Background, objective, and course history

Background

In the 1980ies, the United States Centers for Disease Control and Prevention (CDC) developed public health software for its Epidemic Intelligence Service. The software package was called Epi Info and, later supported and promoted by the World Health Organization, experienced an unprecedented spread throughout the world's public health community.

The initiative to make EpiData was taken by Jens M Lauritsen from Denmark. Initially it was conceived of as part of the "Initiative for Accident Prevention" at Funen County. Why was it necessary to develop a new data entry program, if Epi Info version 6 had all that was needed in terms of control of data entry and simplicity? With the development of the Windows® operating system the majority of current computer users found it increasingly harder to cope with the DOS® operating system of working in Epi Info. Furthermore, with the change in the operating system of computers to newer versions of the Windows® operating system, the Epi Info 6.04d based on the DOS® operating system was eventually becoming obsolete (Windows 7® is no more reading it). Nevertheless, the principles underlying Epi Info are fundamentally sound and needed to be preserved for the new generation of public health practitioners grown up with the Windows® operating system.

On the Epi Info discussion list there were some discussions on strategies around 1997-1998, when the Epi Info team at CDC in USA decided to make an updated Epi Info version 2000. The updated Epi Info applies a different strategy in using a completely new way of working and basing it on the Microsoft Access® database format instead of simple text files.

Commercially available proprietary software is not focused on documentation, simplicity of use and validation of double-entered data. EpiData Entry is a program with a focus on data entry. The ambition of EpiData Entry was to create a simple to use independent application, which would not interfere with or require any special database system drivers (dll-based routines) shared with or interfering with other applications.

EpiData software consists of two modules, EpiData Entry and EpiData Analysis. In this course you will be learning the use of both EpiData Entry (Part A) and EpiData Analysis (Part B), and to apply them to operations research (Part C), starting with its very basic functionality to increasing sophistication, and finally extend your programming skills in EpiData Analysis (Part D).

Course Objective:

Acquire the skills to capture research study data of high quality, supported by thorough documentation of every procedure, conduct basic analyses, and apply them to operations research.

History of the course

The data for the original course were collected in a study simultaneously conducted in Benin, Malawi, Nicaragua, and Senegal.

The persons who collaborated in study design, data collection, analysis, and writing of a report were Séverin **Anagonou** (Benin), Thuridur **Arnadottir** (The Union), Fatoumata **Ba** (Senegal), Awa Hélène **Diop** (Senegal), Donald A **Enarson** (The Union), Martin **Gninafon** (Benin), A C **Kasalika** (Malawi), Hans L **Rieder** (The Union), Tone **Ringdal** (The Union), Felix L M **Salaniponi** (Malawi), Alejandro A **Tardencilla Gutierrez** (Nicaragua) and Arnaud **Trébucq** (The Union).

Utilizing the data generated in this collaborative research project, **three courses** of two weeks duration each **from 1997 to 1999** with a total of 18 participants were conducted in Paris by The Union. Subsidies to defray costs of these three courses were borne by the United States Centers for Disease Control and Prevention, the Coopération Française, the Norwegian Heart and Lung Association, the International Organization for Migration, and the Korean Institute of Tuberculosis.

The **first course** was held in **April 1997** in Paris, France. The participants were Francis **Adatu-Engwau** (Uganda), Nora **Bonso-Bruce** (Ghana), Awa Hélène **Diop** (Senegal), Asma **Elsony** (Sudan), and Amina **Jindani** (The Union). The facilitators were Thuridur **Arnadottir**, Eric **Brenner** (USA), Lawrence J **Geiter** (The Union), Hans L **Rieder** (The Union), and Arnaud **Trébucq** (The Union).

The **second course** was held in **April 1998** in Paris, France. The participants were Mohammed **Akhtar** (Pakistan), Maurice **Andriamiandrisoa** (Madagascar), Manfred **Danilovits** (Estonia), **Lew** Woo Jin (Korea, Republic of), Nguyen Phuong **Hoa** (Vietnam), Shanta Bahadur **Pande** (Nepal), and Alejandro A **Tardencilla Gutierrez** (Nicaragua). The facilitators were Thuridur **Arnadottir** (The Union), Eric **Brenner** (USA), Lawrence J **Geiter** (The Union), Hans L **Rieder** (The Union), and Arnaud **Trébucq** (The Union).

The **third course** was held in **April 1999** in Paris, France. The participants were Ademir **de Albuquerque Gomes** (Brazil), Fatoumata **Ba** (Senegal), Ferdinand **Kassa** (Benin), Pushpa **Malla** (Nepal), **Tieng** Sivanna (Cambodia), and **Wang** Jie-Siu (China), and. The facilitators were Thuridur **Arnadottir** (The Union), Eric **Brenner** (USA), Lawrence J **Geiter** (The Union), Hans L **Rieder** (The Union), and Arnaud **Trébucq** (The Union).

Because of the large costs associated with conducting the course, the course content and format was tested through interactive distance learning during the year 2000 by email. We are particularly indebted to Panganai **Dhliwayo** (Zimbabwe) and Robert **Makombe** (Zimbabwe) who went through this course in their free time. This helped in clarifying ambiguities and removing errors and uploading the course in September 2000 to the Internet (http://www.tbrieder.org).

The **fourth course** was held in Addis Ababa, Ethiopia, in **April 2001**. The participants were Ahmed **Abdurehman** (Ethiopia), Jemal **Aliy** (Ethiopia), Mekdes Gebeyehu **Ayicheh** (Ethiopia), Abebe **Habte** (Ethiopia), Yohannes **Mengistu** (Ethiopia), Moustapha **Ndir** (Senegal), Serkalem **Tadesse** (Ethiopia), Betru **Tekle** (Ethiopia), Mohammed Ahmed **Yassin** (Ethiopia), and Getachew Eyob **Yitelelu** (Ethiopia). The facilitators were Nils E **Billo** (The Union), Panganai **Dhliwayo** (Zimbabwe), and Hans L **Rieder** (The Union).

In 2002, the course material was once more revised to replace Epi Info 6 with EpiData Entry for questionnaire design, data checks, data entry, and data validation. For data analysis the 6.04d DOS version of Epi Info was retained.

