



USAID | **ZAMBIA**
FROM THE AMERICAN PEOPLE



THE MEDICAL INJECTION SAFETY PROJECT

PREVENTING THE MEDICAL TRANSMISSION OF
HIV IN ZAMBIA
FINAL REPORT



SEPTEMBER 2009

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc. in collaboration with Jhpiego and The Manoff Group.



THE MEDICAL INJECTION SAFETY PROJECT

**PREVENTING THE MEDICAL TRANSMISSION OF HIV IN ZAMBIA
FINAL REPORT**

Contract No. GHS-I-00-03-00025-00, Task Order No. 001

The Medical Injection Safety Project was a USAID/Washington project implemented by Chemonics International Inc. and its partners Jhpiego and The Manoff Group

Photographs are courtesy of MISP.

Project staff would like to dedicate this report to all organizations and individuals working to improve infection prevention and increase injection safety to benefit the health of Zambians.

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

CONTENTS

Executive Summary	1
Section I. Commodity Management and Procurement	5
Section II. Capacity Building	13
Section III. Behavior Change Communications	21
Section IV. Policy Environment	27
Section V. Lessons Learned and the Way Forward.....	33

CD-ROM Annex. Project Tools and Reports

Front Cover: Health care providers participating in a MISIP training activity.

ACRONYMS

BCC	behavior change communications
CSO	civil society organization
DHMT	district health management team
HMIS	health management information system
IP	infection prevention
IS	injection safety
M&E	monitoring and evaluation
MSL	Medical Stores Limited
MISP	Medical Injection Safety Project
MOH	Ministry of Health
NIPWG	National Infection Prevention Working Group
PEP	post-exposure prophylaxis
PHO	provincial health office(r)s

EXECUTIVE SUMMARY

Project Background and Context

The Zambia Demographic Health Survey in 2001-2002 estimated a national HIV prevalence of 15.6 percent. Despite an encouraging drop to 14.3 percent in the 2007 survey, HIV prevalence remains a major concern, in addition to hepatitis B and C. The poor state of infection prevention and injection safety (IP/IS) practices in Zambia has been highlighted through assessments of post-abortion care (1997-1998), midwifery education programs (1999-2000), and hospital accreditation surveys (1999-2000) conducted by the Ministry of Health (MOH). In response to the clear need for improved practices across the country that these assessments demonstrated, the MOH in 2003 launched National Infection Prevention Guidelines and formed the National Infection Prevention Working Group (NIPWG), a multi-organizational forum meant to strengthen and coordinate stakeholder involvement in improving IP/IS practices nationwide.

In 2004, the U.S. President's Emergency Plan for AIDS Relief identified Zambia as one of 15 priority countries for scaling-up efforts to prevent the medical transmission of HIV through safe injection practices. This led to establishment of the Zambia Medical Injection Safety Project (MISP), implemented by Chemonics International Inc. in collaboration with Jhpiego and The Manoff Group, the project aimed to significantly reduce the occurrence of unsafe and unnecessary injections by improving the management and safety of blood specimens and increasing injection safety, thereby mitigating the medical transmission of HIV in Zambia.

The project identified occupational exposure to infection as a significant means of transmission of blood-borne diseases. MISP staff identified the people most at risk of infection through unsafe injections, as injection recipients (patients); health care providers, through contaminated needles and syringes; and the wider community, through exposure to contaminated waste, including sharps.

Problem and Solutions

In 2004, Zambia faced major obstacles to improving injection practices. Recurrent shortages in injection safety equipment and supplies existed throughout the country at hospitals, district health care centers, and local dispensaries. Major factors contributing to the chronic shortages included inadequate procedures to forecast and project procurement needs, insufficient and outdated inventory control systems that failed to alert managers to procurement shortages, and prioritization of essential drugs over safety products. In addition, inadequate knowledge among health care providers about IP/IS best practices and a lack of coordination among policy-makers hampered safe injection practices. There was also an observed preference for treatment by injection (as opposed to safe and effective alternative routes of medication) on the part of community members, with corresponding resistance to change in some behaviors of health care providers. The districts were also not budgeting and planning for infection-prevention commodities and activities such as training.

