

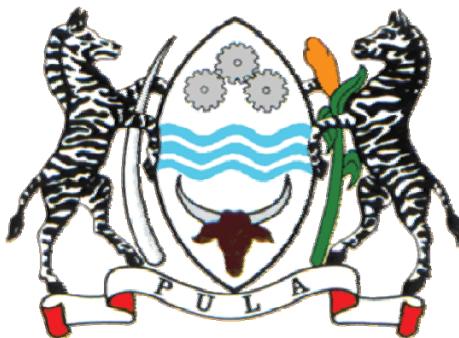
KITSO

AIDS TRAINING PROGRAM

Knowledge, **I**nnovation & **T**raining **S**hall **O**vercome AIDS

*A Summary of KITSO Training
Conducted by the Botswana-Harvard
AIDS Institute Partnership for HIV
Research and Education*

2001-2011



LEADING INSTITUTIONS

MINISTRY OF HEALTH OF BOTSWANA

The Ministry of Health (MoH) has the overall responsibility for health care in Botswana. In 1992 in response to the emerging HIV epidemic the AIDS/STD unit was established to coordinate the National AIDS program (NACP) and to monitor the epidemic. Following restructuring of the Ministry of Health in 2005 the department of HIV/AIDS prevention and Care (DHAPC) was established.

In 2000 the KITSO AIDS Training Program (KITSO) was conceived, developed, and implemented as a collaboration of the MOH, the Harvard School of Public Health AIDS Initiative (HAI) (formerly known as the Harvard AIDS Institute) and the Botswana-Harvard AIDS Institute Partnership for HIV Research and Education (BHP). KITSO was initially guided by the Director of Health Services, Ministry of Health. In 2004, the MOH expanded KITSO to include additional training partners and provide greater breadth of training to health professionals in Botswana. In 2006 the KITSO Training Coordination Unit (KTCU) was formed under the DHAPC.

HARVARD SCHOOL OF PUBLIC HEALTH AIDS INITIATIVE

For over two decades, the Harvard School of Public Health AIDS Initiative (HAI) has been dedicated to promoting research, education and leadership to end the AIDS epidemic. As the number of AIDS cases continues to escalate disproportionately in Africa and other resource scarce settings, HAI has directed its research efforts toward developing prevention and treatment strategies to stem the epidemic in these regions. HAI partners with organizations in Africa and other regions of the world to develop sustainable education and training programs. The training of international scientists and health professionals helps to produce a cadre of experts able to facilitate and lead the development of health care strategies and interventions that will benefit individuals, families, and societies in resource-scarce areas.

BOTSWANA-HARVARD AIDS INSTITUTE PARTNERSHIP FOR HIV RESEARCH AND EDUCATION

Established in 1996, the Botswana-Harvard AIDS Institute Partnership (BHP) is a collaborative research and training initiative between the Government of Botswana and HAI. The research and training initiatives of BHP focus on questions of epidemiology, virology, molecular biology, immunology, genetics, clinical treatment, economics, and social and behavioural medicine issues relevant to the AIDS epidemic in Botswana and southern Africa. The culmination of this research and training will be put into practice developing interventions to stem the epidemic and its societal and economic effects within the populations most affected by the crisis.

AFRICAN COMPREHENSIVE HIV / AIDS PARTNERSHIPS

The African Comprehensive HIV/AIDS Partnerships (ACHAP), a collaboration between the Government of Botswana, the Bill and Melinda Gates Foundation, and The Merck Company Foundation/Merck & Co., Inc.. ACHAP was established in 2000 with goals to decrease the spread of HIV and mitigate the impact of HIV/AIDS in Botswana. Since 2001 ACHAP provided substantial financial and program support to KITSO.

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ACRONYMS

ACCF	<i>AIDS Clinical Care Fundamentals</i> training course
ACHAP	African Comprehensive HIV/AIDS Partnerships
AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
BHP	Botswana–Harvard AIDS Institute Partnership for HIV Research and Education
DHAPC	Department of HIV/AIDS Prevention and Care
HAI	Harvard School of Public Health AIDS Initiative
HCW	Health Care Workers
HDH	Health and Development Africa
HIV/AIDS	Human Immunodeficiency Virus
HSPH	Harvard School of Public Health
IDCC	Infectious Disease Care Clinic
JSI	John Snow International
KITSO	KITSO AIDS Training Program
KTCU	KITSO Training Coordination Unit
LTE	Long Term Evaluation
M&E	Monitoring and Evaluation
MOH	Ministry of Health
PEPFAR	President Emergency Fund for AIDS Relief
PMTCT	Prevention of Mother-to-Child Transmission
TB	Tuberculosis
U-Penn	University of Pennsylvania
WHO	World Health Organization

1 EXECUTIVE SUMMARY

The KITSO AIDS Training Program (KITSO) was established in 2000 by the Botswana Ministry of Health (MOH) and the Botswana–Harvard AIDS Institute Partnership for HIV Research and Education (BHP). Since 2001 KITSO has received generous financial support from the African Comprehensive HIV/AIDS Partnerships (ACHAP), a collaboration between the Government of Botswana, the Bill and Melinda Gates Foundation, and the Merck Company Foundation/Merck & Co. Inc. KITSO was conceived to expedite and provide targeted training to a critical mass of health care workers necessary for the successful introduction of the national antiretroviral therapy (ART) program. By the close of 2011, thirty-two hospital treatment sites and 198 ART satellite clinics were established, and over 170 000 persons currently receive treatment. KITSO actively supported the rollout and establishment of the national ART program by training a large number of health care workers (HCWs) in HIV/AIDS care and treatment. By the end of 2011 close to 15 000 training participants benefited from KITSO's various courses and modules especially the baseline training module *AIDS Clinical Care Fundamentals* which trained over 8000 HCWs.

As a training program, KITSO has a number of distinguishing characteristics: **(1)** the program is Botswana's national training program directed by the MOH; **(2)** the program has a country-specific curriculum, developed in Botswana for HCWs in Botswana; **(3)** the program's training modules are standardized and have been implemented in a consistent fashion, training a high volume of health professionals; and **(4)** the program has been responsive to the evolving training needs of Botswana's health sector in the area of HIV/AIDS since its inception.

In 2004, the MOH expanded KITSO to incorporate additional training partners in the country. Within this enlarged framework, BHP's KITSO Program is referred to as KITSO-BHP.

KITSO-BHP consists of didactic and practical core modules to facilitate the ART rollout, advanced modules to reinforce and expand the HIV/AIDS knowledge and experience of Botswana's HCWs, and two satellite modules for non-medical staff. KITSO training modules have become the standard of training in HIV/AIDS care and treatment throughout Botswana's healthcare system, both public and private.

KITSO is coordinated through the KITSO Training Coordination Unit (KCTU) at the MOH, which includes training coordination, training certification and training data management.

This report provides an overview of the evolution of the KITSO Training Program, its activities and achievements over the past 10 years.

2 PROGRAM DEFINITION

2.1 BACKGROUND

Since the first case of AIDS in Botswana was reported in 1986, HIV has spread rapidly throughout this southern African country. Home to a population of 1.6 million, Botswana was estimated by UNAIDS to have an HIV prevalence of 38.8 percent among pregnant women and more than 330,000 persons living with HIV/AIDS in 2002. HIV/AIDS has decreased life expectancy, increased infant mortality, and put enormous strain on the economic and human resources needed for development, productivity, and global competition. Botswana's public health crisis is characterized by overwhelming demand for care coupled with the healthcare sector's general shortage of HCWs and a scarcity of professional training in HIV/AIDS care and treatment.

The Government of Botswana responded to the crisis by approaching the HAI and the BHP to partner in addressing the training needs of HCWs. In 2000, the MOH and HAI conducted a country-wide needs assessment to determine existing training resources and infrastructure, ascertain available technology, and identify gaps in HIV/AIDS training. The needs assessment and subsequent reference group recommendations culminated in a five-year plan for the development and implementation of a training program focusing on HIV/AIDS care and treatment. The training was to be setting-specific and tailored to the needs of the Botswana healthcare sector, incorporating and emphasizing national protocols, and drawing upon the knowledge of national and international experts.