The **fifth course** was held in Paris, France, in **January 2003**. The participants were Nadia **Aït-Khaled** (The Union), Kya Jai Maug **Aung** (Bangladesh), **Chiang** Chen-Yuan (Taiwan), Paula I **Fujiwara** (The Union), Achilles **Katamba** (Uganda), **Kim** HeeJin (Korea, Republic of), Dumitru **Laticevschi** (Moldova), Jones **Michongwe** (Malawi) and Jotam G **Pasipanodya** (Zimbabwe). The facilitators were Panganai **Dhliwayo** (Zimbabwe), Robert **Makombe** (Zimbabwe), and Hans L **Rieder** (The Union).

The **sixth course** was held in Yangon, Myanmar, in **December 2003**. The participants were Nyein Nyein **Aye** (Myanmar), May Yee **Chan** (Myanmar), Tin Mi Mi **Khaing** (Myanmar), Thandar **Lwin** (Myanmar), Htar Htar **Oo** (Myanmar), Saw **Thein** (Myanmar), Ti **Ti** (Myanmar), Myo **Zaw** (Myanmar), and Thin Thin **Yee** (Myanmar). The facilitators were **Chiang** Chen-Yuan (The Union), Hans L **Rieder** (The Union), and I D **Rusen** (Canada). In all previous courses the hypothesis was to test whether The Union's assumption that ten suspects needed to be examined to identify one case of tuberculosis was applicable to the study area. During the course it emerged, however, that even refutation of the hypothesis had relatively little programmatic implication. It was thus decided to integrate the previously supplementary exercises (dealing with variability of positive findings, patterns of recorded results, and potential incremental yield) into one single hypothesis addressing the critical value of the number of smear examinations that may be justified to identify one additional case or failure on the third diagnostic or the second follow-up smear examination, respectively.

The **seventh course** was held in Paris, France, in **January 2004**. The participants were Wafaa Hassan **Ali Taha** (Sudan), Goar **Balasanyants** (Russia), Nulda **Beyers** (South Africa), Kathy **Lawrence** (South Africa), Biggie **Mabaera** (Zimbabwe), Nymadawaa **Naranbat** (Mongolia), Mahshid **Nasehi** (Iran), Mauro **Occhi** (Mozambique), Yevgeniy **Shubin** (Russia), and Abigail **Wright** (World Health Organization). The facilitators were Panganai **Dhliwayo** (Zimbabwe), Jens M **Lauritsen** (EpiData Association, Denmark), Robert **Makombe** (Zimbabwe), and Hans L **Rieder** (The Union).

The **eighth course** was held in Berne, Switzerland, in **July 2004**. The participants were Sondhja **Bitter** (Switzerland), Eva **Blozik** (Switzerland), Lorenz **Borer** (Switzerland), Michael **Endrich** (Switzerland), Karin **Imoberdorf-Baumgartner** (Switzerland), Caroline **Keller** (Switzerland), Hansjörg **Lüthy** (Switzerland), Christoph **Pammer** (Austria), Sabine **Recker** (Switzerland), Kurt **Schmidlin** (Switzerland), Jan **Wagner** (Switzerland), Sabine **Walser** (Austria), and Mark **Witschi** (Benin). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland). The curriculum of this course was changed in two important aspects from the previous courses. First, a core curriculum was developed to allow the conduct of the course within five working days without loss of any relevant course aspects. Refinements of specific aspects were offered in addenda independent of each other. This allowed course completion within one week (core curriculum) or eight days (core and extended curriculum). Second, the Epi Info Analysis component was replaced by a beta test version of EpiData Analysis which proved to be working smoothly without any glitches.

The **ninth course** was held in Paris, France, in **January 2005**. The participants were Anneke **Hesseling** (South Africa), **Hu** Dongmei (China), Zanele **Hwalima** (Zimbabwe), **Liu** Zhentian (China), Henri **Luwaga** (Uganda), Nguyen Thien **Huong** (Vietnam), John **Osho** (Nigeria), Tran Ngoc **Buu** (Vietnam), Nevin **Wilson** (The Union), and **Yao** Hongyan (China). The facilitators were Panganai **Dhliwayo** (The Union), Jens M **Lauritsen** (EpiData Association, Denmark), Robert **Makombe** (Zimbabwe), and Hans L **Rieder** (The Union). In this course, only free public domain software was used. Data management and analysis were done with

EpiData and EpiData Analysis, supplemented where needed with spreadsheet functions of OpenOffice.

The **tenth course** was held in Berne, Switzerland, in **July 2005**. The participants were Thomas **Bart** (Switzerland), Lisanne **Christen** (Switzerland), Stephanie **Christensen** (Switzerland), Michael **Flück** (Switzerland), Yvonne **Jansen** (Switzerland), Irène **Marty** (Switzerland), Jeanne **Moser** (Switzerland), Christoph **Napierala** (Switzerland), Barbara **Prokup** (Germany), Martin **Raab** (Switzerland), Franziska **Rabenschlag-Trösch** (Switzerland), Claudia **Sauerborn** (Switzerland), and Yasemin **Yüksel** (Switzerland). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland). This course used the same software as the January 2005 course with the latest pre-release version of EpiData Analysis (Version 0.9, Release 5, Build 26). Input from the participants and faculty led to further streamlining of some exercises.

The **eleventh course** was conducted in Paris, in **January 2006**. The participants were **Chay** Sokun (Cambodia), Andrew D R C **Dimba** (Malawi), Elhafiz **Hussein Ibrahim** (Sudan), Akramul **Islam** (Bangladesh), Suksont **Jittimanee** (Thailand), Le Van **Duc** (Vietnam), Nguyen Binh **Hoa** (Vietnam), Helmuth **Reuter** (South Africa), Ezra **Shimeles** (The Union), and **Xu** Min (China). The facilitators were Achilles **Katamba** (Uganda), Jens M **Lauritsen** (EpiData Association, Denmark), and Hans L **Rieder** (The Union). In September 2005, the EpiData Association released the stable EpiData Analysis Version 1.0. Between release and course commencement, the EpiData Association released upgrade Version 1.1 which added the last functionality (aggregate command) that had been possible previously only in Epi Info DOS Version 6.

During 2005 and 2006 the structure of the course was changed into three parts (EpiData Entry, EpiData Analysis, and Operations Research,). Parts A (EpiData Entry) and B (EpiData Analysis) were stripped of the operations research component for the benefit of those who do not have sufficient time available or who wish to familiarize themselves solely with the software. Conversely, Part C (Operations research) was stripped of components now introduced in Parts A and B, concentrating on the application of the latter to the example research project.

