

IMCI COMPUTERIZED ADAPTATION AND TRAINING TOOL (ICATT)

EARLY ADAPTATION AND TRAINING EXPERIENCE



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Executive Summary

To achieve Millennium Development Goal four, which aims to reduce child mortality by two thirds from the 1990 level by 2015, considerable efforts are needed to improve the performance of first-level health workers, particularly through cost-effective training in the IMCI clinical guidelines. As a response to requests for alternative IMCI training approaches, the WHO Department of Child and Adolescent Health and Development (CAH) and the Novartis Foundation for Sustainable Development (NFSD) developed, tested and introduced between 2002 and 2010 an IMCI computerized adaptation and training tool (ICATT). The aim of the computer software is to simplify periodical updates of IMCI clinical guidelines needed and to provide a possibility for a variety of new training approaches.



ICATT has two main interfaces: open and closed. The open interface, *ICATT builder and manager*, is targeted at professionals who are responsible for adapting guidelines and developing training courses. Its main feature is that the adaptation and development of new training courses does not require specialized computer programming skills. Most of the adaptation and developmental work is done using a word processor interface similar to a standard one. Once adapted, ICATT can be “closed” (once closed, the content can no longer be changed) and the closed interface, *Training player* is used for training.

The first generic English version of ICATT was released in May 2008. Three countries, Tanzania, Peru and Indonesia, supported by WHO/CAH and NFSD, were selected as early-application countries to gain experience with the application of ICATT as an adaptation tool and as an IMCI training tool. During this early-application phase ICATT has shown its potential as a powerful new tool for both IMCI adaptation and training.

Experiences have shown that adaptation and translation of ICATT content were reasonably straightforward. The adaptation of guidelines is greatly assisted by ICATT. The possibility of creating different training packages and modes of delivery of ICATT for different categories of health staff in both pre-and -in service provides more flexibility in training. Production of updated materials on DVDs or USBs is more flexible, easier and less costly than production of printed materials. These features were appreciated by members of national IMCI strategy implementation bodies and training planners.

Three different training approaches have been successfully tested in the early application countries: classroom-based training with individual computers or with an LCD projector and

distance learning training. All involved participants in the ICATT-based trainings including members of national IMCI strategy implementation bodies, training planners, course directors, facilitators and trainees have been very positive about working with ICATT. They particularly liked its user-friendliness, the audiovisual parts of ICATT, and the possibilities of individual learning. It is important to underline that the ICATT-based training replaced the standard classroom teaching and learning but, as in standard trainings, it was supported by extensive clinical practice of the appropriate clinical skills.

The early application indicated that ICATT-based courses can be cost-effective as they can be shorter than standard IMCI courses and require less human resources and printed materials.

Support materials developed and tested during the early experience phase have been integrated into ICATT and provide detailed recommendations for the adaptation and translation of ICATT content and planning and conducting ICATT-based trainings.

In 2010, an updated ICATT version 1.1 has been released. It allows decreasing the final size of the Training player and therefore provides a possibility to include even more additional audiovisual materials than version 1.0 used in the early implementation trainings. A new version of ICATT - 1.2 is expected to be released early in 2011, allowing for deployment of the *Training player* on the internet. This will open even more possibilities for ICATT training to reach the health workforce and thus to contribute to increasing the IMCI training coverage.

Recent experience shows that the Computerized adaptation and training tool (CATT) software developed for IMCI (ICATT) can be used practically for any topic, not only IMCI. The potential of the CATT-based Training player as an alternative training approach has already been recognized by various health programmes not related to IMCI and the software is currently used to develop several training courses.

The copyright of ICATT belongs to WHO and the NFSD but the program can be used free of charge by anyone for health-related training without commercial purpose.



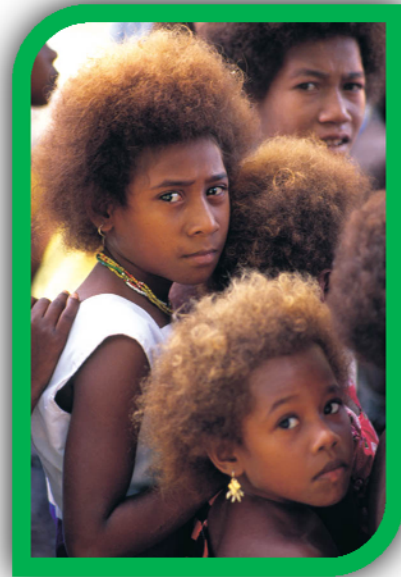
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1. INTRODUCTION

The implementation of the Integrated Management of Childhood Illnesses (IMCI) strategy launched by the World Health Organization (WHO) and UNICEF in the mid 1990s' has been shown to improve health workers performance and quality of service. Currently, more than 100 countries have adopted this strategy. The implementation of the strategy has achieved impressive results both in reducing childhood mortality and in improving the quality of life of children all over the world. However, despite the significant progress made since the global introduction of the IMCI strategy, a number of challenges related to its implementation remain (1,2). Among those challenges are:



- ensuring periodical updates of national and sub-national IMCI clinical guidelines to respond to local health needs, and
- training and maintaining the knowledge and skills of hundreds of thousands of health workers in IMCI.

