

Project

Electronic Training Tool for ICD

Current v.2009-06-01



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Introduction

The training tool will inform certifiers, coders, selectors, and presenters in mortality and morbidity. A “Nutshell” version can also inform decision makers or other staffs, which needs to get an idea what ICD is about. Ways of formulating a diagnosis is not part of this training. The content of the training will follow the specifications of the curricula for coding and certification compiled by the WHO-FIC Network Education Committee (EC) Joint Collaboration with IFHRO.

This document summarizes first the steps achieved and provides the background for decisions taken. The second part describes the structure of the training tool, content, possible contributors, costing, and time planning.

Background

The content and structure for an electronic training can be based on existing electronic and paper based training. Such materials have been used, updated and improved over the last decade and do reflect in their design the experience accumulated in those years.

Curricula

The Joint collaboration of the WHO-FIC EC and IFHRO has been compiling and then assessing the existing ICD-10 training materials. The curricula are themselves based on the teaching experience and on the knowledge of what additional information an ICD-trainee needs to do a good coding job, or to understand ICD-10 coded data.

The initial work emphasizes on coding and coders. However, certification of causes of death, or reporting of diagnoses are the starting point of the standardized process for cause of death and illness information collection with the ICD.

Separate curricula were formulated for mortality and for morbidity use. Both have several elements in common. A separate curriculum describes the knowledge necessary to good cause of death certification practice.

Development

The training tool structure is based on the curricula mentioned above. It was shaped to combine the different aspects relevant to the full range of prospective users. The outlines and the planning included the full set of uses and users of ICD.

The following main points of the workplan are:

Compilation of content

The existing training materials have to be merged and shaped to a slide-based concept.

Interoperability, accessibility

Proprietary formats of the training design tools are a major obstacle to merging and updating existing e-learning materials. The same problem was known for text processors, in the past. The source-material stored in such a proprietary format is not usually accessible for update, in case a different tool has to be used.

Several training materials designed for on- or offline use, require the installation of plug-ins (multimedia plug-ins as flash player) to web-browsers. Security policies of several

institutions do grant neither free internet access and download, nor installation of such plug-ins.

Criteria for e-learning materials are:

(The sequence in the list below does reflect relevance)

- Handy for edits and amendment of already compiled materials to allow such edits to be done by WHO or the Network
- Sound, graphics, interactivity, programming features create the necessary feeling of a gripping learning environment
- Output for online and offline use would permit to access the training where no Internet access exists and to plugging in the training into an online learning platform.
- Storage in a format that is accessible without the authoring-tool in order neither to loose the content nor its structure in case the original authoring-tool is no longer in use.
- Compliance to existing e-learning standards would be an asset. It would broaden the range of uses of the training materials in e.g. the advanced learning platforms mentioned above.
- 'Translation support' allows to keeping the structure and easily transposing the content into another language.

The training tool

Basic use cases:

For mortality any diagnosis of a dead person will be reported in a standard fashion (certificate of death), classified (a code assigned) and the underlying cause will be selected. In Morbidity, there exists no such standard form. The definitions for the “main diagnosis” vary. However, ICD principles for coding AND for selection of the main diagnosis will be included. The tool will be suitable for online and offline use. The design of the source storyboard allows easy production of a print version. Additional podcasts on certification, and providing overview on ICD and coding will ensure the range of possible settings can be addressed.

Audience

The core audience for this training would be physicians, non-medical coding, and certification staff. The non-medical staff may be medically trained or not. Depending on the local setting, either will be coding or certifying independently from best practice recommendations. The table below shows the full range of involved professions.

Profession /ICD tasks	Certification	Assign code	Select single underlying cause	Present the results
Clinician	X	X		
Epidemiologist		X	X	X
Statistician		X	X	X
Health information assistant/manager		X	X	X
Coroner	X			

Medical Lay coder		X	X	
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A special fast track will allow to gather a rapid overview of ICD in a very short time; these trainee will likely not be able to code, but understand principles and pitfalls of ICD.