Initially funded through a private seed grant, in 2001 the MOH and HAI/BHP received the generous financial backing of ACHAP, a collaboration between the Government of Botswana, the Bill and Melinda Gates Foundation, and the Merck Company Foundation/Merck & Co. Inc.

This collaboration (MOH, HAI, BHP, and ACHAP) created the KITSO AIDS Training Program (KITSO), mandated to provide comprehensive, standardized HIV/AIDS training tailored specifically for Botswana's health sector. The Setswana word for knowledge, "KITSO", also serves as an acronym for "Knowledge, Innovation, and Training Shall Overcome" AIDS. KITSO held its first training course in July 2001 and since then close to 15 000 training participants have benefited from KITSO's various courses and modules. The baseline training *AIDS Clinical Care Fundamentals* has proven to be especially instrumental in the roll-out of the national ARV treatment program, having trained over 8073 health care workers (HCW) countrywide.

In 2004 the MOH expanded KITSO to incorporate the expertise of additional training partners under the coordination and leadership of the MOH. Within this enlarged framework BHP's KITSO Program (KITSO-BHP) continued to provide high quality, multi-disciplinary, and standardized training to help healthcare workers understand and apply the Botswana national HIV/AIDS care treatment guidelines.

To achieve program sustainability beyond ACHAP funding, efforts have been ongoing to establish structures and capacity within the MOH of Botswana, to absorb and fully sustain the program.

Following the establishment of the KITSO Training Coordination Unit (KTCU) at the MOH in 2006, a transition plan had been established in 2009 that would further capacitate the MOH to absorb and sustain the KITSO AIDS training program beyond December 2011.

2.2 KITSO PROGRAM GOAL AND OBJECTIVES

Goal

To participate in Botswana's national strategy for HIV/AIDS care by contributing to the management of the epidemic through the provision of high quality, country-specific training in HIV care and treatment for HCWs.

Objectives

- (1)** To develop and implement an innovative and sustainable training program for HIV/AIDS management that is Botswana-specific and responsive to training needs identified by the MOH.
- (2a)** To train a wide spectrum of health care professionals in current HIV/AIDS practices
- (2b)** To support and update previously trained health care professionals in evolving treatment standards.
- (3)** To transition and integrate the coordination unit of KITSO-BHP into the MOH in order to build capacity within the newly established KITSO Training Coordination Unit (KCTU)

2.3 AREAS OF ACTIVITY

Under the leadership of the MOH, KITSO-BHP's activities are divided into six areas of concentration

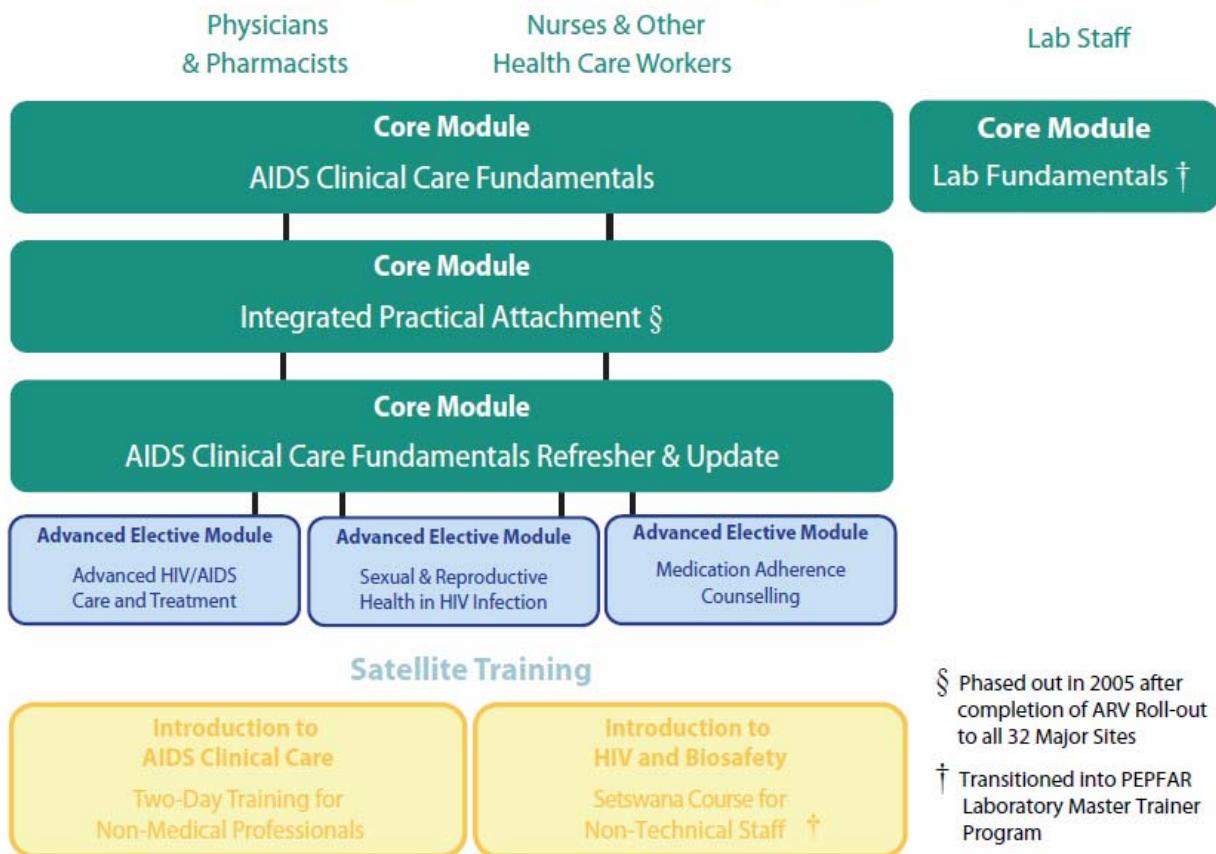
1. Curriculum development
2. Training implementation
3. Reference and Resource support
4. Program monitoring & evaluation
5. Transfer of skills and infrastructure to the KITSO Training Coordination Unit (KCTU) at the MOH