To respond to these challenges, WHO Department of Child and Adolescent Health and Development (CAH) and the Novartis Foundation for Sustainable Development (NFSD) developed, tested and introduced between 2002 and 2010 the IMCI Computerized Adaptation and Training Tool (ICATT) that provides the possibility to adapt the IMCI guidelines at national and sub-national levels, and to develop ICATT-based trainings that fit into various training approaches. The content of ICATT can be translated into various languages and used in a range of environments and settings, giving it a global reach. Once the content of ICATT is adapted, it can be “closed” and distributed to trainers, trainees, NGOs, and other partners that can then use ICATT for training and other purposes, but cannot change the content of the application. Details about the development of the ICATT can be found in a NFSD/WHO report (3).

The first generic version - 1.0 of ICATT was released in May 2008. Three countries, Tanzania, Peru and Indonesia, supported by WHO/CAH and NFSD, were selected as early-application countries to gain experience with ICATT as an adaptation tool and as an IMCI training approach. The three countries are located in three different WHO Regions often representing other countries in their Region. All countries have a long history with IMCI both in adaptation and training, in all countries IMCI is part of the national policy to reduce under-five mortality, all have a large numbers of health workers that needed to be (re)trained in IMCI and all had experimented with different training approaches to increase IMCI training coverage. The

ICATT content was adapted and translated in each country and different trainings approaches were tested. Support materials for the adaptation and translation of ICATT content and planning and conducting ICATT-based trainings were developed and tested during the early experience phase and are available in ICATT.

In addition, advocacy, planning and capacity building for ICATT in different WHO Regions was started in 2008 and a number of other countries began using ICATT for IMCI adaptation and training (3). A moderated website (www.icatt-training.org) assisted potential ICATT users since 2008.

This report provides a summary of the experience in the early-application countries. Details can be found in relevant reports referenced at the end of this document.

2. ICATT STRUCTURE, CONTENT, VERSIONS AVAILABLE, AND COPYRIGHT

IMCI Computerized Adaptation and Training Tool (ICATT) has two main interfaces: open and closed.

The open interface, ICATT builder and manager, is targeted at professionals who are responsible for adapting the IMCI guidelines and developing IMCI trainings. It consists of Chart booklet builder, Library, My library and Training manager.



The **Chart booklet builder** includes the generic WHO/UNICEF IMCI guidelines summarized into a set of charts presented in a chart booklet. The builder permits the easy revision of the chart booklet according to national or sub-national guidelines.



The **Library** includes reference and educational materials on IMCI and related child health issues developed by WHO and other international agencies. It also includes a wide variety of videos, pictures and sounds that are used for audio-visual practice in the training, but that may also be used independently.



My library is an empty directory into which national or local reference documents, videos, photographs, and flash movies relevant to national adaptation of IMCI can be added.



The **Training manager** includes the generic training set and allows for its adaptation and for the development of more training sets according to the training objectives. Materials from the Library help to build a tailor-made training.



Once adapted, ICATT can be “closed” (once closed, the content can no longer be changed) and the closed interface - ICATT training player - used for trainings. The *Training player* displays:

- The training set, the generic version of which consists of three main components: Introduction, Care of young infant aged up to 2 months, and Care of child aged 2 months up to 5 years
- Links to the chart booklet at all relevant pages
- Links to reference materials
- Glossary of terms
- Forms for clinical practice and monitoring of student’s progress.
- Support materials for the adaptation and translation of ICATT, planning, organizing, and conducting ICATT-based IMCI trainings.

The **ICATT training set** is organized into training units with the following structure:



- **READ** - technical information
- **SEE** - illustration material such as pictures, videos and flash movies
- **PRACTISE** - exercises with immediate feedback
- **TEST** - feedback is not immediate; answers are evaluated in a progress bar

The software creates a profile of the user and monitors the trainees’ progress throughout the training. To run the software, a trainee has to have access to a computer but no specific computer skills are needed. The program can either be installed on a computer or run directly from a DVD or USB device.

The ICATT generic IMCI training set is based on the IMCI WHO/UNICEF 1997 generic clinical training course modules. The IMCI case management guidelines were adapted according to all WHO generic updates available until end of June 2010. In addition to the content of generic WHO/UNICEF IMCI training course modules, the ICATT includes a training unit titled Essential care for all young infants based on Pregnancy, childbirth, postpartum and newborn care: A guide for essential practice (WHO 2006) and Managing newborn problems: A guide for doctors, nurses, and midwives (WHO 2003) also available in the ICATT library in section Care for young infant and newborn.

In its generic form, ICATT is available at the end of 2010 in English, French, Spanish and Russian.