In **July 2006**, the **twelfth course** was conducted in Berne, Switzerland, for Master of Public Health students and other interested participants. These were Martin **Adam** (Switzerland), Edith **Betschart** (Switzerland), Tobias **Eckert** (Switzerland), Denise **Felber Dietrich** (Switzerland), T John **Kessler-Teuscher** (Switzerland), Esther **Kolb** (Switzerland), Brigitte **Kuenzle** (Switzerland), Sonia **Menéndez-González** (Switzerland), Stefan **Neuner-Jehle** (Switzerland), Christoph Paul **Röder** (Switzerland), and Hildebrand **Schwab** (Switzerland). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **August 2006**, the **thirteenth course** was given in Changsha, Hunan Province, China. All participants were from China. They were were 范月玲 (**Fan** Yueling), 贾忠彬 (**Jia** Zhongbin), 阚晓宏 (**Kan** Xiaohong), 李晓凤 (**Li** Xiaofeng), 林岩 (**Lin** Yan), 邱柏红 (**Qiu** Baihong), 潭振 (**Tan** Zhen), 王铂 (**Wang** Bo), 汪清雅 (**Wang** Qingya), 张恩溥 (**Zhang** Enpu), 张宏伟 (**Zhang** Hongwei), 张会民 (**Zhang** Huimin), and 赵丁源 (**Zhao** Dingyuan). Facilitators were **Chiang** Chen-Yuan (The Union) and Hans L **Rieder** (The Union).

In December 2006, the **fourteenth** and **fifteenth courses** were given sequentially in Beijing, China. All participants were from China. In the thirteenth course the participants were 陈慧娟 (**Chen** Huijuan), 陈静 (**Chen** Jing), 陈伟 (**Chen** Wei), 房宏霞 (**Fang** Hongxia), 胡嘉 (**Hu** Jia), 梁路 (**Liang** Lu), 刘二勇 (**Liu** Eryong), 马斌忠 (**Ma** Binzhong), 王丹霞 (**Wang** Danxia), 吴顶峰 (**Wu**

Dingfeng), 于宝柱 (**Yu** Baozhu), and 张慧 (**Zhang** Hui). In the fourteenth course, the participants were 陈广华 (**Chen** Guanghua), 孔霞 (**Kong** Xia), 李曙光 (**Li** Shuguang), 罗丹 (**Luo** Dan), 马艳 (**Ma** Yan), 庞学文 (**Pang** Xuewen), 司马雅云 (**Sima** Yayun), 徐吉英 (**Xu** Jiyin), 依帕尔 (**Yi** Pa'er), 张广恩 (**Zhang** Guangen), 赵津 (**Zhao** Jin), and 周扬 (**Zhou** Yang). Facilitators were Jens M **Lauritsen** (EpiData Association, Denmark), Biggie **Mabaera** (University of Zimbabwe, Zimbabwe), and Hans L **Rieder** (The Union), with the assistance of 胡冬梅 (**Hu** Dongmei), 徐敏 (**Xu** Min), and 张慧 (**Zhang** Hui).

In **June 2007**, the **sixteenth course** was given in Khartoum, Sudan. Two major changes were made to the course curriculum. The first change was that the database for Part C was changed to the utilization of the dataset collected as a course project of the January 2003 and 2004 courses (data courtesy: Dumitru **Laticevschi**, Moldova; Nymadawaa **Naranbat**, Mongolia; Achilles **Katamba**, Uganda; Biggie **Mabaera**, Zimbabwe). The second change was to use the test version 2.0 of EpiData Analysis. All participants were from Sudan. The participants were خديجة ادم محمد عبدالسلام (Khadiga **Adam** Mohammed), اسرار محمد عبدالسلام (Asrar M A/Salam **Elegail**), معاذ سرالختم اسماعيل (Maaz Sier Elkhatim Ismail), حباب خالد الخير (Habab Khalid **Elkheir** Omer), امل السماني اسماعيل (Amel Elsammani Mohamed Ahmed **Elmuozamil**), مناضل (Monadil **Hassan** Mohamed Ali), حسن محمد علي (Sayed Mohammed Shareef سيد محمد همت (Abdelmageed عبدالمجيد عثمان موسي (Thoeiba Omer Ali **Muhagger**), ثويبة عمر علي محقر **Himat**), (Olla Mahmoud **Rahamtalla**) علا محمود رحمة الله and عزمي عبدالرحمن عمارة (Azmi Osman **Musa**), **Omara**). The coordinator was لوران علي زين العابدين (Louran **Zein Abdin Ali**, National Tuberculosis Programme Sudan), and facilitators were الحافظ حسين ابراهيم (Elhafiz Hussein **Ibrahim**, Epi-Lab, Sudan), and Hans L Rieder (The Union).
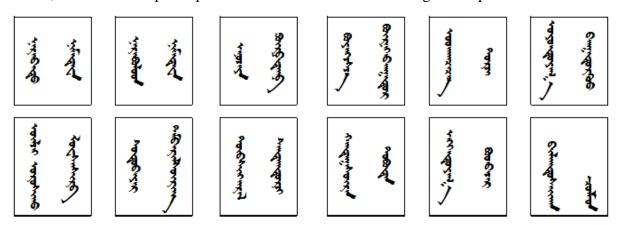
In **July 2007**, the **seventeenth** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. These were Nicole **Bender-Oser** (Switzerland), Bettina **Bringolf-Isler** (Swizerland), Sabina **Büttner** (Switzerland), Christian **Frei** (Switzerland), Florian **Gutzwiller** (Switzerland), Peter **Heri** (Switzerland), Kerstin **Hug** (Switzerland), André B **Kind** (Switzerland), Dimitri **Korol** (Switzerland), Cornelia **Marti** (Switzerland), Anne **Spaar** (Switzerland), and Françoise **Teuscher** (Switzerland). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **November 2007**, the course material was updated to make minor changes to Part A and to accommodate the changes introduced with the release Version 2.0 of EpiData Analysis.