During the last four years, MISP focused on strengthening systems and improving practices to overcome these obstacles. The project supported a host of interventions designed to build the capacity of health facilities at all levels of health care to ensure good planning, forecasting, budgeting, prioritization, procurement, and distribution of infection prevention and injection safety commodities. This was achieved through strengthening district-level public health facilities' infection prevention and injection safety systems, developing and institutionalizing norms and policies, establishing and managing commodity procurement and logistical systems, monitoring and evaluating project impact, and educating the wider community on safe injection practices.

This report is organized according to the following areas — commodity management and procurement, capacity building and training, behavior change communications (BCC), and the policy environment. However, these areas were intrinsically linked and crosscutting. Project activities often incorporated elements of all four areas, and the success of the project was due to the integrated approach undertaken by the MISP team. An overview of each area is presented below.

Procurement. MISP introduced modified, streamlined, and pro-active procurement processes, which reduced commodity procurement lead-time from 60 to 14 days (national average), improving efficiency and reducing delivery delays. The project worked with the districts to maintain adequate and reliable inventory data and to carefully monitor usage, requirements, and disposal needs. During the pilot phase of the project, the project bought computers and printers and delivered them to health care centers to replace handwritten inventory record systems. This allowed managers to access up-to-date information on stock, usage and depletion, and distribution, and made it easier to stay on top of expiration time schedules. However, during the extension phase, there was no available funding for this activity. The project found that a computerized recordkeeping system would have made a greater impact on improving inventory management and recommends that MOH and its partners place greater emphasis on this.¹

Capacity building. MISP increased the capacity of the overall health system to monitor and undertake safe IP/IS practices. In all 72 districts of the country, health care facility managers and health care providers in the public and private sectors participated in MISP awareness-building activities and received training in IP/IS practices, waste management, and management of disposal sites. To support sustainability, MISP, with district health management teams and district-level hospitals, made supportive supervision visits and worked to incorporate IP/IS commodities into their budget allocations and helped establish IP committees at health institutions. The project also strengthened the capacity of health care facility managers to segregate health care waste at the point of generation through introduction of a color-coding system for bin liners to differentiate clinical and non-clinical waste, fencing and construction of appropriate final disposal facilities, such as placenta and dumping pits, and improved management of disposal sites.

¹ As a follow-up on this, MOH has begun working with other partners like JSI/DELIVER to strengthen record-keeping systems at the central, DHMT, and district hospital levels. This includes training for staff that manage integrated logistics systems, as well as needed equipment and software.

Behavior change communications. MISP supported the MOH in influencing changes in IP/IS perceptions and behaviors among health care providers, clients/patients, and community members to reduce the demand for and use of unnecessary injections. This was done through capacity building of health care providers, which ensured that they had adequate knowledge and skills to make informed decisions, and through public education via print and folk media. Finalization and dissemination of Health Care Waste Management Guidelines — through distribution of guidelines, training, and supportive supervision follow-up — helped reinforce the capacity-building activities. The project developed the guidelines in coordination with the Ministry of Health, Ministry of the Environment, and the Environmental Council of Zambia.

Policy. Nationally, MISP supported the MOH to put in place a National Infection Prevention Policy and corresponding guidelines, resulting in a stronger enabling environment for implementation of standard IP/IS activities. The national guidelines are in use, but await a final consensus-building meeting, which will be called by the MOH for official adoption. This meeting was budgeted for by the MOH and was scheduled to occur before December 2009. In addition, MISP collaborated with the MOH to improve existing monitoring and evaluation (M&E) systems, primarily by incorporating new IP/IS indicators into the health management information system (HMIS) and promoting assessment against these indicators. MISP also strengthened the National Infection Prevention Working Group, resulting in improved coordination, and strengthened the ability of members to increase awareness of IP/IS practices within a wide range of institutions. As a result, IP/IS activities were incorporated into curricula of general nursing schools, registered nursing schools, and midwifery schools, as well as into on-site supportive supervision tools and programs. During the project, our team advocated for incorporation of IP/IS activities into the School of Medicine curriculum, and provided guidelines to the medical schools to support this. As of the end of the project, the School of Medicine was still in the process of strengthening the IP/IS component, with support from the NIPWG, as well as the USAID-funded Health Services and Systems Program.