Country adaptations supported by NFSD are available for Peru (Spanish), Tanzania (English and Swahili), and Indonesia (Bahasa Indonesia). A number of other countries, often without direct support, have started to use ICATT for adaptation or/and training in different settings. Examples are Mozambique (Portuguese), Cambodia (Khmer), the Philippines (English), Ukraine (Russian), Fiji (English), the Solomon Islands (English), Kazakhstan (Russian), Kyrgyzstan (Russian), Laos (English) and Malaysia (English). More country adaptations may exist as many countries have had the possibility to use ICATT after its first release in 2008.

The ICATT software is not IMCI specific – it can be used for any topic. The potential of ICATT as an alternative training approach has already been recognized by other health programmes which are not related to IMCI and the software is currently used to develop several training courses.

The copyright of ICATT belongs to WHO and NFSD but the program can be used free of charge by anyone for health-related training without commercial purpose.

3. ACTIVITIES

3.1. ADAPTATION OF ICATT CONTENT

Before ICATT is used in training, the content needs to be adapted according to the national IMCI guidelines (technical adaptation) and translated as needed. The next step, adapting the content of the ICATT generic training set according to various types of target audience (pedagogical adaptation) is an optional activity.

The ICATT global consultants conducted an orientation/capacity building country workshop for key decision makers and senior pedagogues as the first step in each country. Then a national ICATT consultant responsible for adapting the ICATT content was recruited in each country. The ICATT global consultants assisted the national ICATT consultants in the adaptation. In each country, the ICATT content was technically adapted according to the national IMCI guidelines and translated (into Spanish, Swahili, and Bahasa Indonesia). New training units including appropriate exercises were added to the content when required. National reference and audiovisual materials were added to the ICATT library and linked to the training set. Further pedagogical adaptation has not been performed in any country.

During the test courses, an immediate feedback from the facilitators and trainees to the national adaptation consultants was used to improve the first national versions of ICATT.



3.2. TRAINING CONFIGURATIONS TESTED

The ICATT is not a “stand-alone” training programme. As in any other clinical training, clinical practice is an essential part of any type of ICATT based IMCI training. The training must provide an opportunity for a real clinical practice in using case management skills so that trainees can apply these skills correctly in their own work. If possible, a third component: interactive group activities such as role plays, drills, and discussions should complement the computer and clinical training. These activities also help the trainees to transform their new knowledge into skills.

Three training configurations were tested:

- Classroom-based training with individual computers
- Classroom-based training with LCD projector
- Distance learning training

3.2.1. CLASSROOM-BASED TRAININGS

The two classroom-based training configurations were tested at the same time in 2008 both, in Tanzania and Peru. The trainees were divided into two groups. In the group with individual



computers, each participant worked on one computer in a computer classroom under the supervision of facilitators. In the group with LCD projector, the ICATT was projected on a screen and a facilitator who took turns with a co-facilitator moderated the learning: presented the ICATT information parts (READ, SEE) in an interactive way and worked through the exercises with the trainees. Both groups had the same outpatient and inpatient clinical practice and two role plays and two drills. To

compare the training outcomes, all trainees from groups with individual computers and groups with LCD projector took the same written post-test (adapted according to national IMCI guidelines) on the last day of the training.

The classroom-based test training in Tanzania, was conducted in the Tanzanian Training Centre for International Health (TTCIH) in Ifakara, which is also a Regional Training Center and thus linked to the Ministry of Health and Social Welfare. TTCIH provides in-service training for the diploma of Assistant Medical Officers (AMO). The curriculum includes a standard 11 day IMCI course. The test course was conducted for 8 consecutive full days and was attended by 36 AMO



students. English version of nationally adapted ICATT was used for the training. NFSD commissioned the Research Center of the Ifakara Health Institute to attend the training and to prepare a comprehensive report (4,5).

The classroom-based test training in Peru was conducted for 6 consecutive days by the IMCI Training and Research Center of the National Children's Hospital in Lima and conducted in Lima for 20 nursing students (pre-service). Spanish translation of the generic ICATT version was used for the training. An independent paediatrician / IMCI facilitator was recruited to write a report including an evaluation of the classroom-based courses (6, 7).

3.2.2. DISTANCE LEARNING TRAINING

In-service distance learning (DL) trainings were conducted in all three pilot countries in 2009. The overall period of the DL course was approximately two months in Indonesia and Tanzania and one month in Peru. During the training period the trainees met their facilitators 3 times in Indonesia and Tanzania and 2, 3, or 4 times in Peru. The trainees worked individually on computers in their own time in between these encounters. They also individually practiced the IMCI management of patients in their health facilities. Keeping contact between the participants and facilitators by mobile telephone, e-mail, and/or *sms* was planned in all courses. All participants took a written post-test during the final participant-facilitator encounter.