Elements

The design of this ICD e-learning material addresses training of coders and certifiers in mortality and morbidity with different medical background. The overall components have to be in line with the agreed curricula as mentioned above.

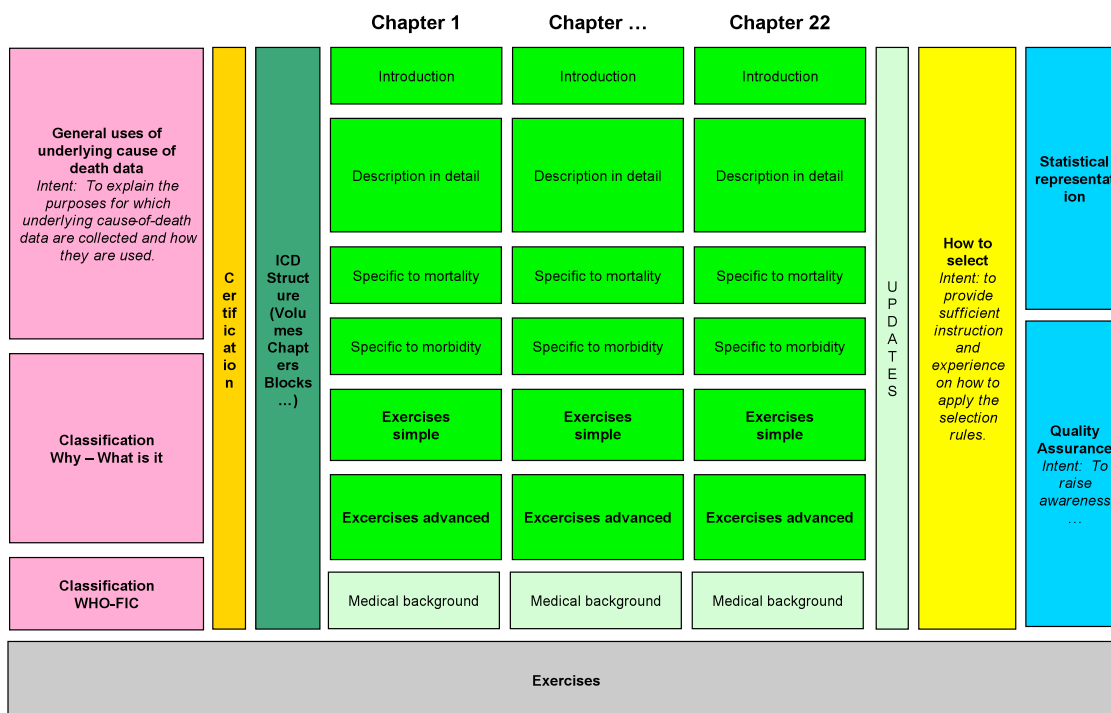
The structural elements are

- parts with content every user needs to know,
- segments for items common or different in mortality and morbidity use,
- lessons, being the smallest learning unit for a single session. Lessons are shaped based on time and could consist either of parts or segments, and of
- teaching units that can consist of one or more lessons necessary to achieve an objective.

The figure below provides an overview of the elements, their content, and how they fit together.

Elements of the training tool

in line with curriculum – updated 2006-07-18



In the full tool, a tree menu will guide the different user groups in case the full tool is to be used. On the other hand, a virtual path would show only elements that are interesting to a specific audience.

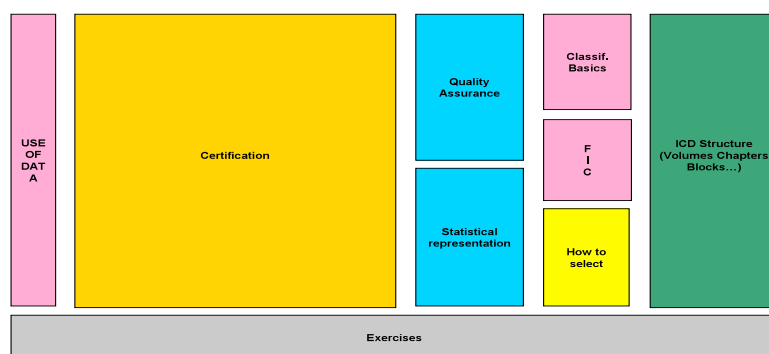
Typical user specific paths would be:

- Lay coder = medicine + ICD + Selection rules
- Physician certifier= certification + ICD introduction + stat. representation

See sample below for a version that has been reshaped for certifiers.