FIRST PERSON

Outstanding Service in Infection Prevention and Injection Safety



Gertrude Musunka has been a practicing nurse since 1994. In December 2002, she was appointed infection prevention coordinator for Ndola Central Hospital. Her duties included IP activities in all wards, theaters, laboratories, and departments.

With no formal training in infection prevention, except for a brief orientation by her predecessor, Gertrude was determined to improve practices in the hospital, but lacked direction. Despite carrying out routine activities, including monitoring IP activities, her impact was limited because she did not fully understand the issues around infection prevention and injection safety.

“In 2003, the USAID (U.S. President’s Emergency Plan for AIDS Relief)-funded Prevention of Medical Transmission of HIV in Zambia program began conducting IP/IS activities, which included on-site training in best practices. Immediately I was appointed as IP focal point person and assumed a challenging role of lobbying for constant availability of commodities from management.”

– Gertrude Musunka

Through MISP, she was trained in performance and quality improvement — an eye-opening experience — where she learned that IP/IS is possible in any setting. A comprehensive training in IP/IS best practices followed this, which included segregation of waste from the point of generation and the importance of instrument processing. During training, Gertrude and her colleagues developed action plans for their hospitals and were given standards to help identify gaps. Through lobbying of her executive director, Gertrude secured budget allocations to purchase IP/IS commodities — a significant breakthrough.

At Ndola Hospital, Gertrude organized orientation sessions and training for other health care providers, including doctors and maids, and trained 212 staff members. By facilitating a number of IP/IS sessions, she became a clinically competent trainer.

Gertrude recently received a Labor Day Award from the City of Ndola in recognition of her hard work and dedication to duty. She met with U.S. Ambassador to Zambia Martin Brennan, who was impressed with the IP/IS program during a tour of the hospital. Through her efforts, Gertrude has brought significant change to the attitudes and practices of hospital staff. Today, she is a role model, constantly working to improve her own skills and build the capacity of her fellow colleagues — and inspiring those around her in the process.

SECTION I. COMMODITY MANAGEMENT AND PROCUREMENT

A major obstacle to affecting changes in IP/IS behaviors among health care providers was a lack of injection safety commodities in most public health facilities. During the pilot phase of the project, it became evident that there were gaps in essential equipment that health care providers needed to introduce and reinforce changes in IP/IS behaviors.

As a result, MISP worked with the MOH to improve commodity management systems within district facilities. By supporting the MOH in planning, budgeting, forecasting, procuring, and distributing IP/IS commodities, MISP ensured the continued availability of essential commodities even after the project's closure.

Standardizing the essential IP/IS procurement commodity list. Before initial assessment activities undertaken by the project, MISP supported the National Infection Prevention Working Group in advocating for the inclusion of IP/IS commodities on the Essential Drug List. This list is the official policy document of the MOH, which defines which drugs should be available in all public health facilities. MISP's work led to the addition of sharps boxes, personal protective equipment (PPE) such as boots and fluid-proof aprons, face shields, masks, and color-coded waste receptacles on the list. The standardized list assists health facilities in planning for their IP/IS commodity needs, thereby improving the quality of service provision. The list, based on World Health Organization recommendations, classified IP/IS commodities into four categories: injection equipment, PPE, disinfectants and antiseptics, and waste receptors.