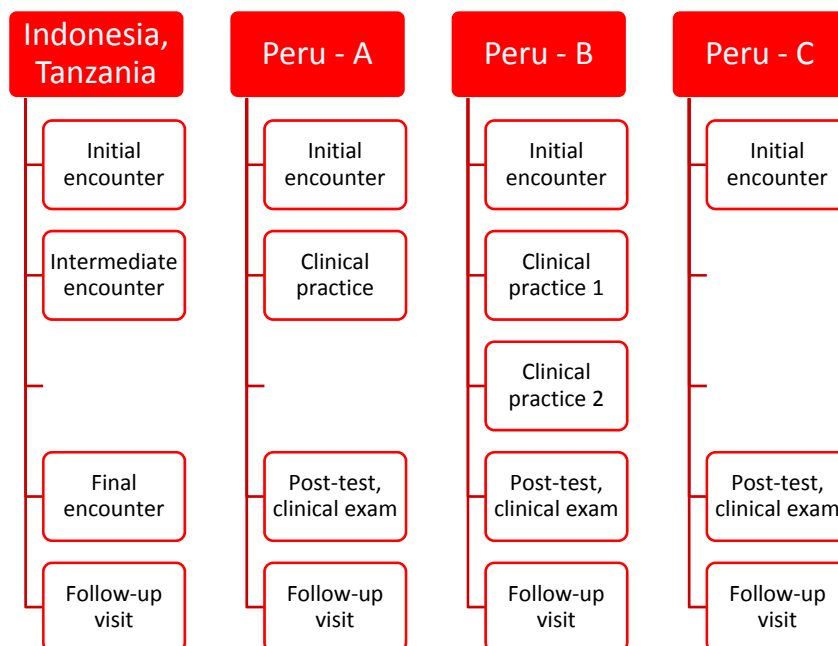


Figure. Structure of test distance learning trainings

In Indonesia (8-10), NFSD contracted the paediatric department of the medical faculty of Gaja Madah University in Yogyakarta to conduct the ICATT-based DL training in collaboration with the MOH in two rural districts. In addition, the department received funds to document the experience including its evaluation. A total of 40 participants from 2 districts (1 nurse or midwife and 1 doctor from 10 HC in each district) participated in the training. Nationally adapted and translated ICATT version was used for the training.

The DL training in Tanzania, was organized by the TTCIH together with the Distant Education Section of the MOHSW and the Eastern Zonal Training Centre of the MOHSW in Morogoro with the assistance of already ICATT trained Course director and facilitators from TTCIH. The participants were 20 nurses, nurse officers, clinical officers, and doctors from 6 nearby health facilities. English version of nationally adapted ICATT was used for the training. TTCIH was contracted to document the experience including its evaluation (11).

The DL training in Peru was organized by the IMCI Training and Research Center of the National Children's Hospital in Lima in an urban-rural setting. The participants, 36 doctors and nurses from 17 health facilities, were divided into three groups. Each group had a different number of participant-facilitator encounters (2, 3 or 4). Nationally adapted Spanish ICATT version was used for the training (12,13).

Follow up after the training was conducted after the DL training in all three countries. In Tanzania, it was based on WHO Guidelines for follow-up (assessment of clinical performance and facility support). In Indonesia it consisted of an assessment of clinical performance and a structured discussion about the use of IMCI process in participant's HF and the use of ICATT after the training. In Peru it consisted of a structured discussion on the content of training, participant's work during self-learning phases, and the use of IMCI case recording forms in participant's health facility.



3.2.3. FACILITATOR TRAINING

All facilitators had been trained in IMCI prior to the ICATT-based course; most of them were also trained in facilitating IMCI courses. All test trainings were preceded by a 3 day facilitator training except the DL training in Peru, which was conducted by facilitators of the preceding ICATT based classroom course.

The objectives of the facilitator training were the same for all training configurations. These were to:

- Get familiar with ICATT,
- Learn facilitator techniques used in the ICATT-based part of the training,
- Refresh the skills and techniques needed for conducting clinical practice sessions, role plays and drills, and
- Obtain information about the organization of the training.

4. FINDINGS

4.1. ADAPTATION OF THE ICATT CONTENT

The adaptation process has shown that the adaptation of ICATT training set content does not require advanced computer skills – routine use of a standard word processing software is sufficient. Adaptation of videos and flash movies however, requires working knowledge of and access to appropriate video and photo editing computer programs.

The adaptation process is the same as that of WHO printed modular course, which means that the work-time required is similar. It is essential to make all changes needed first in printed ICATT text (ICATT support materials - Adaptation and translation aids - Generic ICATT content Word files) and only then transfer them into the ICATT editor.

The national adaptation of ICATT content may be used as an opportunity to update the national IMCI guidelines. Achieving consensus about the updates however may be time consuming and delay the incorporation of ICATT into the country IMCI training.

4.2. ICATT AS A TRAINING TOOL

All involved in the ICATT-based trainings including members of national IMCI strategy implementation bodies, training planners, course directors, facilitators and trainees have been very positive about working with ICATT. Very similar advantages were stated by many facilitators and trainees, e.g.:

“ICATT saves time you are able to see many things and if you want to go back it is easy. So it is very easy and useful.”