Elements of the training tool

in line with curriculum – updated 2006-07-18
version certifiers



On the introductory pages of parts, segments and lessons additional documentation could be added, as descriptions, teaching materials and quick references (e.g. certification flyer) for print or for display on the screen.

Each learning unit should start with prerequisites and goals and have a page and would end with a self-assessment. The results could be sent via email to a teacher, central assessment, or certification unit.

Duration

The overall length of the (coding) training was set to 24 hrs = 72 such units. 3 days of training are affordable in most settings. In addition, six hrs for general introduction and certification training would be necessary. The degree of knowledge that can usually be achieved in such a time allows for safe use of the ICD. The trainee will internalize correct use and understanding of certification, the function of the three volumes of ICD and will be able to avoid known pitfalls. The e-training will prepare the trainee for a face-to-face teaching of special intricate cases and the understanding and use of the selection rules for the single underlying cause.

A unit should not be longer than 15 min, according to experience and be in line with learning theory. This size would also be feasible for trainees that do the training in breaks or in addition to the daily.

Interactivity elements

Active involvement and audiovisual media improve learning outcome. They should be implemented in the e-learning tool.

Pros and cons are explored in the list below:

- Audiovisual elements: production is time consuming and very expensive; text audio has also to be completely redone for translations.
- Sample certificates of cause of death (could be interactive e.g. results that change according to the sequence)
- Use pen and paper: A companion booklet with materials delivered with the tool would be a feasible way. For distribution, these materials should be produced as PDF, to be downloadable and be printed on the spot.
- Look up Internet: Internet will not be available everywhere. Such exercises would be feasible only to a selected audience. It is not clear, which content should be looked for on the internet in the context of ICD. Medical literature, dictionaries, statistics could be examples.

Content outline of the individual elements

Uses of mortality and classification why

Should contain basic introduction to epidemiology and mortality as well as to classification.

The chapters

This part deals with the individual chapters of ICD, their use and provides the minimum medical background.

The standard structure of a chapter comprises:

- Introduction
- Description in detail
- Mortality issues
- Morbidity issues
- Exercises simple – repeat and consolidate
- Exercises intermediate – apply to similar cases
- Exercises advanced – knowledge transfer, e.g. classify diseases mentioned nowhere in the ICD.
- Case descriptions - extensive knowledge transfer is necessary - would require knowledge about the selection of the underlying cause of death and the certificate.

Morphology: explain the code and meaning, brief overview

Certification

This part provides guidance to proper filling in a death certificate. Attached to the electronic training, there should be a brochure/flyer for certifiers that is being prepared by WHO.

Selection of the underlying cause of death

This deals with the essentials. The level of detail would be a bit higher than in the VA manual. This means the full set of rules with examples, algorithms for the application of the rules and known pitfalls would be included.

A full training on the selection of the single underlying cause requires face-to-face training and is far beyond the feasibility of an electronic training tool.

Statistical representation

This part should show basics and known ways of presentation and aggregation and their effect on "leading causes". It should refer to the relative part of Volume 2 of ICD-10.

Quality assurance

This part should describe the relevant steps of the information collection process, possible quality indicators of certification, coding, and the statistical interpretation of the data. Lessons learnt in daily practice should be included.

Updates to ICD

A section in the introductory part would provide an overview on the mechanism of updating ICD and tell where to find updates. A section for training could focus on updates that came into effect since the last edition of ICD. Such segments should be updated on a yearly basis. The content should be incorporated in the Chapter parts of the training in line with the publication of a new edition of ICD. The EC could do this maintenance work.