In **April 2008**, the **eighteenth** course was given in Chisinau, Moldova. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 132) was utilized. The participants were Əlixanova Natəvan (**Alikhanova** Natavan), Azerbaijan; uCa nanava (Ucha **Nanava**), Georgia; maia qavTaraZe (Maia **Kavtaradze**), Georgia; Otilia **Scutelniciuc**, Moldova; Angela **Capcelea**, Moldova; Rita **Seicas**, Moldova; Viorel **Soltan** Moldova; Ştefan **Savin**, Moldova; nino lomTaZe (Nino **Lomtadze**), Georgia; Constantin Dan **Nicolaiciuc**, Romania; Iuliana **Husar**, Romania; Richard **Oleko** (Sudan). Facilitators were Jens M **Lauritsen** (EpiData Association, Denmark), Biggie **Mabaera** (Temporary Consultant to The Union, Lesotho), and Hans L **Rieder** (The Union).

In **June 2008**, the **nineteenth** course was given in Ulaanbaatar, Mongolia. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 132) were utilized. The participants were Пүрэвдагва **Анузаяа** (**Anuzaya** Purevdagva), Цолмон **Билэгтсайхан** (**Bilegtsaikhan** Tsolmon), Бүрнээбаатар **Буянхишиг** (Burneebaatar **Buyankhishig**), Будбазар **Энхтуяа** (Budbazar **Enkhtuya**), Довдон **Хандаасүрэн** (Dovdon **Khandaasuren**), N **Naranbold** (Н. **Наранболд**), Baatarkhuu **Oyuntuya** (Баатархүү **Оюунтуяа**), Dorj **Otgontsetseg** (Дорж **Отгонцэцэг**), Demberelsuren **Sodbayar**

(Дэмбэрэлсүрэн **Содбаяр**), Sandagdorj **Tuvshingerel** (Сандагдорж **Түвшингэрэл**), Luvsansharav **Ulzii-Orshikh** (Лувсаншарав **Өлзий-Орших**). Hans L Rieder (The Union) was the facilitator. Following are the names of Nymadawa **Naranbat**, who organized the course, and the eleven participants written in the traditional Mongolian alphabet.

In June / July 2008, the **twentieth** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 132) were utilized. All participants were from Switzerland. They were Caroline **Bähler-Baumgartner**, Daniela **Dyntar**, Martin **Egger**, Carola A **Huber**, Ursula **Kälin-Keller**, Annette **Koller Doser**, Andrea **Merkel-Hoek**, Eric **Odenheimer**, Helen **Prytherch**, Anna **Späth**, and Melinda **Spiesshofer**. The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **October 2008**, the **twenty-first** course was given in Kampala, Uganda. Course I was given during this five-day course. It was specifically designed to fit this 5-day course, also incorporating the previously existing brief overview of EpiData software. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 141) were utilized. The participants were Raymond **Asiimwe** (Uganda), Bernard Ssentalo **Bagaya** (Uganda), Freddy **Bwanga** (Uganda), Henry **Byabajungu** (Uganda), Basra Esmail **Doulla** (Tanzania), Nicholas **Ezati** (Uganda), Fred **Kangave** (Uganda), George **Lukyamuzi** (Uganda), Diana **Nadunga** (Uganda), and Raymond **Shirima** (Tanzania). Francis **Adatu-Engwau** (Uganda) was a guest participant, and formerly a participant in the first course. The facilitator was Hans L **Rieder** (The Union), supported in part by Achilles **Katamba** (Makerere University, Uganda, and The Union Country Office, Uganda).

In **February 2009**, the **twenty-second** course was given in Kampala, Uganda. Course II, Part B (EpiData Analysis) and Part C (Operations research) were given during this five-day course, although some exercises had to be skipped due to the brief duration of the course. EpiData Analysis Version 2.1 (Test Build 159) was utilized. The participants were Francis **Adatu-Engwau** (Uganda), Bernard Ssentalo **Bagaya** (Uganda), Freddy **Bwanga** (Uganda), Basra Esmail **Doulla** (Tanzania), Fred **Kangave** (Uganda), Diana **Nadunga** (Uganda), and Raymond **Shirima** (Tanzania. The facilitator was Hans L **Rieder** (The Union), supported in part by Achilles **Katamba** (Makerere University, Uganda, and The Union Country Office, Uganda).

In **July 2009**, the **twenty-third** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2 (Build 169) were utilized. All but one participant from the principality of Liechtenstein were residents of Switzerland. They were Aline **Barbir**, Rita

Born, Mazda **Farshad**, Oliver **Fuchs**, Juliette **Gerber**, Gerti **Kitting Gaillard**, Meltem **Kutlar Joss**, Teresa **Leisebach Minder**, Elisabeth **Oberfeld**, Anna **Plym**, Corinna **Rüegg**, Dino **Schlamp**, Eliane **Siegenthaler**, Federico **Soldati**, and Esther **Walser** (Principality of Liechtenstein). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **October 2009**, the **twenty-fourth** course was given in Paris, France, for fellows and participants in the training module 2 offered by the Centre for Operational Research of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Dawit **Assefa Lemma** (Ethiopia), Walter Kizito **Kibango** (Kenya), Proscovia Namuwenge **Mukonzo** (Uganda), Mweete Debra **Nglazi** (South Africa), **Nguyen Binh** Hoa (Viet Nam), Mahfuza **Rifat** (Bangladesh), Srinath **Satyanarayana** (India), Zaw Myo **Tun** (Myanmar), Hannock Mukoma **Tweya** (Malawi) and Susanna Sophia **Van Wyk** (South Africa). The facilitators were Hans L **Rieder** (The Union) and Anthony D **Harries** (The Union), assisted by Nguyen Binh **Hoa** (Fellow, Viet Nam).

In **March 2010**, the **twenty-fifth** course was given in Paris, France, for three selected fellows and participants in the training module 2 offered by the Centre for Operational Research of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The course focused on Parts C (Operations Research) and D (More on EpiData software). The participants Nguyen Binh **Hoa** (Viet Nam), Zaw Myo **Tun** (Myanmar), and Hannock Mukoma **Tweya** (Malawi). The facilitators were Hans L **Rieder** (The Union) and Jens M **Laurtisen** (EpiData Association).