“Working with ICATT is enjoyable, exciting”.

“ICATT is simple, easy to understand.”

“ICATT is more interesting and challenging comparing to conventional training.”

“When there are no patients, IMCI case management may be learned from many ICATT exercises.”

“ICATT encourages becoming accustomed in using a computer.”



Software like ICATT would be preferred in learning/teaching other topics in the future to conventional methods by most participants and facilitators.

Only few negatives, related to the technical content of the IMCI training set rather than to ICATT software itself, were mentioned by few facilitators and trainees, e.g.:

“Typing is difficult if you do not know how to use a computer.”

“Too little time /too many exercises (Classroom-based trainings)”



There are several types of questions in ICATT exercises: dual, one of many, several of many, number, and text (requiring a verbal answer). It was found that the text questions were difficult to complete and were more time consuming for trainees with little previous computer skills (typing)



Computer skills of the trainees in individual computer use courses ranged from nil to routine computer users. A session on **navigation in ICATT** including an individual practice was conducted at the beginning of each course with individual computer use except DL training in Peru, the trainees in which were mostly routine computer users. There were no substantial issues concerning navigation in any course and during the courses evaluation most of the trainees marked the navigation in ICATT as

easy.

An approximate average **time needed to work through ICATT** was 26 hours and ranged from 22 to 37 hours in classroom-based courses with individual computer use. Work-time near the upper range was needed in Tanzania due to approximately 4 hours needed for working through the national adaptations, mostly added training units on HIV/AIDS.

The **knowledge post-test results** were similar in all training configurations in all countries. The mean proportion of correct answers in the same written post-test (nationally adapted) scored in the same way ranged between 73% and 83%. In Peru, medical students were asked to take the same post-test after a standard IMCI course with printed materials. There was no statistically significant difference ($p \geq 0.05$) between their results and the results of ICATT classroom-based trainings for nursing students.

It should be noted that no incentives were used for participants of the test training courses and the in-service participants volunteered. Therefore the participants did not have a strong motivation to pass the test. The national ICATT consultant who adapted ICATT for Tanzania replaced the standard 11 day course in the curricula for Clinical Officers training in Clinical Officers Training Centre (COTC), Kilosa by ICATT-based IMCI course since the academic year 2008/2009 and the ICATT post-test became a part of paediatric examination. The post-test mean score in 2008/2009 was 90% - highly statistically significantly better than the scores in the test trainings ($p < 0.01$) with 36 of 39 students achieving or passing the conventional threshold of 80% for success in passing an examination (14).

4.3. IMPLEMENTATION OF THE TEST TRAINING COURSES

4.3.1. CLASSROOM-BASED TRAININGS WITH INDIVIDUAL COMPUTERS

The duration of 6 and 8 days (Peru and Tanzania respectively) of the course were found mostly adequate, although several participants considered the course too short, and, exceptionally, a participant considered the course too long.

Strengths:

- Work at individual pace -within time limits.
- Time for learning is ensured, participants are not distracted by their other commitments.
- Facilitation is limited – facilitator: participant ratio 1:10-15 is sufficient for ICATT work.
- Working under supervision ensures that participants really work through the ICATT.
- Assistance for IT or IMCI issues is readily available.

Challenges:

- Working speed of a group and within a group may be very different especially if the group is not homogenous (different types of health workers, different computer skills).

Progress bar

Each of ICATT training unit has a TEST exercises section. Correct answers to the TEST exercises are not provided immediately (unlike to PRACTISE exercises). A **Progress bar** with a distinct section for each training unit displayed at each ICATT screen and also on Progress screen shows whether the exercises in this unit were done correctly (green), done with less than 80% questions answered correctly (red), or not done at all (white).

Completing TEST exercises is considered as completing the training unit because progress within the unit is not measured.

Individuals have different reading skills and read at a different speed. Although even individuals without prior computer skills learn navigation in ICATT easily, they may work through the ICATT more slowly (especially working through the exercises and specifically those that require typing in a verbal answer) than routine computer users.

Some participants were slow because they had spent too much time trying to get correct answers in TEST exercises evaluated in the Progress bar (box). Progress bar indicating that a unit was successfully passed seemed extremely important to most participants. Some participants did not work systematically forward and roamed through ICATT or spent time with reference documents linked to the Further reading page of the training set, which are optional and not a part of the training.

4.3.2. CLASSROOM-BASED TRAININGS WITH LCD PROJECTOR

The duration of 6 and 8 days (Peru and Tanzania respectively) of the course were found mostly adequate, although several participants considered the course too short.

It has been found that when reading the ICATT content word for word and doing all exercises, the progress speed is similar to that of the slowest participants working on a computer individually – or even slower. For this reason, the ICATT text was summarized, TEST



exercises omitted and PRACTISE exercises reduced in the second half of the first ever course in Tanzania and throughout the course in Peru.