The call for proposals

The call for proposals was announced on the WHO classifications website. A project description, Terms of Reference, and sample lessons were available on the WHO classifications website from 27th July 31st August 2007. All collaborating centres and working groups of the WHO-FIC Network were notified about the call via email, the same day. The letter was forwarded among the members of the different working groups and outside these groups. Three companies in this field have been collaborating with WHO departments in the past. They were notified directly, too (no disclosure of the mutual email addresses of this distribution list).

Questions of offerers were answered in two batches of documents that were published on the website above. All offerers were notified about questions and answers, as soon as they were published. The mutual names and addresses were not disclosed.

By the 31st of August, five offers were received.

The selection of proposals

A review panel was selected across different departments and clusters of WHO, including the WHO .

The reviewers received the tender package (ToR, Samples), the published questions and answers of offerers, the offers, and an evaluation sheet asking evaluation of topics along the lines of the ToR. The review group met once discussing the results of the review and particularly verifying where big differences in assessment occurred. In addition, every reviewer was asked for personal subjective opinion about which company to select, and why.

Based on the judgement of the selection panel and with respect to pricing, Peak Dean Interactive was selected.

The company received the reviewed materials for certification, Chapter 1, 10, 19 and 20 and after review discussed design in more detail with WHO.

Content compilation

Network participation

Additional input for real life examples by the Education Committee has been sought.

Feed back has been received on some of the newly compiled materials, and for real life examples, to some extent.

Schedule:

Original:

	2006		2007				2008			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3.Training toolkit										
Compil. content (remn.)			■	■						
Review process				■	■					
Educational review					■					
Electronification,					■	■				
Interactivity, Beautific.						■	■			
Pilot testing						■	■			
Final edits								■		
Translation									■	■

Project progress

In a joint effort, the WHO collaborating Centres for International Classifications (WHO-FIC CC) have set up curricula for teaching correct use of ICD-10. Based on these curricula, lessons and training questions are compiled by the network, namely the Australian Collaborating Centre. The writer is financially supported to a small part from DFID through HMN, by the US Collaborating Centre, and by the Australian Collaborating Centre.

A company is transforming these materials into electronic self-learning format, for online and offline use.

The review of the materials is voluntary work contributed by a set of members of the WHO-FIC Education Committee:

Roberto	Becker	PAHO		
Kathy	Giannangelo	US	US-CC	AHIMA
Donna	Glenn	US	US-CC	NCHS/CDC
Carol	Lewis	PAHO	US-CC	-
Monica	Pace	Italy	It-CC	Statitalia
Cleone	Rooney	UK	GB-CC	ONS
Stefanie	Weber	Germany	D-CC	DIMDI
Lars Age	Johansson	Sweden	Nord-CC	Stat. Sweden
Cassia	Buchalla	Brazil	Bras-CC	Univ Sao Paolo
Patricia	Wood	Canada	CDN-CC	Statcan

The dual review process includes a first round of review after the texts have been written. Feed back is consolidated by the editors. The second round reviews the electronic training produced by the company. Necessary edits are made by the company.

A round of field testing in Korea, Japan, in collaboration wit WPRO, AFRO, and SEARO is envisaged for the first half of March 2009. Feedback will be discussed at the WHO-FIC Education committee meeting begin April 2009. Necessary edits will be made by the company by mid May 2009.

Due to several reasons, and because of delays due to non functioning payment mechanisms (GSM) the project is currently about 12 months behind schedule.

After the first round of field testing the analysis of the feedback showed the reviewers had given attention mainly to the first modules, and eclectically to other parts of the training. This meant that 70% of the tool had not mbeen reviewed at that time. In dicussion with the WHO-FIC education committee it was agreed to extend the time for reviews by 6 weeks, and have a few committed reviewers to go through the whole training.

Next steps include consolidation of the comments, agreement on the necessary edits, and implementation of the edits.

Annex 1: Selection procedure

Selection procedure of the external company for the ICD-10 training tool

Background

In a joint effort the WHO collaborating Centres for International Classifications (WHO-FIC CC) have set up curricula for teaching correct use of ICD-10. Based on these curricula, lessons and training questions are compiled by the network. The writer is financially supported by one WHO-FIC Collaborating centre and the HMN. The review of the materials is voluntary work contributed by a set of members of the WHO-FIC CC. An company has to transform these materials into electronic self-learning format, for online and online use.