3 PROGRAM DESCRIPTION

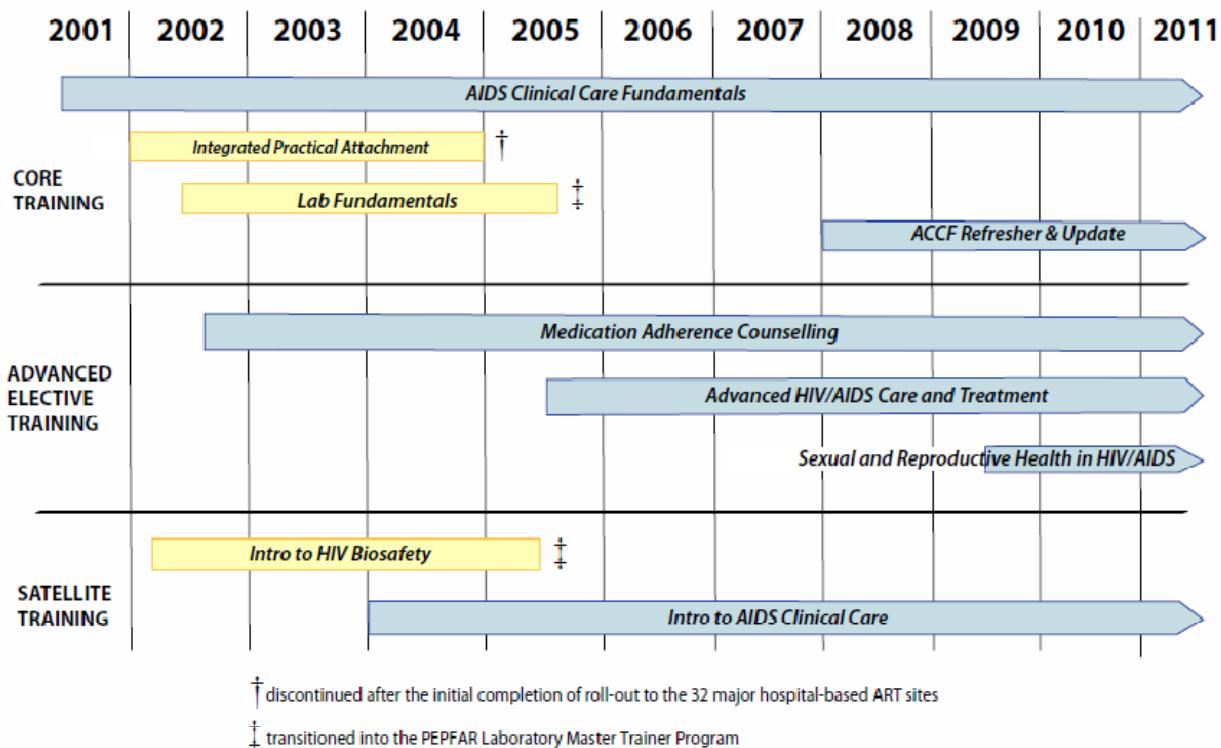
3.1 DESCRIPTION OF CURRICULUM STRUCTURE

Since 2002 KITSO training modules serve as the standard for training in HIV/AIDS care and treatment throughout Botswana's public and private healthcare system. KITSO consists of three didactic and one practical core modules to facilitate the ART rollout, three advanced elective modules to reinforce and expand the HIV/AIDS knowledge and experience of Botswana's HCWs, and two satellite modules for non-medical staff. Curriculum standardization ensures that, even when different faculty and organizations implement a course, participants receive the same training information.

KITSO-BHP Curriculum Delivery Diagram, 2001 to 2011



Timeline of KITSO Curriculum Development and Implementation



Module implementation is standardized for all KITSO courses. Full attendance is required, and participants complete both a baseline assessment and a final examination. HCWs who meet the requirements set by the MOH receive certificates verifying successful course completion.

Participants attending satellite training modules receive a letter of attendance.

3.2 DESCRIPTION OF INDIVIDUAL MODULES

Core Modules

AIDS Clinical Care Fundamentals (ACCF), a four-day didactic training for doctors, pharmacists, nurses, pharmacy technicians, and social workers was designed to provide Botswana's HCWs with the information and skills necessary to begin providing basic ART to patients. This baseline module, which includes both adult and pediatric content, is comprised of lectures, case study discussions, practice exercises, and question and answer sessions. The following 13 core topic areas are addressed: Introduction to the Botswana National ARV Program; HIV Pathophysiology and Epidemiology; Laboratory Diagnostics in ARV Therapy; Principles of ARV Therapy; Pediatric Considerations and ARV Dosing; ARV Drug Toxicity; Drug-Drug Interactions; ARV Drug Resistance and Treatment Failure; Adherence, Adult and Pediatric Opportunistic Infections; Prevention of Mother-to Child Transmission (PMTCT), HIV and Reproductive Health, and Post-Exposure Prophylaxis (PEP).

Integrated Practical Attachment was designed as a hands-on follow-up to *ACCF* during the initial roll out phase of the national ARV program, utilizing the high-volume ART clinics established at Botswana's two referral hospitals for clinical mentoring in adult and pediatric ART. Doctors, nurses, and pharmacy staff were taught under the guidance of experienced national clinicians, who in turn were supported by international experts from various MOH collaborators. Doctors attached for four weeks of mentorship, maintained a clinical logbook, and gained the confidence and ability to see patients independently, while working under expert supervision and support. Nurses and pharmacy staff were attached to the same ART clinics for two week rotations to gain experience in the national protocols for adherence counselling, treatment initiation, and treatment follow-up. This module was phased out in 2004 after the completion of the ARV roll-out since there was then sufficient capacity of mentorship at each treatment site.

AIDS Clinical Care Fundamentals Refresher/Update. This two-day training module was developed in response to a high demand for refresher training, as well as the need to update already trained healthcare staff on the most recent changes to the national treatment guidelines. Incorporating information from the new guidelines along with care and treatment fundamentals, the training covers HIV testing, ARV therapy eligibility, principles of ARV therapy, management of toxicities, management of treatment failure, PMTCT, and treatment of TB and other opportunistic infections.

Laboratory Fundamentals, a one-day didactic and practical module, was designed for laboratory personnel and HCWs involved in the collection and processing of laboratory specimens for the ART program. This training includes practical background on the testing protocols for the ART program, sample collection, labelling, testing procedures, results interpretation and reporting, and basic biosafety. This KITSO training component was taken over by the PEPFAR Laboratory Master Trainer Program in 2006.

Advanced Elective Modules

Advanced HIV/AIDS Care and Treatment is a five-day course for doctors and pharmacists who have successfully completed *ACCF* and have subsequently gained clinical experience in ART. The course addresses advanced ARV treatment challenges and provides in-depth information in the areas of HIV virology and immunology, ARV drug resistance, principles of ARV therapy, management of treatment failure, management of opportunistic infections, PMTCT, pediatric-specific issues, and relevant findings from HIV/AIDS research conducted in Botswana and throughout the world. This didactic module includes extensive case study discussions that utilize actual patient cases provided by course participants to illustrate and reinforce optimal care and treatment within the Botswana setting.

The **Medication Adherence Counselling (MAC)** module is a three-day interactive training module for nurses, pharmacy technicians, and social workers from active ARV treatment centers. Focusing on potential barriers to medication adherence in the Botswana context, this course combines lectures, case discussions, role-playing, and interactive activities to strengthen adherence counselling skills.

Sexual and Reproductive Health in HIV Infection provides training for health professionals providing counselling and care in sexual and reproductive health issues for persons living with HIV. The course empowers health care workers to identify and manage sexual and reproductive health issues pertaining to HIV infection, such as STI's family planning including conception and contraception, menopause, pregnancy and PMTCT, and HIV prevention.

Satellite Modules

Introduction to HIV and Biosafety is a half-day satellite training module taught in Setswana for support staff (orderlies, cleaners, drivers, etc.) working in ARV sites and was part of the initial ARV roll out training. Topics include background on the testing done for the ARV program, sample collection and handling, completion of lab forms, interpretation of results, and biosafety. This module has been integrated into the PEPFAR Laboratory Master Training Program since 2006.

Introduction to AIDS Clinical Care, this two day training course for lay counsellors, family welfare educators, and other non-medical professionals—provide non-medical staff with basic understanding of identification and management of HIV/AIDS in Botswana. Course content includes an introduction to HIV pathophysiology and immunology and information about testing, eligibility and referral for ARV therapy.

3.3 MONITORING AND EVALUATION

Introduction

Since its inception KITSO has undertaken different evaluation methods to assess the quality and integrity of the program's structure, content, and implementation. KITSO-BHP staff has developed and implemented a comprehensive monitoring and evaluation plan in an on-going effort to improve the KITSO AIDS Training Program and make decisions for its continued effectiveness. The KITSO-BHP team has been committed to assessing the quality and integrity of the program's structure, content, and implementation together with continuous dialogue with the Ministry of Health and other stakeholders. This approach has resulted in a program that can quickly respond to national public health guidelines, stakeholders' and evaluators' recommendations, and faculty and training participant feedback.

In order to maintain a balance in our monitoring and evaluation process, the total plan consists of our internal monitoring & evaluations program combined with quarterly activity reports to the MoH and the program's funder, as well as external evaluation feedback.

