwifery students. ICATT was introduced in 2009 and will be used for pre-service training in 2010. The quality of pre-service IMCI training at the 37 medical schools requires further assessment.

What are the IMCI pre-service training core competencies?

IMCI training is designed to build a set of core competencies for health workers seeing sick children. Core competencies are the minimum standards of clinical care that all health workers should have mastered by the end of the training. These should have been mastered regardless of any changes that country programmes may make in the methodology, duration or technical content of the training. Core competencies will vary slightly between countries if country-specific adaptations have been made for local causes of mortality and morbidity. Complementary competencies that might be added for local adaptations include assessment, classification and treatment of HIV infection, dengue fever, sore throat and wheezing. Core competencies are summarized in the box on the next page.
**IMCI Core Competencies**

**General**
- Know how to use the IMCI chart

**Danger signs**
- Know and recognize the general danger signs
- Provide prereferral treatment
- Counsel a caretaker about urgent referral
- Provide care where referral is not possible

**Competencies on main symptoms**
- Assess and classify for main symptoms: cough or difficult breathing, diarrhoea, fever and ear problems
- Provide appropriate prereferral treatment and refer
- Treat with antibiotic and/or antimalarial and other treatments with correct dosage and correct duration
- Counsel the caretaker of the child on when to return immediately and on follow-up

**Competencies on care of the sick young infant**
- Assess young infant from birth up to two months old for signs of very severe disease or local infections and treat or refer after prereferral treatment
- Assess young infant for signs of diarrhoea, classify and treat or refer
- Counsel a mother about infant feeding

**Competencies on malnutrition and anaemia**
- Check a child for malnutrition and anaemia and classify
- Identify the child with severe malnutrition and/or anaemia, provide appropriate prereferral treatment and counsel caretaker for referral
- Treat child with severe malnutrition, low weight for age and/or anaemia
- Counsel the caretaker on when to return immediately and on follow-up

**Competencies on immunization and feeding**
- Immunize a child presenting to a health facility
- Counsel mother on appropriate feeding
What elements need to be put in place in order to introduce IMCI pre-service education?

Experience from the Region has shown that there are several elements required for successful implementation of pre-service education.

Support and commitment from key pre-service education decision-makers

The commitment of the administrative heads of health professional schools is essential. Their support is needed in order to build a core of IMCI-trained faculty members, adapt the curriculum to incorporate IMCI and provide opportunities for learning and applying the skills in the clinical setting. Also important is collaboration with other national bodies that need to support changes to the curriculum such as ministries of health and education, professional societies and professional accreditation bodies.

Getting support from decision-makers has been aided by early engagement of academic staff in IMCI orientation and planning. Familiarity with the IMCI approach often transforms these individuals into advocates for change.

Integration of IMCI into the teaching curriculum

Students learn best when the content and methods of IMCI are included within the context of other relevant child and community health topics. Teaching must provide opportunities to build IMCI case management skills through supervised clinical practice with patients. Two general approaches have been used: phased integration of IMCI concepts into relevant subjects and clinical training under the supervision of a clinical instructor.

Training institutions vary considerably in their teaching methodologies. Some use problem-based teaching, others employ traditional methods and a few combine both. In some institutions, IMCI is taught in blocks in which exposure is intensive for a defined period. In others, IMCI is phased in over a longer period. ICATT will be used increasingly in the future and is suited to small groups or individual learning. ICATT is designed to teach principles and elements of practice but still needs to be supported by hands-on clinical training. ICATT also can be used for updating teachers and clinical instructors on policy changes and modifications to the IMCI clinical approach. Cambodia, Mongolia and the Philippines have begun adapting ICATT for pre-service training. Fiji had introduced ICATT in the medical and nursing pre-service training since 2008 and 2009, respectively.
The IMCI Computerized Adaptation and Training Tool

- Allows local updates to the IMCI guidelines to be added easily and modification of the training materials to suit local training requirements.
- Can be used to provide computer-based group classes or individual self-directed learning.
- Requires clinical exposure to reinforce knowledge and skills learned.
- Requires adequate follow-up, supervision after training
- Includes standardized tests at the end of each module and provides certification at the end of training.

Case example: IMCI pre-service education in Mongolia

Mongolia started pre-service IMCI in medical schools by including IMCI in the paediatrics and family medicine rotations. In paediatrics, eight hours of IMCI training were included in the fourth year rotation and 12 hours in the sixth year rotation. Twenty-five hours were included in the family medicine rotation. As the curriculum evolved, IMCI also was added to the curriculum of third-year and fifth-year students. An IMCI handbook for students was translated into Mongolian and widely used.

The total classroom hours devoted to IMCI is 23, with an additional 50 hours for inpatient rotation and 32 hours of outpatient teaching. As a result of this initiative, medical graduates enter the public health service with skills and knowledge in IMCI.1

Selection of materials for IMCI teaching

High quality IMCI training materials provide schools with evidence-based resources. WHO provides generic materials such as a model chapter to be incorporated in standard paediatric textbooks, a model IMCI handbook2, IMCI charts, posters, photo booklets, video and mother’s card and a guide to student assessment. All can be adapted for local use.