The Call for Proposals

The call for proposals was announced on the WHO classifications website. A project description, Terms of Reference, and sample lessons were available on the WHO classifications website from 27th July-31st August 2007. All collaborating centres and working groups of the WHO-FIC Network were notified about the call via email, the same day. The letter was forwarded among the members of the different working groups and outside these groups. A set of companies in this field has been collaborating with WHO departments in the past. They were notified, too (no disclosure of the mutual email addresses of this distribution list).

The offerers had questions. Those were answered in two batches of documents that were published on the website above. All offerers were notified about questions and answers, as soon as they were published. The mutual names and addresses were not disclosed.

The Response

Overall by the 31st of August, 5 offers were received:

- AHIMA (American Health Information Manager Association)
- Dr Cagri Kalaca
- PeakDean Associates
- Skillsoft
- Tata Interactive

Kalaca and PeakDean included required samples based on the demo materials provided by WHO. The AHIMA sent their sample (internet access + Passwords) on 13 November. Skillsoft and TaTa Interactive sent access to samples of previous work, without making reference to the demo materials.

The Assessment

A review panel was selected across different departments and clusters of WHO.

1. Hillary Rawe, Staff Development and Learning Officer, HQ/DG/GMG/PML
2. Jing Wang, Technical Officer, Editorial Rights, WHO Press
3. Alessandra Noriega-Minichiello, Technical Officer, HQ/DG/IER/MHI/CHI

4. Marco Vitoria, Medical Officer, HQ/DG/HTM/HIV/ATC
5. Claudia Stein, Medical Officer, HQ/DG/Food Safety (unable to participate)
6. Robert Jakob, Medical Officer, HQ/DG/IER/MHI/CAT

The reviewers received the tender package (ToR, Samples), the published questions and answers of offerers, the offers, and an evaluation sheet structuring and asking topics along the lines of the ToR. The review group met one discussing the results of the review and particularly verifying where big differences in assessment occurred between reviewers. At the end of this session, every reviewer was asked for personal subjective opinion about which company to select, and why.

Slight differences occurred for “technical content”, as understanding varied between “health sector” and “ICD/Classification” content. Some reviewers informed themselves in other UN agencies about the companies, following the references given in the offers. Thus, variation in response occurred. The same applied for “guidable and reliable. It was deemed generally difficult to assess the editability. Skills with the required software were assessed indirectly, when the sample was presented in exactly such software, or if the proposal included acquisition of the software. The criterion of editability is relevant for ICD training materials. Reviewers found it difficult to extract such information from the offers. Concern about potential quality of work of Skillsoft was raised. Their offer showed already changing character sets and sizes within the text. Concern about potential outsourcing of work or hiring additional specialists mentioned in the proposals of AHIMA, Skillsoft, TaTa and Kalaca.

The personal summaries gave a ranking of preference to 1. PeakDean and 2. AHIMA, whereas for the subsequent ranks there were differing opinions. Summary subjective comments:

1. PeakDean: Shows good structure of learning in the sample, the proposal creates confidence about the technical background of this company. The company shows the most experience.
2. AHIMA: Seem to have a lot of experience
3. Skillsoft: According to offer they seem to have language skills.
4. TaTa Interactive: The company has only 4 staff.

The decision

The summary of the evaluation sheets is:

TATA Interactive	Skillsoft	Peakdean	Kalaca	AHIMA
231	261	386	290	309

Annex 2: Assessment sheet

Company (summary impression)	Company 1	Company 2
Rating: 1=none; 2=poor; 3=sufficient; 4=good		
Past target Audience		
Subject related expertise (classification training)		
Multicultural expertise		
Multilingual expertise		
Company size		
Company reliable		
Company guidable		
Product editable		
Product translatable		
Source code accessible without used authoring tool		
Sample useful		
Sample Appealing		
Description of organization		
Rating: 1=none; 2=poor; 3=sufficient; 4=good		
Information demonstrating knowledge of and experience in classification and data training;		
Experience with Lectora		
Information demonstrating expertise in the production of electronic self learning and online learning materials.		
Familiarity with linguistic and cultural issues, processes and motivational aspects arising from compilation of electronic training materials for an international context;		