In **July 2010**, the **twenty-sixth** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2 (Build 171) were utilized. All participants were residents of Switzerland. They were Brigitte **Brunner**, Adrian **Businger**, Elisabeth **Maurer Schild**, Rebecca **Osterwalder**, Alexandra **Rauch**, Charles **Senessie**, Ulf **Tölle**, and Roco **Umbescheidt**. The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **October 2010**, the **twenty-seventh** course was given in Paris, France, for fellows and participants in the training module 2 offered by the Centre for Operational Research of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Felix **Afutu** (Ghana), Sarabjit Singh **Chadha** (India), Karen **Du Preez** (South Africa), Razia **Fatima** (Pakistan), Oliver **Gadabu** (Malawi), Lucy **Guluka-Gawa** (Malawi), Mohammed **Kogali** (Sudan), Rose Jepchumba **Kosgei** (Kenya), Ajay M V **Kumar** (India), Tonderayi Clive **Murimwa** (Zimbabwe), Mauro **Niskier Sanchez** (Brazil), and Kudakwashe Collin **Takarinda** (Zimbabwe). The facilitators were Hans L **Rieder** (The Union), Nguyen Binh **Hoa** (Viet Nam), Zaw Myo **Tun** (Myanmar), and Sven Gudmund **Hinderaker** (The Union).

In **May 2011**, the **twenty-eighth** course was given in Paris, France, for two selected fellows from the training module 2 offered by the Centre for Operational Research of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The course focused on Parts C (Operations Research) and D (More on EpiData software). The participants Karen **Du Preez** (South Africa) and Ajay M V **Kumar** (India). The facilitators were Hans L **Rieder** (The Union), Jens M **Laurtisen** (EpiData Association), and Hannock Mukoma **Tweya** (Malawi).

In **November 2011**, the **twenty-ninth** course was given in Paris, France for fellows and participants in the training module 2 offered by the Centre for Operational Research of The

Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Henry Shadreck **Kanyerere** (Malawi), Nicholas **Kirui** (Kenya), Pranay **Lal** (India), Sharath Bugurina **Nagaraja** (India), Sharan **Ram** (Fiji), Carlos Alberto **Mendoza-Ticona** (Peru), Emmanuel **Singogo** (Malawi), Nelda **van Soelen** (South Africa), Kerry **Viney** (New Caledonia), and Aung Naing **Win** (Myanmar). The facilitators were Hans L **Rieder** (The Union), Sarabjit **Chadha** (The Union), and Ajay M V **Kumar** (India).

In **February 2012**, the **thirtieth** course was given in Kathmandu, Nepal for fellows and participants in the training module 1b offered by the Centre for Operational Research of South East Asia office of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The participants were Tshering **Jamtsho** (Bhutan), Tashi **Denup** (Bhutan), Shyla **Islam** (Bangladesh), Wasantha **Jayakodi** (Sri Lanka), Swati **Srivastava** (India), Suresh **Shastri** (India), Ramya **Ananthakrishna** (India), Rajendra **Basnet** (Nepal), Caetano **Gusmao** (Timor Leste), Sokhan **Khann** (Cambodia), Sarwat **Shah** (Pakistan), Iwayan **Artwan** (Indonesia). The facilitators were Ajay M V **Kumar** (The Union, India) and Srinath **Satyanarayana** (The Union, India).

In **March 2012**, the **thirty-first** course was given in Bengaluru, India, for participants of the operational research course conducted by the Centre for Operational Research of South East Asia office of The Union in association with the National Tuberculosis Programme, United States Centre for Disease Control and Prevention, and the National Tuberculosis Institute. EpiData Entry Version 3.1 (Build 270108) was utilized. The participants (all residing in India and working for or in close association with the national tuberculosis programme) were Gurpeet **Singh,** Priyanka **Agrawal**, **Subhakar**, Raju **Chepuri**, Solomon **Muller Ankala**, Chetan **Purad**, D J **Deka**, Rajeev **Pathak,** Pankaj **Nimavat,** Amar **Shah,** Sunil **Kumar**, Karthickeyan **DSA**, Rajesh **Deshmukh**, Tapas **Patra,** Parija **Debudatta,** Asha **Fedrick** , Shivramakrishnan, Rajabhau D **Yeole**, Suparna **Chatopadhaya,** Shiv Kumar **Singh,** Vrinda **Sahasrabhojane**, **Anand** and **Tripathi**. The facilitators were Ajay M V **Kumar** (The Union, India) and Srinath **Satyanarayana** (The Union, India).

In **April 2012**, the **thirty-second** course was given in Paris, France, for three selected fellows from the training module 2 offered by the Centre for Operational Research of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The course focused on Parts C (Operations Research) and D (More on EpiData software). The participants were Sarabjit Singh **Chadha** (India), Sharath **Burugina Nagaraja** (India), and Nicholas **Kirui** (Kenya). The facilitators were Hans L **Rieder** (The Union), Ajay M V **Kumar** (The Union, India), and Jens M **Laurtisen** (EpiData Association).

In **May 2012**, the **thirty-third** course was conducted in Goa, India, for about 60 or more WHO-hired consultants working for the national tuberculosis programme in India (plus a couple of observers from the WHO-India and WHO-SEARO office) to build their capacity in data management; they were in turn expected to train all the 650 and more data entry operators working for the national tuberculosis programme. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The course duration was three days and focused on Parts A (Data Entry) and B (Data Analysis). The facilitators were Ajay M V **Kumar** (The Union, India), Sharath **Burugina Nagaraja** (India), Kiran **Rade** (India) and Srinath **Satyanarayana** (The Union, India).

In **May-June 2012**, the **thirty-fourth** course was given in Nairobi, Kenya, as a component of a course on data management for personnel working in tuberculosis reference laboratories, largely in Africa. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version

2.2.1.178 were utilized. The course focused on Parts A (Data Entry) and B (Data Analysis). The participants were Pamela Juma **Akinyi** (Kenya), Vignon Charles Frank **Faïhun** (Bénin), Frederick **Kangave** (Uganda), Thuwein Yusuf **Makamba** (Tanzania), Faisal **Masood** (Pakistan), Margaret **Ndisha** (Kenya), Diana **Nadunga** (Uganda), Collins Tanaka **Sakubani** (Zimbabwe), Tigist Habtamu **Shiferaw** (Ethiopia), Elizabeth Ndaafetwa **Shipiki** (Namibia), Raymond Philip **Shirima** (Tanzania), and Mukururi **Sibanda** (Botswana). The facilitators were Hans L **Rieder** (The Union) and Armand **Van Deun** (The Union). Subsequent to the course, the structure of Part A (EpiData Entry) was adjusted to improve the flow into more coherent blocks.