Two (or more) facilitators are needed for conducting the training to alternate in working through the ICATT, which is very demanding. Facilitator: participant ratio 1:6 was found adequate.

Strengths:

- The speed of progress is controlled by the facilitator.
- The time for learning is ensured, participants are not distracted by their commitments at work or at home.
- Participants appreciate the constant interaction with facilitators.



In Tanzania at the TTCIH, some of the participants of the LCD group complained that they were not in the group with individual computer use. After the TTCIH hosted the first ICATT test course, it replaced the standard 11 day course by ICATT-based course in the curricula for Assistant Medical Officer students and, as the information about the way of work in the LCD group got around more participants wanted to be in the LCD group than in the group with individual computers.

In Peru, participants of the group with individual computer use thought that working in a group with an LCD projector was more effective.

- IT support is usually not needed because the facilitator works with equipment he uses routinely.
- Projected approach is suitable even for institutions with one computer & LCD projector.

Challenges:

- Conducting the training is very demanding on facilitators as it requires a substantial preparation prior to the training sessions and his or her constant action during the sessions.
- The training is also very demanding on participants as it requires a constant attention during long ICATT sessions and no individual work pace is possible.
- It is difficult to monitor participant learning.
- ICATT is not primarily intended for projection, screens with more text may be somewhat difficult to read from distance.



4.3.3. CLINICAL PRACTICE IN CLASSROOM-BASED TRAININGS

The organization of the clinical practice in classroom-based trainings is very similar to standard IMCI courses, therefore the facilitator: participant ratio should be 1:3-4 - the same as in WHO standard course to ensure the quality. Additional facilitators are needed only for clinical practice.

Fewer patients than in a standard IMCI course were seen due to shorter course duration.

4.3.4. DISTANCE LEARNING TRAININGS

4.3.4.1. TRAINING PERIOD AND FACILITATOR-PARTICIPANT FACE TO FACE ENCOUNTERS

The two-month period for the DL course was found adequate in **Tanzania and Indonesia**. Some Indonesian participants considered it to be too long.

The duration of each of the three encounters was one full day. The initial facilitator-participant encounter consisting of presentations on IMCI and ICATT, individual practice in ICATT navigation, and a clinical demonstration of the IMCI assessment and classification of a sick child was found very demanding mostly because only few participants were routine computer users. It has been suggested that the agenda for the first encounter should be split into two days with shorter-than-whole-day schedules.

One day duration of the intermediate and final encounters were found adequate.

The intermediate and final encounters included problem solving, feedback on work done, and individual clinical practice of what has been learned. The intermediate encounter also included a demonstration of what will be learned and the final encounter also included a demonstration of what has not been demonstrated before and a written post-test.

Participants were asked to bring their Student profile for the facilitators to check their progress in the ICATT (box). Learning how to transfer Student profile was found to be very demanding. Facilitators also checked participants' recording forms completed for patients seen during their individual clinical practice in their health facilities.

Student profile and progress checking

Before starting working through ICATT, the student is asked by the program to create his or her **Student profile** that records the student's answers to all exercises. The Student profile is stored by default in Documents at the hard disk. This **Student profile can be transferred** to a USB device and loaded into Training player at another computer thus it can be brought to the facilitator for checking the student's work on **Progress screen** or **Progress bar**.

In Indonesia, 40 participants were recruited into the training, 4 were replaced early in the training, and 38 participants completed the training (5% drop-out rate). In Tanzania, 18 of 20 participants completed the training (10% drop-out rate).

The facilitator: participant ratio 1:3-5 during the encounters was considered adequate.

The one-month period for the DL course in **Peru** was unanimously found too short.

The duration of each encounter was 2-3 hours. The initial encounter consisted of presentations on IMCI and ICATT, and assigning the participants to one of three groups with different number of intermediate encounters (0,1, or 2).



The content of clinical practice (intermediate) encounter(s) was not related to progress in ICATT or problems encountered, demonstrations have not been adequate, and there was no individual clinical practice.

The final encounter consisted of a written post-test and a clinical examination.

Participants' progress in the ICATT or recording forms completed for patients seen during their individual clinical

practice in their health facilities were not checked.

Facilitator: participant ratio was 1:12.

In Peru, 35 participants were recruited into the training, 4 were replaced early in the training, and 22 participants completed the training (37% drop-out rate). Most participants dropped out of the group without any intermediate encounter.

4.3.4.2. SELF-LEARNING PHASES

In Indonesia and Peru all participants had computers at home and learned at home. In Peru all participants had also internet access at home. Most of the participants had computers at their workplace but they had no time to learn at work or the office computer were always used by other staff and also many participants' own computers were newer than the office computers.

In Tanzania most of the participants worked on a computer in their health facility, several worked in an internet café or at a friends' computer and only three participants had a computer at home. Problems encountered with an access to office computers were: The person in charge of the computer did not want to give a password to the participant (it belonged to a health programme and contained sensitive data), the computer was always

used by other staff, or the participant's health facility did not have a computer although it reported to the course organizers that it had one.