Previous experience with training of classification of disease with WHO, UN organizations, international agencies or other relevant institutions.		
Quality of description for how the work will be carried out		
roles and responsibilities		
outline production		
description for each proposed Team member		
proposed time/performance schedule for completion of the work		
Samples		
Costs		

Annex 3 Request for proposal

REQUEST FOR PROPOSAL

Issuance date: 27 July 2007
Closing date: 30 August 2007

Design and realization of an electronic training for ICD-10 Classifications and Terminology World Health Organization

Introduction

The ability to accurately classify diseases with the International Classification of Diseases (ICD) and correct use of the mortality certificate and related selection rules systems is a major barrier to collection and presentation of valid and comparable health information. Better classification of information related to disease and external causes of disease requires clear understanding of key concepts and terms of the ICD.

Background

In 2006, the WHO Classifications and Terminologies Team initiated work on an international electronic training tool, together with the WHO-FIC Network and IFHRO. The Training Tool aims to provide knowledge for the correct use of ICD based upon internationally agreed curricula. It is intended to be adaptable, translatable yet consistent across the entire spectrum of health care and across cultures and languages. Lessons have been compiled that comprise coding knowledge, basic medical knowledge and questions for assessment and repetition. The materials are based on existing training materials and were verified by a review committee of experts.

Desired characteristics and expertise

Harmonization and interchangeability of training materials are a prerequisite to international collaboration. WHO-CAT is using the authoring software “Lectora” and has agreed with its network this software be the platform for compilation of training materials. This software, “Lectora”, must be used for production of this electronic training and the bidder will commit to handing the source files of the training to WHO.

WHO calls for proposals from qualified and eligible firms and institutions to undertake the programme of work phase 2 described in Annex 1: Terms of Reference. The proposal should be not more than 10 pages (plus attachments) and should be submitted by **30 August 2007, 17:00 UTC. The proposal should include:**

1. **Description of your organization** including:
 - a. Information demonstrating knowledge of and experience in classification and data training;

- b. Information demonstrating expertise in the production of electronic self learning and online learning materials.
 - c. Familiarity with linguistic and cultural issues, processes and motivational aspects arising from compilation of electronic training materials for an international context;
 - d. Previous experience with training of classification of disease with WHO, UN organizations, international agencies or other relevant institutions.
2. **Proposal for how the work will be carried out.** Your approach to providing the work described in the attached Terms of Reference including a detailed description of Team composition including the specific roles and responsibilities for each Team member and the outline production of a sample based on the 2 lessons provided in the attachment. This outline would contain information about: text elements, audiovisual elements, interactive elements and feed back/assessment elements.
 3. **Staff.** A separate description for each proposed Team member with details of his/her name, CV, responsibilities and anticipated number of work days. WHO reserves the right to approve or reject each proposed individual. A sufficient number of native speakers of English is required to ensure high language quality of the final product.
 4. **A proposed time/performance schedule for completion of the work** including an overall time line for the programme of work as set out in Annex One. It is expected that the overall work program will be completed within eight months, and the draft for pilot testing be completed in six months.
 5. **A detailed budget** for the completion of the work. This should include costing of the staffing work days and direct project costs. For example, communications requirements associated with tele-conferences, agreed travel or outsourcing of selected parts of the work. Two face to face meetings at WHO Headquarters in Geneva will be the minimum to be included in the costs. The costs for every individual task and sub-task (a-i) of the Terms of Reference will be listed separately and identify also the time allocated as well as a measure of size of the product.
In addition the price for production of (1) 10 sec animation, (2) 10 sec film (speaker+film) and (3) 10 sec speech, will be listed separately.

NB: WHO requires that if an invited contractor has a question during the bidding process it needs a written response. That response needs to then be sent to all other invited bidders individually (so that they are not able to see who else was invited to bid). So all bidders have the same information.