In **July 2012**, the **thirty-fifth** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2 (Build 178) were utilized. The participants (all residing in Switzerland) were Lukas **Fenner**, Micòl **Gianinazzi**, Lotte **Habermann-Horstmeier**, Eva-Maria **Hau-Grosch**, Marianne **Jost**, Tanja **Löhri**, Thomas **Plattner**, Regina **Scharf**, Laura **Wengenroth**, Alfred **Wiesbauer**, and Natascha M **Wyss**. The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **July 2012**, the **thirty-sixth** course was given in Paris, France, for fellows and participants in a training module offered by the Centre for Operational Research of The Union. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The participants were Serge **Ade** (Benin), Fengling **Mi** (China), Emmanuel **Kanike** (Malawi), Bodrun **Siddiquea** (Bangladesh), Kang Yang **Lim** (Singapore), Prashant **Bhat** (India), Ganzaya **Sukhbaatar** (Mongolia), Hilary **Gunguwo** (Zimbabwe), Philip **Owiti** (Kenya), Eunice **Wahome** (Kenya), Christine **Njuguna** (South Africa) and Kesete **Yirdaw** (Ethiopia). The facilitators were Ajay M V **Kumar** (The Union, India), Nguyen Binh **Hoa** (Viet Nam) and Srinath **Satyanarayana** (The Union, India).

In **September 2012**, the **thirty-seventh** course was given in Chennai, India, for participants of the operational research course conducted by the South East Asia office of The Union in association with the National Institute for Research in Tuberculosis (erstwhile Tuberculosis Research Centre). EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The participants (all residing in and working for tuberculosis control in India) were Kovid **Sharma**, Jaya Prasad **Tripathy**, Jaiswal **Narendra**, Jigneswar **Patel**, Nanda **Kumar**, Sanat Kumar **Tripathi**, Kamal Chand **Naik**, Lord Wasim **Reza**, Priyakanta **Nayak**, Ramesh **Kumar**, **Palanivel** C and **Deepa** D. The facilitators were Ajay MV **Kumar** (The Union, India), Ramya **Ananthakrishnan** (REACH, India) and Amar **Shah** (WHO, India).

In **December 2012**, the **thirty-eighth** course was given in Nadi, Fiji Islands, for participants of the Pacific Operational Research Course conducted by the Centre for Operational Research of The Union and The Secretariat of the Pacific Community. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The participants, from different countries of the Pacific region were Edwin Henry **Daiwo** (Solomon Islands), Rupihner **Defang** (Federated States of Micronesia), Saen **Fanai** (Vanuatu), Louise **Fonua** (Tonga), Natalie **Girin** (New Caledonia), Mareta **Hauma** (Republic of Marshall Islands), Noel **Itogo** (Solomon Islands), Tom **Jack** (Republic of Marshall Islands), Veisinia **Matoto** (Tonga), Joaquin **Nasa** (Republic of Marshall Islands), Markleen **Tagaro** (Vanuatu) and Karen **Tairea** (Cook Islands). The facilitators were Ajay M V **Kumar** (The Union, South East Asia office and also module chair), Karen **Bissell** (The Union), Shakti **Gounder** (Fiji Ministry of Health), Bridget **Kool** (The University of Auckland, New Zealand), Sharan **Ram**

(Fiji National University), Christine **Roseveare** (EpiData Trainer, New Zealand) and Kerri Viney (Secretariat of the Pacific Community).

In **January 2013**, the **thirty-ninth** course on "Efficient, Quality assured Data capture using EpiData" was given in Bengaluru, India, for medical college professionals working in close collaboration with the Revised National TB Control Programme in Karnataka. This course was conducted by the South-East Asia office of The Union in association with the Bangalore Medical College and Research Institute. This course, the first of its kind in India, utilized EpiData Entry Version 3.1 (Build 270108). The participants were **Madhusudan** M, Mohammed **Imran**, Amit Kumar **Rao**, Arshiya **Kouser** S, **Navya** CJ, **Vinay** M, Nagaraja **Goud** B, **Ranganath** TS, **Ravish** KS, **Kishore** SG, **Sarsawathi** S, **Thilak** SA, **Shivaraj** BM, Riyaz **Basha** S, Nimmy **Dominic**, Ashok Kumar **Gudagunti**, Deepak **Tamang**, Surbhi **Joshi**, Karuna D **Sagili**, Archana **Trivedi**, Swaroop Kumar **Sahu**, Josephine **Priya** K, Suresh **Kumbhar**, **Anushka** T, Lilian **Dsouza**, Nevin **Wilson and** Sunita **Prasad**. The facilitators were Ajay M V **Kumar** (The Union, South East Asia office and also module chair), Balaji **Naik** (WHO-RNTCP, Bengaluru), **Deepak** KG (WHO-RNTCP, Tumkur), Prashant **Bhat** (WHO-RNTCP, Hubli) and **Palanivel** (IGMCRI, Puducherry).

In **February-March** 2013, the **fortieth** course was given in Kathmandu, Nepal for participants of the Asian Operational Research Course conducted by the Centre for Operational Research of South-East Asia office of International Union Against Tuberculosis and Lung Disease (The Union). EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.2.180 were utilized. The participants were Mangal **Bahadur Tharu** (Nepal), Xia **Yinyin** (China), Yaping **Chang** (China), Lekey **Khandu** (Bhutan), Jakir Hossain **Bhuiyan Masud** (Bangladesh), Sumudu Chandana **Abeygunawardena** (Srilanka), Olga **Denisiuk** (Ukraine), Gabeena **Mamoon** (Pakistan), Satyavani (India), Mrinalini **Das** (India), Shankar **D** (India), Ravinder **Kumar** (India). The facilitators were Ajay M V **Kumar** (The Union, India), Swati **Srivastava** (PHFI, India), Balaji **Naik** (WHO-RNTCP, India), Karuna D **Sagili** (The Union, India) and Deepak **Tamang** (The Union, India).