Commodities Procured by MISP

Injection Equipment

Disposable needles (21 g, 23 g)
Disposable syringes (2 mL, 5 mL, 10 mL)
Disposable cannulars (18 g, 24 g)

Personal Protective Equipment

Utility gloves (medium, large)
Heavy-duty gloves
Examination gloves (medium, large)
Surgical gloves (7½, 8)
Plastic aprons
Goggles/face shields
Gum boots

Disinfectants and Antiseptics

Sodium hypochlorite (3.5% w/v)
Sanitizer hand rub

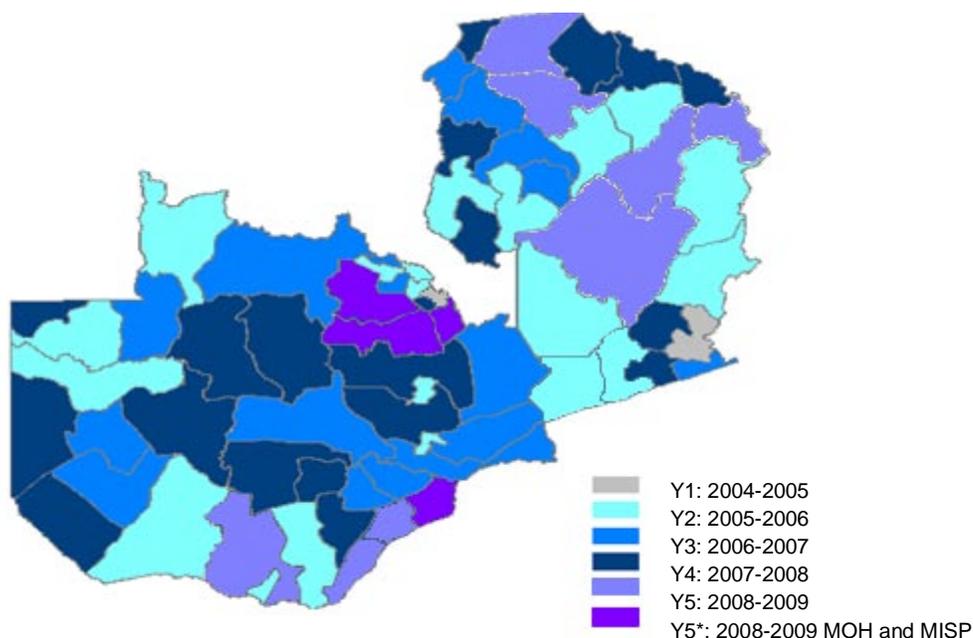
Waste Receptors

Color-coded bins
Color-coded bin liners (green, black)
Sharps boxes (5L)
Buckets

Identification and selection of districts. Before embarking on initial assessment visits, the project team contacted MOH provincial health offices (PHOs). Initially, each PHO selected two districts per year in its province to undergo needs assessments by the project. In most cases, the PHO gave priority to areas with an identified need for IP/IS commodities; for example, areas in hard-to-reach locations.

In 2004, during the pilot phase of the project, MISP worked in just two districts: Ndola (Lusaka Province) and Chipata (Copperbelt Province). Upon extension of the project in 2005, MISP conducted assessments and follow-up activities in all 72 districts. The map below illustrates the districts.

Exhibit 1. Districts Assessed for Commodity and Procurement Management in 2004-2008