Selection procedure

An independent review committee will be established to review all proposals.

Proposals will be ranked according to the criteria outlined in this request for proposals; this criteria include, cost, quality and experience measures.

The committee reserves the right to contact any reference supplied by the bidder, to request additional supporting or supplementary data from the bidder, arrange interviews with the proposed contractor or finalists, and to reject any or all proposals submitted.

Information in the proposals will be treated as proprietary and shared only with the WHO-CAT team and the review committee that is directly responsible for evaluation of the proposals.

Sub-Annex 3.1: Terms of Reference

Introduction

The ability to accurately classify diseases with the International Classification of Diseases (ICD) and correct use of the mortality certificate and related selection rules systems is a major barrier to collection and presentation of valid and comparable health information. Better classification of information related to disease and external causes of disease requires clear understanding of key concepts and terms of the ICD.

In 2006, the WHO Classifications and Terminologies Team initiated work on an international electronic training tool, together with the WHO-FIC Network and IFHRO. The Training Tool aims to provide knowledge for the correct use of ICD based upon internationally agreed curricula. It is intended to be adaptable and translatable across the entire spectrum of health care and across cultures and languages. Lessons have been compiled that comprise coding knowledge, basic medical knowledge and questions for assessment and repetition. The materials are based on existing training materials and were verified by a review committee of experts.

Harmonization and interchangeability of training materials are a prerequisite to international collaboration. WHO-CAT is using and has agreed with its network the software “Lectora” to be the platform for compilation of training materials. This software must be used for production of this electronic training.

For further information see attachment 1.

Current Status

The 1st phase of the project is now complete. The high level achievements of the first phase include:

1. development of curricula for ICD-10 coders and certifiers in mortality and morbidity
2. establishment of a core technical group to provide technical advice on the training;
3. description of users and uses of the training tool
4. design of the overall structure of the training tool development of lessons and questions
5. design of the overall structure of the training tool

The training will have an overall length of about 30 hrs. The materials of phase 1 comprise 83 lessons (568 screens), of whom 5 lessons (43 screens) relate to task h.1 and 8 lessons (24 screens) relate to task h.2.

In developing the training tool to date, the Working Group has drawn upon the work of the Network of WHO Collaborating Centres for the Family of International Classifications.

The training materials have been designed to link closely with the WHO-FIC Network curricula for certification, mortality coding and morbidity coding.

Phase 2

Phase 2 of the project will build on the achievements of Phase 1 to develop an electronic training. The focus will be on the tasks necessary to transform the existing lessons into and electronic training by January 2008 and incorporation of edits resulting from pilot testing by June 2008.

One lesson will contain text, two interactivity elements, and questions for training and self assessment. Questions have been formulated already in phase 1. They include multiple choice as well as free text (code) answers. The feed back given depends on the answer given. This feed back takes into account misses, near misses/typical mistakes and correct answers.

A link to an e-learning platform/learning management system is not necessary at this stage but may become relevant in the future. Registration of individual users and sending of assessment results to a user-dependent email address is necessary.

The reference training will be produced in English. It will be translated into other languages at a later stage. The selected English language has to take into account the different user groups (medical and non-medical background). In addition the English version may be used for regions where no translation into the local language does exist and where English is the preferred language of this part of the health sector.

Any text has to be translatable and accordingly no text can be part of any bitmap graphical element. Spoken elements should be avoided as they would have to be produced afresh for all other languages.

Expected are the following tasks:

- a. Split the existing lessons into units for electronic learning;
- b. Partially reshape the lessons according to e-learning requirements in agreement with the Working Group
- c. Use the questions and examples included in the pre-compiled material;
- d. Add interactivity elements in agreement with the WHO-CAT
- e. Draft criteria for pilot testing, evaluate and incorporate the results of the feed back;
- f. Produce the complete electronic training in a publishable form including a user guide
- g. Produce the same training for paper-based training
- h. Produce two podcasts :
 - 1) introduction to the use of ICD
 - 2) filling in of a certificate of death;
- i. Provide a final report of Phase 2 for WHO and external release including recommendations on future directions for work on the training tool.