Monitoring and Evaluation Activities

- Participant knowledge Assessment: Pre and Post Tests
- Training Implementation assessment: participant questionnaires
- Training data base to monitor all training implementations carried out by KITSO-BHP
- Quarterly activity reports
- Internal long term training evaluation (2007)
- External program evaluations (2003, 2004, 2009)

Approach

Through the monitoring and evaluation plan KITSO staff examine the impact of program activities, training efforts, teaching tools, and continuing medical education efforts for AIDS care in Botswana. The evaluation is seen as a continuous process towards identifying opportunities for improvement. During the first stage, data on program effectiveness is collected and areas needing change are identified. The second stage involves planning how changes can be made, followed by the third stage of implementing the planned changes. The last step re-evaluates the changes and their impact on the program. Using this approach, the training program has evolved over the past 10 years, to provide the most effective and relevant training for HCWs in Botswana.

Participant knowledge assessment (pre and post test)

Participant performance on examinations has been used as an important benchmark in the assessment of participants' knowledge and overall evaluation of each training course. Participants are given a baseline pre-test before the start of the training. The result of this pre-test is used to gauge the prior knowledge of HIV care at baseline. A final assessment (post test) is given at the conclusion of each training to assess participants' knowledge gain after training.

This evaluation method provides a good overview of individual knowledge gain as well as the effectiveness and quality of training implementation.

Post examination results have been used as criteria for training certification.

Training certification

Training participants who meet all course requirements which are 100 % of course attendance and a stipulated pass mark in the final exam will receive a certificate of completion.

Training implementation assessment

Course participants complete training evaluation questionnaires at the end of each training course, assessing each training activity as well as the overall quality, and effectiveness of training. In addition participants are given the opportunity to comment on areas of course improvement.

The analysis of all training questionnaires is summarized in a training summary report for review by KITSO faculty and the KITSO team.

Training database

Because of the great importance of monitoring the progress and impact of the KITSO training program in terms of numbers of health workers trained, the program has since inception used some form of tracking instrument for this purpose. In the early years, the numbers were tracked with Microsoft Excel Spreadsheets, and later, FileMaker Pro was adopted as a more formalized database management software. As the program progressed and the numbers increased, and as the reporting requirements became more complex, a more robust database needed to be put in place, and in 2007 this was achieved through a tailor-made Microsoft Access database.

The Access database has, since its introduction, greatly simplified the management of training data, enabling the program officers to come up with different permutations of data for various report requests, for example for the funders, the health facilities or the ministry. It was in view of its ease of use and robustness that the Ministry of Health decided in early 2009 to formally adopt and adapt the KITSO-BHP training database track all training efforts under the Department of HIV/AIDS Prevention and Care (DHAPC). As of October 2011, that adaptation process has long been completed, and all the data in the KITSO-BHP database has been migrated into this new expanded database, which is now managed by the KITSO Training Coordinating Unit (KTCU) at the Ministry of Health.

Quarterly activity reports

As the funder of KITSO-BHP, ACHAP has developed a quarterly program activity reporting system.

The quarterly report monitors program targets and achievements for each output indicator as well as key challenges and responding activities.

Program Evaluations

Several evaluations of the KITSO program have guided us in our approaches to improving the KITSO curriculum and program every year. There were four evaluations conducted approximately every couple of years, from Health and Development Africa in 2003, John Snow, Inc. in 2004, the Botswana Harvard Partnership and Ministry of Health in 2006, and the World Health Organization in 2009, respectively.

Health and Development Africa, 2003

In early 2003, ACHAP and the Ministry of Health solicited an external evaluation of HIV and AIDS training efforts from Health and Development Africa (HDA). They contracted HDA to undertake an evaluation of KITSO training and the Clinical Preceptorship Program coordinated by ACHAP. The evaluation team from HDA studied program processes (training logistics and methodologies), program outputs (number of people trained) and program outcomes (core knowledge of trainees). A cross-sectional survey of a randomized sample of recipients of training was conducted. ACHAP and the MOH conducted qualitative interviews with program and institution managers.

Approximately 350 trainees attended the KITSO program from 2001-2003; and HDA interviewed a sample of 143 trainees (including 81 KITSO trainees and 62 preceptorship trainees). Overall, the results of the questionnaires and interviews were positive. More than 60% of total respondents felt that KITSO training was excellent (69%); the materials were highly accessible (81%); and the lectures had high relevance to clinical practice (64%). There were several potential concerns expressed by program respondents, however. A majority (67%) felt that the KITSO trainings were not long enough to learn the complex material and facilitate questions and discussion. In addition, although the KITSO program has a practical component, only 36% of participants felt that there was a practical component to their training.

HDA's final report favourably reviewed both efforts, but identified the need for improved integration of all HIV and AIDS training under the Ministry of Health and consensus on standardized theoretical and practical training. It was suggested that the programs were integrated for KITSO training and preceptors into a single program. Specific recommendations for KITSO included: prioritizing the selection of participants based on likely utilization of knowledge; orienting clinical preceptors; expanding and developing curriculum to consider modules for institutions that are not part of the ARV roll-out program; and distributing KITSO materials to other organizations and individuals who provide training. Some general recommendations included: adding a component of quality control, setting a criteria for competence after participants attended training, and finally agreeing upon a curriculum and methodology for training.

John Snow, Inc., 2004

John Snow International (JSI) was contracted in May 2004 to conduct the 2nd external evaluation of KITSO. JSI built upon the existing HDA evaluation and any updates to the program since 2003. JSI had several new objectives: to look at the internal and external management and administrative environment under which KITSO operated; to look at ACHAP's continued contribution to sustainability; and the extent to which resources in the program have been optimally used.

To conduct its analysis, ACHAP provided JSI with KITSO documents for review. JSI also conducted semi-structured interviews with key KITSO staff, ACHAP staff, as well as recipients of training from a number of cadres and sectors.

Overall, JSI found that KITSO management was very organized and submitted regular reports to ACHAP indicating its progress. JSI concluded that the KITSO program has clearly met the goals stated in the program proposal, is playing a key role in the expansion of ARVs, and is contributing to prevention and care efforts through training of health care personnel and development of in-

country experts and trainers. It was further reported that KITSO is uniquely positioned to provide key components and support for training and human resource development as well as contributing to the ultimate development of the Ministry of Health's HIV comprehensive training program. Specific recommendations included: focusing training on new ARV sites as they are identified by the MOH; providing refresher courses; continuing work with other training programs as outlined in the KITSO Expansion Plan 2004; increasing interactive activities in training; collaborating to standardize training programs; identifying areas of emerging needs for future training; replacing and adding physicians to provide continuing education; providing clinical coverage for local physicians to lecture; and working with funders to ensure ongoing funding which will allow long-term planning and adequate time to integrate the program into the MOH structure.

JSI found KITSO program staff very committed, often working spending nights and weekend to improve and develop the program.

Botswana Harvard Partnership and Ministry of Health, 2007

The Botswana Harvard Partnership (BHP) and Ministry of Health (MOH) conducted a long-term evaluation of its own KITSO program in 2006 using feedback from the past two evaluations while conducting more interviews and knowledge tests with trainees. The objectives of the BHP-MOH long term evaluation were mainly to see if there was knowledge improvement in course content regarding HIV/AIDS pre and post training. The evaluation also looked at trainee's perception of KITSO with regards to their professional development, knowledge retention, and on patient care within facilities.

To conduct the evaluation, BHP-MOH did a general program survey, knowledge test, and semi-structured interviews with facility management. 2 KITS0-BHP staff performed data entry and analysis was done using SAS statistical software. The sample size included 494 recipients of training across 17 different ARV treatment sites in Botswana.

Overall, the long-term evaluation had favourable responses. Almost 100% of respondents said the AIDS Clinical Care Fundamentals course was excellent or good while increasing their knowledge in HIV/AIDS care. 85% of respondents said that they were working in a capacity allowing them to use the skills and information taught in the KITSO training. Furthermore, all facilities reported that KITSO training equipped health facility staff to competently managed patients on ARV therapy. This has led to improved patient care, adherence counselling, and the management of ARV drug and side effects.