Most of the work was done over weekends and in the evenings in all pilot countries.

Installation issues reported in Indonesia and Tanzania where the ICATT player was distributed on USBs were related to hardware (old computers), non-licensed software on the computers and viruses. The only issue related to ICATT software was interference with already installed newer version of Adobe reader – this issue was solved in the ICATT version produced at the end of 2010.

In Peru, ICATT player was distributed on DVDs and no running/installation issues were reported.

Assistance for access and installation issues required ranged from none (Peru) to an IT specialist visiting the participants at their workplace (Tanzania).

Facilitator participant communication between the encounters was planned in all test courses. In Indonesia and Tanzania, many conversations took place over the phone. In Tanzania, in addition, the Training director together with an IT specialist visited participants' at their health facilities to solve the computer access and installation issues. In these countries, a regular communication between the encounters was considered very useful for problem-solving and as an incentive for keeping progress of the participants. Participants would have appreciated more contacts with facilitators and discussions among participants themselves. In Peru, there were just few e-mail and phone communications.

Working through ICATT

In Indonesia, 76 % of participants have completed all 25 training units by the end of the course. The number of times that the participants worked with ICATT during the course widely varied. It was between 2 and 3 times a week in average. The number of times that the participants individually practised with patients at their health facilities also widely varied and was also between 2 and 3 times a week in average during the 2 month training period.

In Indonesia and Tanzania, the participants were instructed to manage as many children as possible according to the IMCI clinical guidelines and to bring completed recording forms to the facilitators for checking. The total number of patients managed throughout the course by individual participants widely varied from 13-69 in Indonesia and 18-40 in Tanzania. The mean number of patients seen was remarkably similar in both countries: 28,4 and 27 respectively





In Peru, the participants reported to have had 1-5 ICATT sessions per week during the one month training period with each session lasting 1-4 hours. Most participants estimated that they have spent between 12-20 hours with ICATT but many participants did not work through the ICATT systematically. Several participants reported that they needed more than 40 hours to complete the training in ICATT (Peruvian national adaptation comprises more materials than the generic version).

4.3.4.3. OUTCOME OF DISTANCE LEARNING TRAININGS

The knowledge post-test results in classroom-based and DL training were NOT statistically different ($p < 0.05$) in Tanzania.

In Peru, the results of DL training were statistically significantly lower than in a standard IMCI course ($p < 0.05$). The test results achieved in the classroom-based courses were somewhat better than the result of the DL course but the difference was not statistically significant. There was no statistically significant difference in the post-test results between the groups with different numbers of encounters. Also, considering how the intermediate encounters were conducted, differences would not be expected.

Strengths

- Work at individually convenient time, at entirely individual pace.
- More clinical cases managed than in classroom-based training.
- Lower costs than classroom-based training.

Challenges

- Access to computers is an issue in some settings.
- Hardware/software/virus issues may be an obstacle for ICATT installation in some settings.
- Participants have to find the time for learning themselves; they may be distracted by their commitments at work or at home.
- Considerable motivation of participants and discipline in self-learning are needed. Incentives are needed more than in other configurations.



4.4. ADDITIONAL CLASSROOM TEACHING ACTIVITIES

In classroom-based courses, two drills and two role plays were conducted as scheduled. In DL training in Indonesia only one drill and one role play were conducted due to time limitations, in Tanzania one drill (on drug doses) was conducted in addition to the two scheduled and one role play. No drills or role plays were conducted in Peru.



“Better to add more role plays before going to the (clinical) practice.” (participant in Tanzania)

Drills and role plays help trainees to transform their new knowledge into skills, engage all trainees, and add to a variety in training methods. Drills and role plays break long computer sessions in classroom-based trainings (especially in a training with LCD projector). In training with LCD projector additional drills may replace some ICATT exercises to progress faster.



4.5. FACILITATORS AND FACILITATOR TRAINING

Even experienced IMCI facilitators need to be trained in facilitating ICATT-based courses in order to get familiar with ICATT navigation, arrangement of the IMCI content in ICATT and facilitating techniques used in an ICATT-based training. In general, a 3-day facilitator training was found adequate. Facilitators, especially of DL trainings, however felt insecure at the beginning of the course. DL trainings require time-concentrated instant solutions (a phone call, many queries at time limited group encounter) without the assistance of an experienced Training director. The fact that, during the training period, the facilitators did not work through ICATT systematically but only through those parts (especially TEST exercises) about which they received queries from the participants when they received the queries contributed to their insecurity. Also some facilitators did not have access to computers outside of training hours.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ For facilitators with little previous computer skills it was difficult to provide assistance in ICATT navigation to the participants at the beginning of the course.

“We feel that the participants know more about ICATT than we do”. (facilitator at the end of a DL course)

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ Providing facilitators with the Training player before the training to provide them with an opportunity to get familiar with it before TOT was not very successful.