Year 1 – Ndola (Copperbelt) and Chipata (Eastern). **Year 2** - Sesheke and Lukulu (Western), Mansa and Samfya (Luapula), Kabwe and Serenje (Central), Zambezi and Mwinilunga (Northwestern), Livingstone and Kalomo (Southern), Lundazi and Chama (Eastern), Lusaka (Lusaka), Mufurila and Kitwe (Copperbelt), Kasama and Mungwi (Northern). **Year 3** – Senanga and Mongu (Western), Kawambwa and Nchelenge (Luapula), Mumbwa and Mkushi (Central), Solwezi and Kabompo (Northwestern), Mazabuku and Monze (Southern) Petauke and Nyimba (Eastern), Kafue and Luangwa and Chongwe (Lusaka), Chililabombwe and Chingola (Copperbelt), Luwingu and Chilubi (Northern), Chadiza (Eastern). **Year 4** – Kalabo and Kaoma and Shan’gombo (Western), Mwense and Milenge and Chiengi (Luapula), Kapiri Mposhi and Chibombo (Central), Kasempa and Mufumbwe and Chavuma (Northwestern), Itezi tezhi and Namwala and Choma (Southern), Katete and Mambwe (Eastern), and Mpulungu and Mbala and Nakonde (Northern). **Year 5** – Lufwanyama, Masaiti, Kalulushi, Mpongwe, Luanshya (Copperbelt) and Siavonga (Southern). **Year 5* (Districts where MOH provided full financial support for the assessment and training activities)** – Kazungula and Gwembe and Sinazongwe (Southern), Isoka and Mporokoso and Kaputa and Mpika and Chinsali (Northern).

Assessing existing gaps in commodity supplies. MISP teamed-up with MOH procurement officers and pharmacy specialists from the central, provincial, and district levels to conduct assessments in district health facilities. In addition to identifying commodity and procurement gaps, needs assessments ensured that demand-based systems were in place to regulate procurement processes. MOH staff were involved in assessment activities to encourage ministry ownership of the project from the beginning. Engaging MOH ensured knowledge transfer to ministry staff as they were exposed to the issues, causes, and impact of commodity shortages and inadequate management systems, and were involved in mitigation activities supported by the project. MOH staff assisted MISP in developing

assessment tools (see accompanying CD) and observed procurement best practices, increasing their own knowledge, encouraging the transfer of that knowledge to their colleagues and counterparts, and promoting the sustainability of project activities.

The project observed that stock levels of essential IP/IS commodities were below 50 percent in all districts. Most health facilities lacked adequate financial resources and proper procurement systems or were poorly implementing existing systems, and observed knowledge gaps existed among procurement staff and commodity managers.

The assessments provided MISP with information needed to draw up detailed initial procurement lists tailored to each facility's individual procurement needs. This helped identify systems and knowledge gaps in IP/IS, which led to design of training focused on solutions to specific problems. Photos taken at the sites during the assessment phase were used during training for discussions about problem-solving. Participants found this useful in that it introduced practical and visual "evidence" into the training situation.



From left: Catherine Munganaga, Western Province provincial pharmacist, alongside MISP Procurement Advisor Matildah Zyambo, conducts assessments at Luampa Mission Hospital in Kaoma District.

Commodity procurement to support the program objectives. Having developed an individualized list of commodities required as a starter stock (three to four months' supply) for a specific facility, project procurement staff worked with the facility to determine the quantity of commodities needed, based on consumption rates observed at the time of the assessments. It was important to emphasize the need for a demand-driven procurement system so limited resources could be allocated most efficiently across health care facilities. MISP put in place M&E systems where they did not exist (or improved them where they did) to ensure that facility records complied with the following standards:

- Stocks of drugs and medical surgical supplies on the essential drug list are between minimum and maximum quantities
- All stock control cards and books are regularly updated (i.e., upon use of stock)
- Monthly physical counts and "first-in, first-out" procedures followed
- Collection of IP/IS commodity indicators completed



A sister-in-charge at the University Teaching Hospital in a well-organized commodities stockroom tracks commodity inventories with an accountability book.

Once commodity needs were identified, MISP sought authority to procure the goods from MOH, which was responsible for the associated distribution costs. A request for quotations was then issued to local firms, inviting them to participate in the competitive bidding process. Offers were evaluated, and the most competitive bid was chosen by a selection committee, including MISP staff and representatives from MOH and Medical Stores Limited (MSL), the MOH's health commodity warehouse. All procured commodities were then delivered to MSL for distribution to the assessed districts.