Despite these glowing reports, the long-term knowledge tests were below expectations. The median score on multiple choice questions was 54%. This could reflect the limitations of didactic courses and highlights the need for continuing education opportunities, performance feedback and mentoring beyond the six KITSO courses evaluated. While the program has come far since 2002, the program cannot remain static and must continue to respond to advances in HIV medicine the evolving needs of the health care sector they serve.

World Health Organization, 2009

The Ministry of Health contracted the World Health Organization (WHO) to conduct an evaluation of all of its ARV programs in Botswana since the ARV program had never been subjected to an international review. The objectives of the evaluation were to assess program planning, coordination, and partnerships; training programs; counselling; clinical care; patient satisfaction; pharmacy; monitoring & evaluation; and costing, to name a few. The evaluation was also to identify and document challenges, opportunities and innovations of the ARV treatment program to date.

The review was carried out using literature reviews, cross sectional data collection from facility to national levels, and some consultative and participatory approaches as well. WHO teams looked at current ARV policies, progress reports and findings, and recommendations from previous reviews and assessments of related programs. WHO teams also conducted field visits. Data capture and analysis was done using Epi Info 3.3.2.

In the review, there was a small evaluation of KITSO training, as part of the overall evaluation of ARV programming in Botswana. The majority of health care workers interviewed (93.5%) stated that the KITSO trainings equipped them to correctly manage patients on ARVs. Despite this, WHO teams found several potential concerns with KITSO trainings: it was heavily reliant on external partners, raising concerns about sustainability and more advanced training was needed to fully equip health care workers with the knowledge to handle difficult ARV cases. Overall, the WHO felt the program could be improved with requiring refresher courses, and by improving sustainable funding through other resources.

4 PROGRAM IMPLEMENTATION

Since its inception in 2000 the KITSO AIDS Training Program has evolved to meet the training needs of a fast expanding and evolving national ART program. After initial start up activities, a faculty was assembled comprised of experienced HIV clinicians from the United States and clinicians from Botswana's public and private health care sector to jointly develop and implement a curriculum that was tailored to meet the critical needs in HIV care training in Botswana. Since then the curriculum has been modified, diversified and expanded to cater to different levels and specialty areas of HIV/AIDS care and treatment in an evolving treatment program. KITSO's flexible approach in program implementation strategies has allowed the quality training of a large number of HCWs without interrupting health care services. While program development and implementation was initially mainly driven by support from international experts, there is now sufficient training and treatment capacity in country to facilitate didactic training and clinical mentoring.

4.1 PROGRAM START-UP (2000 - 2002)

Needs Assessment

After the program's inception in January 2000 the first crucial step in the design of the KITSO AIDS Training Program was the development and implementation of a preliminary needs assessment to assess existing training resources and infrastructure, HIV/AIDS training needs for all categories of health professionals, and technological infrastructure. The needs assessment was performed throughout Botswana by a research team consisting of MOH and HAI representatives. The needs assessment team surveyed healthcare providers at all levels of the healthcare system, from small rural clinics to large referral hospitals in urban areas. A preliminary report of the needs assessment was presented to the MOH in October 2000. The results of the needs assessment provided the MOH and the KITSO team with the information necessary to begin developing a tailored training program that would address the unique challenges that health care professionals face in Botswana.

Reference Group Meeting

After MOH officials reviewed the preliminary needs assessment report, the KITSO team moved ahead to the second step in the program's development: the creation of the KITSO Reference Group. Since one of the goals of KITSO was to have personnel from Botswana, Harvard and other appropriate institutions jointly design and teach the curriculum, it was critical that Batswana medical officers and other health leaders provided input into KITSO's development. Therefore, on December 11-12, 2000, the planning committee of the KITSO AIDS Training Program –which consisted of MOH officials, HAI and BHP representatives - convened a meeting of the program's reference group. Members of the reference group included medical officers, medical specialists, family nurse practitioners, nurses, and counsellors. The purpose of this meeting was to review the preliminary results of the needs assessment, review and comment on the proposed curriculum and

program structure which derived from the needs assessment, suggest potential faculty, and make recommendations for training implementation strategies.

Curriculum development and first training implementations

Curriculum for physicians

To begin the curriculum development process, ten faculty members (physicians) from Botswana were invited to Boston April 9-14, 2001 to participate in the first KITSO faculty meeting. During the week-long meeting, Batswana faculty members were paired with United States- based faculty from Harvard University, Baylor University, and other affiliated organizations to work on a detailed curriculum outline and learning objectives. During the three months following the faculty meeting, faculty pairs from Botswana and Boston committed themselves to develop specific sections of the curriculum using an internet based groupware system KAIRE (Knowledge management Applied to International Research and Education) that has been specially designed by the Harvard KITSO staff for this purpose. In light of the impending roll-out of a national ART program the content of the curriculum focused on HIV/AIDS treatment and care. The first *KITSO Antiviral Therapy Course* was implemented in Gaborone on July 22-29, 2001 by faculty from Botswana and the United States. Forty-five health care workers (41 physicians, 2 pharmacists, 2nurses) selected by the MOH, participated in the course. While the course was primarily directed to physicians, representatives from the nursing and pharmacy professions were also invited to the course for purposes of further curriculum development to cater for those cadres of HCWS.

Curriculum for nurses, nurse counsellors and pharmacy staff

Due to the urgent need for training of other health care workers in HIV/AIDS care and the provision of ARV therapy, a second group of faculty (nurses, nurse counsellors, pharmacists) was assembled in Botswana to provide recommendations on the most effective ways for KITSO to adapt the physician's course for nurses, nurse counsellors and pharmacy staff. This followed a second curriculum development meeting in Boston from September 23 to October 6, 2001, where twenty seven collaborators and faculty members from Botswana and the United States (Harvard, Baylor University, and HRSA) developed the curriculum.

On November 4-11, 2001 joint faculty from the United States and Botswana implemented the first KITSO course in *HIV/AIDS Care and ARV therapy* for nurses and pharmacy staff in Gaborone. Forty-three nurses and pharmacy staff from the first 4 ART sites, Serowe, Francistown, Maun and Gaborone were trained.

In 2002, following the first training implementations, KITSO faculty in Botswana and USA continued to refine and adapt the curriculum to make it most suitable and applicable for the Botswana setting and the new evolving ART program. Two further training courses for nurses and pharmacy staff, as well as one more training for doctors were implemented for HCWs providing ARV therapy in the first four ART sites, Gaborone, Francistown, Maun and Serowe.

In September 2002 the MOH convened a stakeholders meeting in Gaborone to review the effectiveness and acceptability of KITSO training. The recommendations of the stakeholders meeting resulted in the development of a combined training course for doctors, nurses and pharmacy staff that would address fundamental concepts of HIV/AIDS care and ARV therapy,

which was to be complemented by an advanced elective training course tailored to the specific training needs for doctors as well as an advanced elective training course for nurses and other healthcare workers addressing specific training needs for these cadres. Lab staff was to receive their own training. Furthermore it was determined that KITSO training was to set the standard of HIV/AIDS care training in Botswana.

Combined curriculum in AIDS Clinical Care Fundamentals (ACCF)

In December 2002 the first combined training course in *AIDS Clinical Care Fundamentals* (ACCF) was implemented by Botswana faculty in Gaborone.

4.2 ARV ROLL-OUT TRAINING SUPPORT (2003 - 2004)

Starting in 2003, the Botswana government embarked on the expansion of the ART program from its original four to 32 treatment sites country wide by the end of 2004. This expansion was accomplished through a step-wise approach over a two year period. The initial 32 sites included a main clinic, usually termed an Infectious Disease Care Clinic (IDCC) which was integrated into the existing hospital and was linked to 2-5 designated satellite clinics which conducted screening and referrals. Treatment sites were first established in easily accessible, population dense areas and then expanded to smaller and more rural sites with the roll-out of ART.