In **March 2013**, the **forty-first** course on "Efficient, Quality-assured Data capture using EpiData" was given for medical college professionals and scientists from the Vector Control Research Centre working in Puducherry, India. This course was conducted by the South-East Asia office of The Union in association with the medical college Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER). This course utilized EpiData Entry Version 3.1 (Build 270108). The participants were **Murugan** V, Prasad **Dikale**, Kavita **Vasudevan**, Hemant **Shewade**, Johnson **Cherian**, **Mahalakshmi**, **Subitha** L, Anindo **Majumdar**, **Kalaiselvi, Vedapriya**, Anuj **Mittal**, Ramesh **Chauhan**, Madhan **Raj**, S **Srikanth**, E Susiganesh **Kumar**, R **Kanagarethinem**, R **Moorthy**, Yogesh A **Bahurupi**, Om Prakash **Bera**, Surendar **Rangaswamy**, Manoj Kumar **Panigrahi**, R **Srinivasan**, C **Sadanandane** and **Ganesh**. The facilitators were Ajay M V **Kumar** (The Union, South-East Asia office and also module chair), **Palanivel** (IGMCRI, Puducherry), Swaroop Kumar **Sahu** (JIPMER, Puducherry), Karuna D **Sagili** (The Union, India) and Deepak **Tamang** (The Union, India).

In **March 2013**, the **forty-second** course was given in Bengaluru, India, for participants of the operational research course conducted by the Centre for Operational Research of South-East Asia office of The Union in association with the India National Tuberculosis Programme, United States Centers for Disease Control and Prevention (CDC Atlanta), and the National Tuberculosis Institute, Bangalore. EpiData Analysis Version 2.2.2.180 was utilized. The participants (all residing in India and working for or in close association with the national tuberculosis programme) were Gurpeet **Singh,** Priyanka **Agrawal**, Raju **Chepuri**, D J **Deka**,

Rajeev **Pathak,** Amar **Shah,** Sunil **Kumar**, **Karthickeyan** DSA, Rajesh **Deshmukh**, Parija **Debudatta,** Asha **Fedrick**, **Shivramakrishnan**, Rajabhau D **Yeole**, **Anand** and **Tripathi**. The facilitators were Ajay M V **Kumar** (The Union, India), Srinath **Satyanarayana** (The Union, India), Balaji **Naik** (WHO-RNTCP, India), Sreenivas **Nair** (WHO-India), Vineet K **Chadha** (NTI, India), Patrick **Moonan** (CDC Atlanta), Smitha **Ghosh** (CDC Atlanta) and John **Oeltmann** (CDC Atlanta).

In **March 2013**, the **forty-third** course on "Efficient, Quality-assured Data Analysis using EpiData" was given in Bengaluru, India, for medical college professionals working in and around Bengaluru, Karnataka. This course was organized by Bangalore Medical College and Research Institute in collaboration with the South-East Asia office of The Union. This course utilized EpiData Analysis Version 2.2.2.180. The participants were Amit Kumar **Rao**, **Ashwini**, **Navya** CJ, Nagaraja **Goud** B, **Ranganath** TS, **Ravish** KS, **Sarsawathi** S, **Thilak** SA, **Shivaraj** BM, Riyaz **Basha** S, Nimmy **Dominic**, Swaroop Kumar **Sahu**, Josephine **Priya** K, Lilian **Dsouza, Hamsa** L**,** Puneeth **Kumar and** Subhash **Babu P**. The facilitators were Ajay M V **Kumar** (The Union, South-East Asia office and also module chair), Karuna D **Sagili** (The Union, India) and Deepak **Tamang** (The Union, India).

In **April 2013**, the **forty-forth** course on "Advanced use of EpiData software for operations research" was conducted in Delhi, India, with an emphasis on Parts B, C, and D, using EpiData Entry Version 3.1 (270108) and EpiData Analysis Version 2.2.2.180. The participants, all from India, were Jaya Prasad **Tripathy**, **Palanivel** C, Amar N **Shah**, Balaji **Naik**, Priyakanta **Nayak**, Debadutta **Parija**, Mrinalini **Das**, Deepak **Tamang**, Karuna Devi **Sagili**, and Riyaz **Basha Sardar**. The facilitators were Ajay M V **Kumar** (The Union, South-East Asia office) and Hans L **Rieder** (The Union, Paris).

In **May 2013**, the **forty-fifth** course was conducted in Yaoundé, Cameroun, using EpiData Entry Version 3.1 (270108) and EpiData Analysis Version 2.2.2.181. The participants were Wilfried **Békou Kossi** (Bénin), Frédéric **Békang Angui** (Cameroun), André **Nana Yakam** (Cameroun), Yvon Martial **Ngana** (Centrafrique), Jules **Toloko Risasi** (Congo, RD), Valéri **Oulaï Ibodé** (Côte d'Ivoire). The facilitator was Hans L **Rieder** (The Union, Paris).

In **May-June 2013**, the **forty-sixth** course was conducted in Paris, France, using EpiData Entry Version 3.1 (270108) and EpiData Analysis Version 2.2.2.182. The course title was "Advanced use of EpiData software for operations research" and was given to four participants selected from the Union's Centre for Operational Research 2012 cohort who had already passed "Module 1b". The course focused on Parts B (Introduction to EpiData Analysis), C (Operations Research) and D (More on EpiData software). The participants were Kesete **Yirdaw** (Ethiopia), Prashant **Bhat** (India) , Philip **Owiti** (Kenya), and **Lim** Kang Yang Leo (Singapore). The facilitators were Hans L **Rieder** (The Union), Ajay M V **Kumar** (The Union, India), and Jens M **Laurtisen** (EpiData Association).

In **July 2013**, the **forty-seventh** course was conducted in Berne, Switzerland, using EpiData Entry Version 3.1 (270108) and EpiData Analysis Version 2.2.2.182. The course title was "From paper to computer records – ensuring data quality for analysis". The course was provided for participants enrolled in the Swiss Public Health training curriculum. The participants were Lars P **Andersen**, Anka **Baltensperger**, Nicole **Bartlomé**, Katrin **Crameri**, Corina **Ebnöther**, Nicole **Gysin**, Isabelle **Keel**, Gablu **Kilcher**, Jörg **Lützner**, Miriam **Pfiffner**, Anne **Schmidt**, and Johannes **Wacker**. The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In **September-October 2013**, the **forty-eighth** course was conducted in Dhaka, Bangladesh, using EpiData Entry Version 3.1 (270108) and EpiData Analysis Version 2.2.2.182. In

addition, an introduction was made to EpiData Manager public release version v1.4.2 and EpiData Entry Client v1.4.2. The course title was "EpiData software for quality-assured data entry and analysis". The course was provided for personnel working in the Damien Foundation projects in Bangladesh and selected personnel from the national tuberculosis control program. The participants were Muhammad Ameer **Ali**, Panna Lal **Goswani**, Md Anwar **Hossain**, Md Shamin **Hossain**, Aung **Kya Jai Maug**, Priojit Kumar **Nandi**, and Binoy **Tudu**. The facilitator was Hans L **Rieder** (The Union).