4.6. COSTS OF ICATT-BASED COURSES

It is no doubt that the costs of ICATT-based trainings are lower in all training costs categories than the costs of a standard 11 day IMCI course. It is difficult however, to provide a proportion for the cost reduction as it depends on the training configuration, duration of the course and local conditions. In Table 1 you will find a comparison of ICATT-based training costs and a standard 11 day IMCI training course given as a proportion of a standard course costs where possible. Calculations were made for courses with approximately 20 participants.

Costing category	Standard 11 day course	Classroom-based training with individual computers (6 days)	Classroom-based training with LCD projector (6 days)	Distance learning training (3 group encounters)
Training personnel costs	100%	33%	38%	18%
Participant costs (excluding travel)	100%	55%	55%	27%
Room, equipment rental, lunch and refreshments	100%	55%	55%	27%
Material costs for classroom part of the training				
Standard course: 8 modules, photo booklet, chart booklet, recording forms, video tapes ICATT-based courses: DVD or USB flash disk, chart booklet, recording forms				
Supplies for clinical practice				
Standard course: Sufficient for clinical sessions conducted on 10 days ICATT classroom-based training: Sufficient for clinical sessions conducted on 5 days ICATT-based DL training: Sufficient for clinical sessions with individual practice conducted on 2 days. Small supply for individual practice should be considered if supplies are deficient in trainee's health facility.				

Table. Approximate comparison of ICATT-based IMCI training costs and a standard 11 day IMCI training course (each course with 20 participants)

5. CONCLUSIONS

During the early-application phase, ICATT has shown its potential as a powerful tool for offering additional options and opportunities for scaling up IMCI adaptation and training.

ICATT permits easy customization of the content to fit the country context or target users training objectives, ICATT facilitates timely, continuous and speedy update of guidelines as soon as new developments occur.

ICATT is user friendly, easy to teach, to use and the tool can be reproduced at low cost on DVD/USB. ICATT based courses can be cost-effective as they can be shorter than standard IMCI courses and require less human resources and printed materials.

All involved in the ICATT-based trainings including members of national IMCI strategy implementation bodies, training planners, course directors, facilitators and trainees have been very positive about working with ICATT. They particularly commented on the user-

friendliness of ICATT, the wide options it offers - the possibilities of individual learning, with well-built audiovisuals.

The ICATT software can be used for any topic. The potential of ICATT as an alternative training approach has already been recognized by other health programmes which are not related to IMCI and the software is currently used to develop several training courses.

The experiences from early application have indicated that ICATT is a suitable alternative tool for IMCI training in various training configurations, of various types of health workers (nurses, medical officers, doctors) of participants with previous computer knowledge ranging from none to regular users, and in in-service as well as in pre-service settings. In places where computers are scarce, the classroom-based training with LCD projector can be used if one computer and one projector are available. The training trials have also indicated that ICATT-based courses can be cost-effective as they can be shorter than standard IMCI courses, require less human resources much less printed materials. ICATT can thus substantially contribute to effective and efficient IMCI training and increased number of health workers trained through the use of the tool in a variety of training approaches.



6. RECOMMENDATIONS

The national body responsible for IMCI implementation in a country should build an adequate capacity for adaptation and future updates at national level. The adaptation of ICATT content should be a team, not an individual work to avoid loss of know-how due to staff turnover.

After producing an adapted ICATT training player, the ICATT adaptation team should conduct a training trial with few volunteers in order to identify potential inconsistencies and errors and improve the first national version. This training trial is also useful for obtaining a local a time estimate for work through the ICATT training player. Alternatively, the first training course conducted may be used for these purposes.

Support materials developed and tested during the early experience phase have been integrated into ICATT and provide detailed recommendations and suggestions for the adaptation and translation of ICATT content, for planning, organizing, and conducting ICATT-based trainings making the ICATT thus self-standing for organizing and conducting training courses. ICATT however is not a “stand-alone” training programme. As in any other clinical training, clinical practice is an essential part of any type of ICATT-based IMCI training. Training organizers should therefore include clinical sessions into the training plan and, if possible, should also include a third component: interactive group activities such as role plays, drills, and discussions to complement the computer and clinical training.

Facilitators of ICATT-based courses should have sufficient computer skills to learn and subsequently teach the navigation in ICATT easily. ICATT facilitators must have an unrestricted access to a computer during the whole training period. Training of trainers is recommended even for facilitators routinely facilitating standard IMCI courses. A short period (one week) between TOT and participant training is desirable. Training organizers should select the future ICATT facilitators according to the criteria and include TOT into the training plan.

Experience to date shows that introducing e-learning technologies into training, including ICATT, may be impeded by computer viruses and/or outdated hardware or unlicensed software. Therefore, especially at initial stages of ICATT implementation, the training director should ensure the availability of IT support that may help to avoid unnecessary problems and possible frustration when something does not work as expected.



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