The training preparation of a critical mass of HCWs at each treatment site was among other factors an essential step for the successful countrywide roll-out of ART. To accomplish this task without major interruption of health care services the KITSO team devised a plan by which core treatment teams from each prospective treatment site would receive didactic training and clinical mentorship in the provision of ARV therapy ahead of the ART roll-out to their site. Core treatment teams, which were prioritized for training, consisted of 20 staff from the hospital IDCC and four staff from each satellite clinic. The hospital team was commonly comprised of 2-4 doctors, 10-12 nurses, 2-4 pharmacy staff, and 1-2 social workers. To accomplish the implementation of this training plan in step with the ART roll-out, the KITSO faculty joined forces with the ACHAP Clinical Preceptors program. The following approach was adopted to deliver didactic training and clinical mentoring at each site:

(1) Core treatment teams first received training in *ACCF* in either a facility-based or centralized format, depending on the size of the treatment site. Large treatment sites able to release sizable groups of HCWs for training were offered facility-based training, while smaller treatment sites with staff limitations were pooled with other facilities of similar size, to receive centralized training over a period of 4-6 weeks (e.g., releasing five staff per week over four weeks to accomplish the training of 20 staff). This training format for smaller facilities enabled simultaneous training of core treatment teams from multiple sites, while avoiding the interruption of ongoing health care services by taking all HCWs from a single site.

(2) After the successful completion of *ACCF* training, one doctor, one nurse, and one pharmacy staff member from each treatment site were attached to one of the two referral hospitals for the *Integrated Practical Attachment*. At the conclusion of the attachment training, participants returned

to their treatment sites equipped to begin ART efforts there and to provide basic mentorship to other HCWs at that facility.

(3) As each treatment site's opening date approached, the *Laboratory Fundamentals* module was conducted at the facility. For support staff, the satellite module, *Introduction to HIV & Biosafety*, was implemented alongside this training, usually on consecutive days.

(4) Before the launch of each treatment site, an experienced international ART practitioner (preceptor) from the ACHAP Clinical Preceptorship Program was assigned to the treatment site for 3-6 months to assist in the final preparations and the initial ART launch and provide ongoing logistical assistance, clinical mentoring, and KITSO lectures.

4.3 ART SITE SUPPORT TRAINING (since 2005)

With the successful completion of the ART roll-out, KITSO introduced the advanced elective training modules in *Medication Adherence Counselling*, *Advanced HIV/AIDS Care and Treatment*, and *Sexual and Reproductive Health in ARV Infection*. To satisfy the evolving needs for advanced and specialized training, all three courses were developed to provide responsibility-specific continuing and advanced training for HCWs from ART treatment sites. These courses, conducted in a centralized location, built specialized knowledge and skills integral to the long-term success of Botswana's ART program.

The advanced elective modules - and the additional satellite module *Introduction to AIDS Clinical Care* for family welfare educators, lay counsellors and health educators—strengthened the ART program and improved the quality of care received by patients in Botswana. *Introduction to AIDS Clinical Care* is conducted at ART sites by the staff of the BHP-PEPFAR Master Trainer and Site Support Program, another MOH coordinated training program that provides on-site supportive training and mentoring and clinic management assistance to operating ART sites.

Following the roll-out training of core HCW teams for each treatment site, *ACCF* training became the baseline HIV/AIDS care training for all HCWs in Botswana. The further expansion of ART sites to the satellite clinics, staff reassignments, resignations, and replacements create a continuing need for baseline training provided in the *ACCF* module.

4.4. CONTINUING EDUCATION

KITSO-BHP has introduced a number of continuing education efforts and resources, including case conference calls, KITSO Reference Corners, Care and Treatment Resource Packets, instructional CD-ROMs and Video Tapes and an ART guidelines handbook.

Case Conference Calls were held during the ART roll-out phase with 2-3 ART sites participating in each call as a means of sharing experience, information, and ideas among Botswana's HCWs. KITSO teaching faculty lead the calls and discussions of challenging patient cases from the participating sites.

KITSO Reference Corners were established in the libraries in Botswana's two referral hospitals, Nyangabgwe Referral Hospital and Princess Marina Hospital. Reference corners included copies of current international medical journals and relevant handbooks and research and reference resources.

'Care and Treatment Resource Packets' were timely ART-related readings compiled by KITSO faculty when updating the teaching material for *Advanced HIV/AIDS Care and Treatment*. These packets of journal articles were sent to every operating ART site on a quarterly basis, as a reference resource for HCWs.

Over the course of the program KITSO has developed one video tape series and three instructional CD-ROMs that were used for refresher training as well as distance education. The most recent is an audio-enabled CD-ROM of *ACCF*, released in 2008 for the dissemination of the revised 2008 treatment guidelines.

In 2008 KITSO developed the 2008 ART guidelines handbook for easy reference for all HCWs in Botswana.

4.5 TRAINING OF TRAINERS (TOT)

Right from KITSO's inception, program sustainability was one of the main goals of the program. Training of trainers in HIV and AIDS care and treatment has been an integral part of KITSO-BHP efforts. Evidence of this can be seen in the existence of the PEPFAR Master Trainer Program, which utilizes trainers who were early participants in KITSO's didactic courses, practical training and case conference calls. Prior to their engagement as Master Trainers, some had gained valuable teaching experience as KITSO faculty members.

As a result of the training efforts of KITSO-BHP and other KITSO training partners, Botswana now enjoys a large pool of experienced and knowledgeable clinicians who are now engaged in training their colleagues and managing facilities and programs. Due to this achievement, HCWs receive clinical mentorship at their respective site after graduating from ACCF, and this is why the practical training module (*Integrated Attachment*) was phased out in 2005.

While KITSO's program development and implementation was initially mainly driven by support from international experts, KITSO is now fully run by local faculty and support staff.

5 SUSTAINABILITY

Right from KITSO's inception as the national training program in HIV/AIDS care and treatment, long term program sustainability beyond donor funding was one of its main goals. Therefore program strategies and activities needed to focus on (1) the establishment of local capacity (2) the establishment of a training coordination unit within the Ministry of Health and (3) the provision of sufficient in-country funds to fully sustain the program.

Capacity-Building

From the start all program activities, including curriculum development and implementation have been carried out under the direction of MoH leadership and in consultation with local stakeholders. This resulted in a program that was tailored to respond to the special needs and specific settings of Botswana.

With the initial lack of local expertise in AIDS treatment, a strategy was chosen, whereby a group of local faculty was paired with experienced clinicians from the US to begin with curriculum development and implementation of the first training courses. This initial support and skills transfer started the process of local capacity building. Further program development and implementation continued in collaboration with international experts from various partner organizations (ACHAP preceptorship program, WHO, BHP, U-Penn, Baylor) in Botswana. While the expertise of local faculty was augmented through the collaboration of international faculty, the experience and commitment of local faculty was vital to the program's long term sustainability.

As of 2011, the KITSO AIDS Training Program is fully run by local trainers and owns a curriculum that is modular based, multi-disciplinary and responsive to the evolving training needs of its advanced ART program.

Training Coordination

In 2006 the MOH established the KITSO Training Coordination Unit (KTCU) to oversee all HIV/AIDS training related activities under the Department of HIV/AIDS Prevention and Care (DHAPC). Following the establishment of the KTCU a transition plan was put in place that would allow the transition and integration of all training coordination components, including training certification and training database from KITSO-BHP to the MOH.

In January 2010 three KITSO-BHP training coordination officers were seconded to KTCU to build capacity and to provide skills transfer within the KTCU. Since then all training coordination activities have been carried out from the training coordination office at KTCU, while KITSO-BHP continues to assist with curriculum development and training implementation.

Program Funding

While ACHAP provided the majority of funding for KITSO-BHP during the programs 10 years of operation, the MOH has contributed significantly to program costs. The MOH provided office space, and covered costs for training venues, participants' travel and stipends. Staffing costs were shared between ACHAP and MOH. While leadership and direction were provided by key MOH employees, personnel costs for program development and implementations as well as training coordination were provided by ACHAP.

According to the 2010-2011 KITSO transition plan, the MOH was to solicit funds by the end of 2011 to fully sustain the KITSO program. Training coordination positions were to be incorporated

under the KTCU into the MOH staff establishment, while funds were to be secured to outsource training implementation/curriculum development to a capable training institution.