In **October 2013**, the **forty-ninth** course was given in Chennai, India, for participants of the National Operational Research Course (2013-14) conducted by the South-East Asia Regional Office of The Union in association with the National Institute for Research in Tuberculosis, India. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.2.182 were utilized. The course was titled "Efficient, Quality-assured Data Capture and Analysis using EpiData". The participants (all residing in and working for tuberculosis control in India) were Kalpita **Shringarpure,** Deepti **Nirwal,** Sairu **Philip,** Shankar **Dapkekar,** Kiran Kumar **Reddy,** Kumaravel **Ilangovan,** Syed Imran **Farooq,** Hemant D **Shewade,** Umesh Chandra **Tripathi,** Bhavin **Vadera,** Anshul **Avijit**, and Poorana **Ganga Devi**. The facilitators were Ajay MV **Kumar,** Karuna **Sagili,** Deepak **Tamang** (The Union, India), Palanivel **C**, Swaroop **Sahu** (JIPMER, Puducherry), and Mrinalini **Das** (MSF, India).

In **March 2014**, the **fiftieth** course was given in Kathmandu, Nepal for participants of the Asian Operational Research Course conducted by the Centre for Operational Research of South-East Asia office of International Union Against Tuberculosis and Lung Disease (The Union). EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.2.182 were utilized. The participants were Raman **Mahajan** (India), Wajira **Rajapakshe** (Sri Lanka), Sarder Tanzir **Hossain** (Bangladesh), Nay **Thiha** (Myanmar), Nang Thu Thu **Kyaw** (Myanmar), Basant **Joshi** (Nepal), Kimcheng **Choun** (Cambodia), Srinivas **Bairy** (India), Kinley **Zam** (Bhutan), Sai Ko Ko **Zaw** (Myanmar), Aashifa **Yaqoob** (Pakistan) and Vishal **Dogra** (India). The facilitators were Karuna D **Sagili** (The Union, India), Mrinalini **Das** (MSF, India), Prashant **Bhat** (WHO-RNTCP, India), Hemant **Shewade** (Indira Gandhi Medical College and Research Institute, India) and Jay Prasad **Tripathy** (PGIMER, India). Ajay M V **Kumar** (The Union, India) participated as observer.

In **July 2014**, the **fifty-first** course was given in Paris, France, for participants of the fifth Paris Operational Research Course conducted by the Centre for Operational Research of International Union Against Tuberculosis and Lung Disease (The Union). EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.2.182 were utilized. The participants were Riitta **Dlodlo** (Zimbabwe), Thi Mai Phuong **Nguyen** (Vietnam), Janet **Dzangare** (Zimbabwe), Daphne **Lagrou** (Afghanistan/Belgium), Shuisen **Zhou** (China), Mar **Verlade** (Switzerland), Charity **Kanyoro** (Kenya), Mbazi **Senkoro** (Tanzania), Wondu Teshome **Amenu** (Ethiopia), Michel **Sawadogo** (Burundi), Justine **Mirembe** (Uganda) and Josephine **Namboze** (Zimbabwe). The facilitators were Ajay M V **Kumar** (The Union, India), Rafael **van den Bergh** (Luxembourg), Kuda **Takarinda** (Zimbabwe), Philip **Owiti** (Kenya) and C **Palanivel** (India).

In **March 2015**, the **fifty-second** course was given in Kathmandu, Nepal, for participants of the fourth Asia Operational Research Course conducted by the Department of Research, International Union Against Tuberculosis and Lung Disease (The Union), South-East Asia Regional Office, New Delhi, India. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.2.182 were utilized. The participants were Sudeepa **Khanal** (Nepal), Mongal Singh **Gurung** (Bhutan), Hamayoun **Hemat** (Afghanistan), Mahboob **Ul Haq** (Pakistan), Aye **Myat Thi** (Myanmar), Thi Thanh **Huyen Truong** (Vietnam), Sujit Kumar

Sah (Nepal), Zin Min **Thet Lwin** (Myanmar), Kathirvel **Soundappan** (India), Chandor **Wangdi** (Bhutan), and Srinivas **Reddy Edla** (India). The facilitators were C **Palanivel** (India), Vivek **Gupta** (The Union, India), Hemant **Shewade** (The Union, India), Philip **Owiti** (Kenya), Mrinalini **Das** (MSF, India) and Jay Prasad **Tripathy** (India).

In **March 2015**, the **fifty-third** course was given in Cotonou, Bénin, for collaborators from 9 francophone countries in Africa in the observational study of the "Bangladesh 9-month regimen" for multidrug-resistant tuberculosis. The course was given in French but the English course material was used and it focused on the analysis of study data, using as introduction material from Parts A and B. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.2.183 were utilized. The participants were Gisèle **Badoum** (Burkina Faso), Wilfried **Békou** (Bénin) , François **Ciza** (Burundi), Valentin **Fikuma** (République Centrafricaine), Yves **Habimana-Mucyo** (Rwanda), Charlotte **Kamgué Tchieche** (Cameroun), Ferdinand **Kassa** (Bénin), Lucien Koffi **Kouakou** (Côte d'Ivoire), Olivia **Mbitikon** (République Centrafricaine), Marie-Léopoldine **Mbulula** (République Démocratique du Congo), Yvon **Ngana** (République Centrafricaine), Jürgen **Noeske** (Cameroun), Ibodé Valéri **Oulai** (Côte d'Ivoire), Alberto **Piubello** (Niger), Tandaogo **Saouadogo** (Burkina Faso), Bassirou **Souleymane** (Niger), Jules **Toloko** (République Démocratique du Congo). The facilitators were Ghislain Kobto **Koura** (The Union), Hans L **Rieder** (The Union), Valérie **Schwoebel** (The Union), and Arnaud **Trébucq** (The Union).