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1 Flores-Verschoor MA. Mission Report on IMCI Pre-service Training in Mongolia.
Training of teaching staff

A critical mass of teaching staff who have received IMCI training is needed. This means that they should have received IMCI clinical training modeled on the 11-day in-service IMCI training course. Preferably, they also should have undergone the IMCI facilitators’ course and facilitated in-service training. Staff who will be responsible for clinical training should have experienced running the clinical component of IMCI training in hospitals and outpatient facilities. It has been useful in some settings to involve staff from training institutions in the early phases of IMCI implementation. This builds their knowledge of the approach.

Making IMCI a part of licensure examinations for health staff

Collaboration with professional bodies in some countries has resulted in IMCI being included in licensure examinations. The benefits of this strategy are twofold. First, training institutions have a strong incentive to incorporate IMCI into their curriculum. Second, trainees are more motivated to learn, understand and practise IMCI skills in order to be licensed. IMCI competence is part of licensure for health professionals in Papua New Guinea, the Philippines, Solomon Islands and Viet Nam.

Do health workers who receive IMCI pre-service education practise IMCI?

The follow-up of students once they have graduated and commenced clinical practice remains challenging. It is conducted by about one third of teaching institutions worldwide. Providing students with IMCI materials that they can use after they graduate may help them recall knowledge and skills and apply them to clinical practice, but less than half of the students surveyed had access to their IMCI modules or chart booklet, student handbook, manual, mother’s card, wall chart or videos. Many institutions do not have the resources to provide all students with IMCI materials.

Research from Viet Nam shows that there are a number of possible barriers to applying IMCI in work settings, including heavy caseloads, a lack of understanding of IMCI by other health workers and a lack of essential drugs. In the longer term, some of these barriers can be addressed by improving systems support such as supervision, medicines and supplies. It is recommended that all countries periodically follow up graduates in order to assess how well they are applying IMCI principles. In the longer term, ICATT will be a useful method for providing health workers with IMCI refresher training after graduation.

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4 Ibid.
A follow-up study of IMCI pre-service education in Viet Nam was conducted in 2005. The main objective was to determine whether graduates from the University of Medicine and Pharmacy in Ho Chi Minh City during the period 2000–2005 were practising IMCI correctly.

In this cross-sectional observational study, a sample of 224 paediatricians who had graduated from the Postgraduate Program on Paediatrics between 2000 and 2005 and a sample of 215 newly-graduated doctors were included. Inclusion criteria required that doctors were managing sick children at public first-level health facilities at the time of the survey.

Fully 90% of the respondents reported that they applied IMCI with sick children. Observation found that 55% of doctors correctly applied the IMCI case management guidelines. Performance was associated significantly with the grades obtained in the paediatrics course at the university. A positive correlation was found between the attitude towards IMCI and the level of IMCI performance.

Patient load was identified as a major constraint to applying the IMCI approach. Other obstacles included differences in content of IMCI taught in schools from those used in the health facility; some diseases seen in the clinics were not included in the IMCI guidelines; recommended antibiotics in the IMCI guidelines were not available; and IMCI guidelines were not perceived to be acceptable to mothers, paediatricians or the chief of their department.

These findings were used to update the local IMCI guidelines and to plan strategies for improving the use of IMCI at first-level facilities, including enhancing training to manage problems commonly encountered by medical graduates. In addition, it was recognized that there was a need to improve awareness of the IMCI approach among senior clinical staff and managers.

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What are the challenges to scaling up pre-service IMCI education?

Ten countries in the Region have begun IMCI pre-service education, with training coverage highly variable. Most countries have found it challenging to expand pre-service education to all medical and nursing schools.

Common challenges to scaling up IMCI pre-service education include:

- Diversity of training curriculum at different training institutions
- Logistical and organizational requirements of providing supervised clinical practice
- Large numbers of students
- Difficulties keeping trainers updated with new developments
- Attrition of trainers

Addressing these barriers will require continuing advocacy for IMCI pre-service education, increased resource allocation, better development of national and subnational clinical training sites and use of ICATT as an alternative training methodology requiring fewer trainers.

Conclusions: IMCI pre-service education

- Pre-service IMCI education is an effective approach for training health workers.
- The early engagement of academic staff in the orientation and planning of IMCI is important for getting it incorporated into the pre-service education curriculum.
- Different approaches have been used to incorporate IMCI into the undergraduate training curriculum. Regardless of the approach, training must include an adequate level of clinical practice in order to be most effective.
- Whatever training approach is used, trainees should master the IMCI core competencies.
- Including IMCI skills in licensure examinations for health staff improves the likelihood that they will be incorporated into the curriculum and mastered by trainees.
- Periodic follow-up of IMCI-trained graduates is recommended in order to determine how well they implement IMCI in facilities, to identify barriers to practices and to solve problems.
- In the longer term, further expansion of IMCI pre-service education will require continuing advocacy, increased resource allocation, better development of national and subnational clinical training sites and wider use of ICATT for individual and small group learning.
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