To give the MOH an opportunity to put in place capacity and resources that would ensure the sustainability of the training program and ensure uninterrupted training activities, ACHAP as the main funder of the training program has approved a 5-month funding extension until March 31, 2012.

Challenges

The high staff turn-over due to economic migration provides a continuous challenge of maintaining sufficient human resources for health. This has a direct impact on Botswana's capacity to provide ART but also in KITSO's effort to build sufficient training capacity in the public sector.

Release of HCWs from their care responsibility in government facilities to conduct training has been a great challenge. This has resulted in the failure of a TOT training model and the need to hire full-time dedicated trainers to provide ongoing training.

The recent global economic crisis has also affected Botswana, whose main income is revenue from diamond sales. In addition, the generous donations from the international community have been dwindling. Government expenditure had to be cut down in order to accommodate the government's budget cuts. These economic constraints could have a direct impact on the government's ability to financially sustain the KITSO program in future.

6 PROGRAM OUTPUTS

6.1 CURRICULUM DEVELOPMENT

Since 2001 KITSO-BHP, in collaboration with national and international experts, has developed a module based, country specific, multi disciplinary, and standardized training curriculum. Training modules are grouped into core training modules, advanced elective training modules and satellite training modules.

Core Modules:

- AIDS Clinical Care Fundamentals
- Integrated Attachment
- Lab Fundamentals

Advanced Elective Modules:

- Medication Adherence Counseling
- Advanced HIV/AIDS Care and Treatment
- Sexual and Reproductive Health in HIV Infection

Satellite Modules:

- Introduction to HIV and Biosafety
- Introduction to AIDS Clinical Care

All training modules have been developed according to evolving training needs identified by the MOH.

6.2 TRAINING IMPLEMENTATION

KITSO training has been essential to the skills preparation of all 32 national treatment sites during the countrywide rollout as well as ongoing training to support the continued functioning and expansion of the national treatment program. As of October 2011, 14,896 training participants benefited from KITSO's various courses and modules. The baseline training *AIDS Clinical Care Fundamentals* has proven to be especially successful, having trained over 8073 health care workers (HCW) alone.

Since 2006 KITSO-BHP has been implementing distance training as an alternative training format utilizing an audio-enhanced CD ROM of 'AIDS Clinical Care Fundamentals'. Out of 8073 training participants in *AIDS Clinical Care Fundamental* 511 have been trained through distance training.

Training of trainers (TOT) in HIV and AIDS care and treatment has been an integral part of KITSO-BHP efforts. As a result of this training effort Botswana now enjoys a large pool of experienced and knowledgeable clinicians who are now engaged in mentoring their colleagues at their treatment sites. Furthermore all incoming international preceptors underwent KITSO training as part of their orientation training. The PEPFAR Master Trainer Program, established in 2005, evolved out of KITSO trained doctors, nurses and pharmacists. While KITSO's program development and implementation was initially mainly driven by support from international experts, KITSO is now fully run by local faculty.

Figure 1: Training Course Implementation: Timeline and Training Output

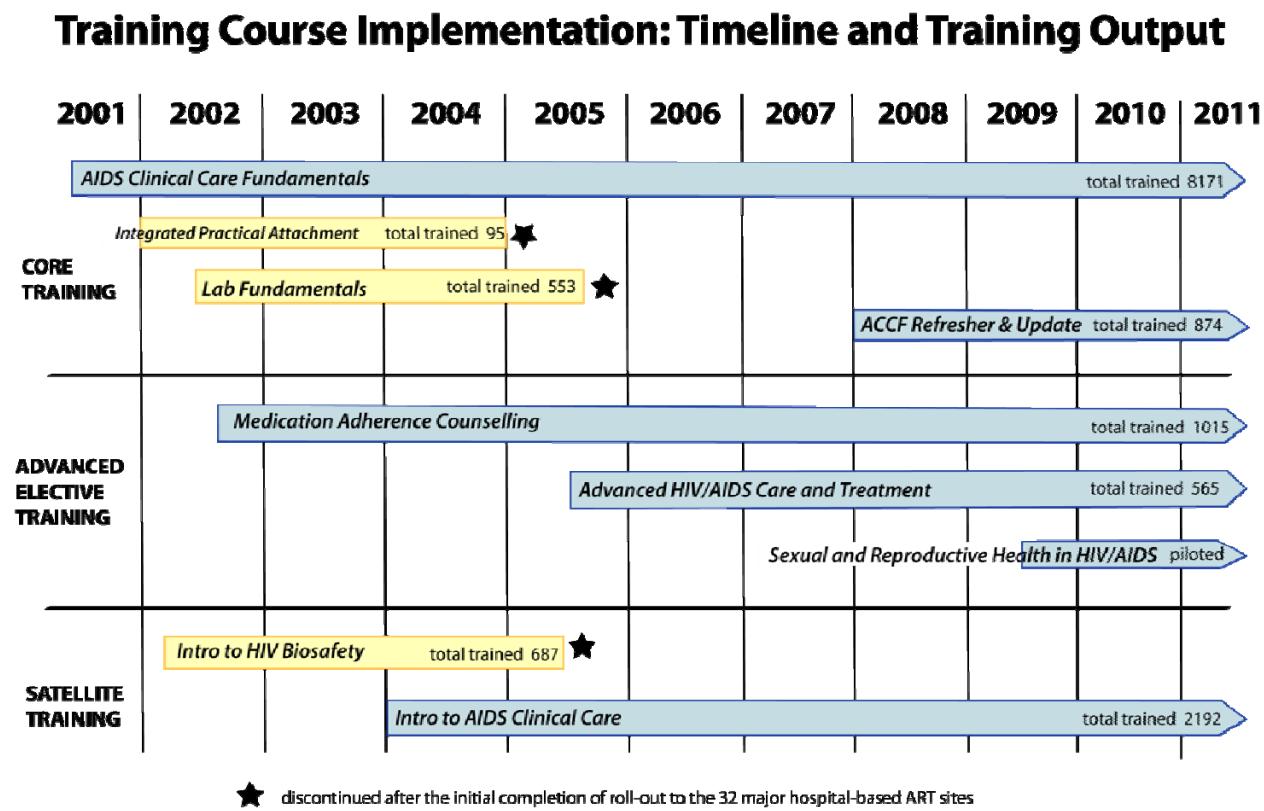


Table 1: KITSO-BHP Training Summary, July 2001 to October 2011

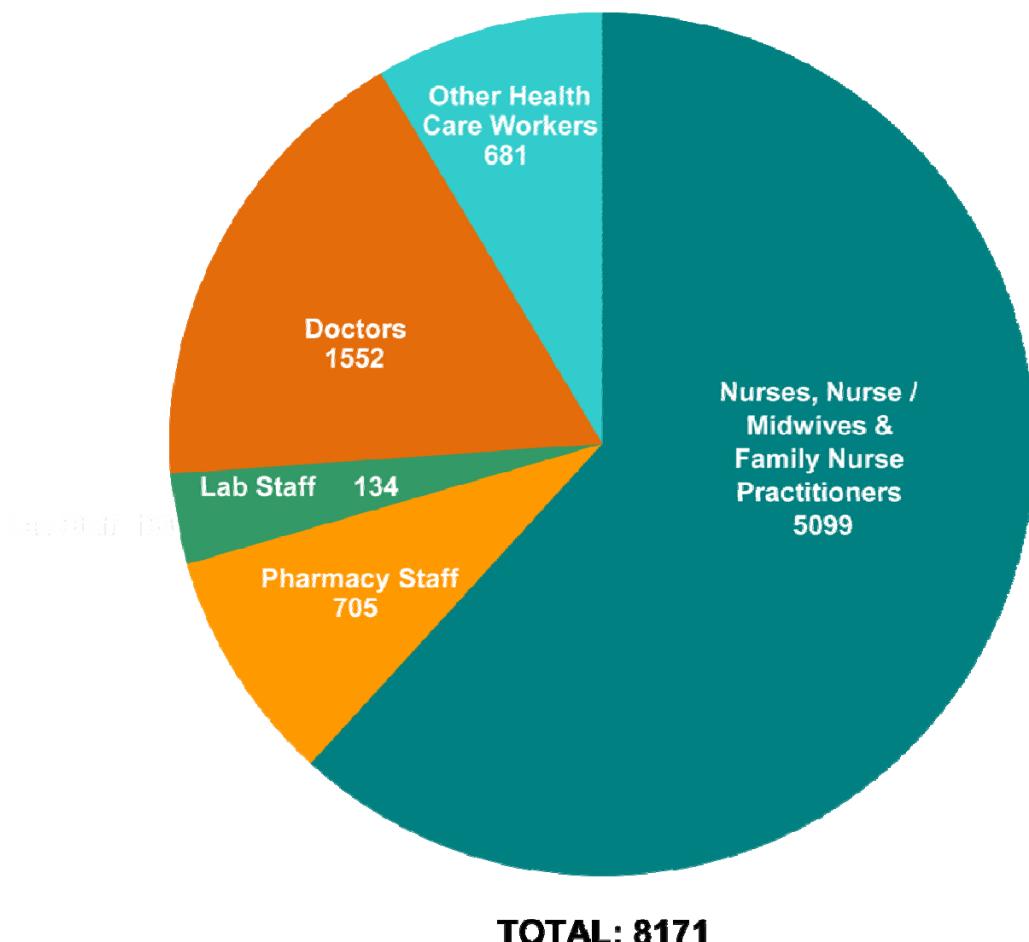
Course	Training Contacts
AIDS Clinical Care Fundamentals	8171 participants
AIDS Clinical Care Fundamentals Refresher/Update	874 participants
Laboratory Fundamentals*	553 participants
Introduction to HIV and Biosafety*	68 participants
Introduction to AIDS Clinical Care**	2192 participants
Medication Adherence Counselling	1015 participants
Advanced HIV/AIDS Care and Treatment	565 participants
Sexual and Reproductive Health in HIV Disease	24 participants

*Module phased out following the initial completion of ARV rollout to 32 treatment sites.

**Implemented in collaboration with the PEPFAR Master Trainer Program

AIDS CLINICAL CARE FUNDAMENTALS

CUMULATIVE TRAINING NUMBERS BY PROFESSION, JULY 2001 - OCTOBER 2011





KITSO training participants and faculty during an *AIDS Clinical Care Fundamentals* training in September 2011. With this group, the ACCF module accomplished 8000 health care workers trained

6.3 REFERENCE AND RESOURCE SUPPORT

KITSO Reference Corners

In 2002 KITSO Reference Corners have been established in the two referral Hospitals, Nyangabgwe Hospital and Princess Marina Hospital in an effort to avail up-to-date resources to health care workers, medical students, and faculty. KITSO reference corners were accommodated in the hospital libraries and were coordinated by the hospital librarian in collaboration with KITSO-BHP staff. Each KITSO corner has been equipped with a computer, to allow access to reference materials online, a selection of relevant medical textbooks as well as ongoing journal subscriptions until December 2010.

Training equipment

To support ongoing training at health facility level, in 2003 KITSO-BHP provided 10 district hospitals in Maun, Serowe, Selebi Phikwe, Bobonong, Mochudi, Kanye, Ramotswa, Lobatse, Molepolole and Mahalapye with the necessary training equipment (lap top computer and LCD projector) to allow the facilitation of standardized KITSO lectures during in-service training activities.

Teaching Tools

Over the past 10 years KITSO-BHP has developed a number of teaching tools to enhance its training efforts.

CD-ROMs and Video tapes

Between 2001 and 2008 KITSO-BHP developed three instructional CD-ROMs and one video tape series that were used to facilitate distance education

- 2001: CD-ROM Course for physician: *Antiretroviral Therapy, Lessons from Botswana: A Comprehensive Instructional Guide on HIV and AIDS Medicine for Health Professionals*.
- 2002: Video Tape Series Course for Nurses: *Antiretroviral Therapy*, a recording of lectures delivered during KITSO course implementation February 2002.
- 2006: CD-ROM KITSO baseline training course *AIDS Clinical Care Fundamentals*: This CD-ROM contained recordings of lectures and case discussions delivered by KITSO faculty and provided high-quality instructions tailored specifically to the Botswana national program.
- 2008: KITSO baseline training course *AIDS Clinical Care Fundamentals*: This CD-ROM has replaced the 2006 version, after the update of the 2008 national treatment guidelines.

Pill Charts and Pediatric Dosing Charts

During 2002, under the direction of pediatric KITSO-BHP faculty, pediatric dosing charts were developed to verify the calculation of correct dosages of ARV therapy for Children. Furthermore a pill chart pictorially depicting the first, second and third line ARV therapy outlined in the national treatment guidelines was introduced.

The dosing charts and pill charts were reviewed and updated according to changes in the national guidelines. In 2008 the KITSO pediatric dosing chart was replaced by the WHO dosing chart.

Handbook of the 2008 Botswana National Treatment Guidelines

KITSO-BHP faculty in collaboration with the national guidelines committee developed a hand-book of the 2008 national ARV treatment guidelines for quick and easy reference for all HCW in Botswana.

KITSO-BHP also contributed towards the printing costs of the guidelines handbook.

6.4 MONITORING AND EVALUATION

Training data base

From the first training implementation in 2001, KITSO-BHP has developed mechanisms to ensure the tracking of all training data. As the training program expanded, and the reporting requirements became more complex, a training data base was developed that greatly simplified the management of training data, and enabled different permutations of data for various report requests, e.g. for the funders, the health facilities or the MOH.

In 2010 in line with the KITSO-BHP training coordination transition to the MOH, the KITSO-BHP data base has been fully transitioned and was expanded and adapted to serve as the national training database for all programs under the DHAPC.

Standardization of training evaluation and certification

KITSO-BHP is using standardized evaluation tools and methods to assess the relevance and quality of all its training courses, as well as the knowledge base of training participants before and after training.

Training certification is based on standardized criteria which are full course attendance and a stipulated pass mark in the final assessment.

Long-term training evaluation

In 2006 BHP-KITSO in collaboration with the MOH conducted a long-term training evaluation (LTE) to assess impact on individual HCW's care and treatment knowledge and skills, professional development, and knowledge retention. In addition, the LTE assessed the impact of KITSO courses on facilities providing treatment and care as part of the national ART initiative. The report was released by the MOH in 2007.

6.5 TRANSITION OF KITSO TRAINING COORDINATION TO THE MOH

In 2010 three KITSO-BHP training coordination officers were seconded to the MOH to build capacity and provide skills transfer within the KCTU. Since then all training coordination activities including training certification and training data tracking are carried out from the training coordination office at the KTCU.

7 CONCLUSION

As a single, standardized, national training program coordinated by the MOH, the KITSO AIDS Training Program is a model of HIV/AIDS care training which can expand health care capacity in response to the HIV/AIDS epidemic. KITSO has been an indispensable element in Botswana's nationwide rollout and establishment of the national ART program. Through timely implementation of a module based, standardized curriculum, broad collaboration, high quality country specific instruction, effective monitoring and evaluation, and strong MOH leadership and coordination, KITSO has set a standard that is acknowledged beyond the borders of Botswana.

The KITSO training model has served many countries in the region in their effort to scale up their ART programs. Furthermore, many KITSO trained HCW have migrated to neighbouring countries where they now play a major role in the expansion of HIV/AIDS care capacity. To this effect, KITSO has not only benefited Botswana's health care community and subsequently its people in need for quality HIV/AIDS care but had a far more reaching impact within the region.

With the further scale up of ART as well as with emerging challenges of a maturing treatment program it is paramount that training is ongoing and evolving. Therefore mechanisms need to be put in place, that assure sufficient financial resources and ongoing capacity building to sustain this very important training program.