In total, MISP procured \$1,400,000 in IP/IS commodities across 67 districts. By providing facilities with adequate initial stocks of essential IP/IS equipment, the project was able to support a broader range of activities, including training and behavior change communications among health care providers. This also created an appreciation for the commodities available at the facility level, leading many districts to budget for and procure these items independently based on links made with producers via MISP.

Follow-up and supportive supervision visits help track the delivery and use of IP/IS commodities. Supportive supervision visits were conducted by the MOH with technical support from MISP (see CD for follow-up tool) to confirm that commodities were delivered in full and in a timely manner, and to ensure that health facilities were monitoring usage correctly. MISP observed during initial assessment visits that many health facilities had poor systems for tracking IP/IS commodity inventories. Procurement staff and health care facility managers were trained on the importance of tracking commodity usage and inventories at the hospital and ward levels and on how to use accountability books (inventory tracking books) to facilitate efficient monitoring of supply levels.

The project conducted follow-up activities in 58 districts. All facilities received the IP/IS commodities planned for their facilities. In those instances where districts did not receive the required quantities of commodities, due to lack of communication between district and peripheral warehouses, MISP facilitated the timely distribution of the commodities and worked to mitigate future occurrences. This was done by consistent supportive supervision and follow-ups. The warehouse workers were oriented on IP/IS issues, including the importance of the products. They were also included in the facility infection prevention committees to promote teamwork.

Upon follow-up, it was encouraging to see that most facilities had developed accountability systems, ensuring good planning, budgeting, quantification, and prioritization of commodities to prevent future stock-outs. Facilities recorded improved stock levels for most IP/IS commodities as a result of increased support from hospital management and prioritization of IP/IS, witnessed by the inclusion of IP/IS commodity procurement into hospital action plans. This led to increased budget allocations for commodities and encouraged program sustainability. Among facilities sampled during the final project evaluation, 99 percent had new single-use syringes and needles available and 98.7 percent had sharps boxes available, compared with 93.2 percent and 45.3 percent at baseline, respectively.

Sustainability of procurement initiatives. The government's health procurement system in Zambia calls for districts to place orders at the central level (Medical Stores Limited, managed by Crown Agents), where all MOH items are stored. Thus, the districts supported by MISP would place orders for IP/IS commodities with Stores Limited. Under the project's memorandum of understanding with the MOH, MISP would then provide funding for the purchase, while the MSL would pay for storage, as well as transportation from the central level down to the facility level. By the end of the project, most of the districts that received follow-up (57 districts) had begun to include IP/IS activities, including procurement of a standard list of IP/IS commodities, in their annual action plans. A follow-up study is recommended to ascertain whether the action plans in these districts were executed.

A major issue that MISP identified early on, which contributed to frequent stock-outs experienced by most facilities, was a lack of available commodities on the local market. There were few local vendors of IP/IS commodities, thus requiring facilities to purchase from foreign vendors and resulting in delivery delays and high purchase prices. This effectively barred many facilities from procuring IP/IS commodities in the desired quantities, if at all.

MISP developed a strategy targeted at promoting the production of health commodities among local vendors. Companies such as Delight Investment, Sterlin/BD, Ngansa Pharmaceuticals, and Crown Agents were invited to meetings in which consumption data of IP/IS commodities in health care facilities were shared, illustrating the demand for these products on the local market. In addition, communication between vendors and facilities was encouraged so companies could better understand the needs of the health care community. All of the items that used to be imported became cheaper on the local market, and DHMTs were able to negotiate on their own for better prices. For example, a bottle of sodium hypo-chloride solution ("JIC") was formerly imported for close to 10,000 kwacha. When produced locally, the price dropped to as low as 3,000 kwacha. Commodities, including sharp boxes and injection equipment, are not yet produced locally at a quality that the project or the MOH found to be sufficient.

As a result of these efforts, these companies were able to link with the health facilities and district health management teams (DHMTs) to supply them with IP/IS commodities. These companies benefited, as the project indirectly created a market for them. The MOH now has direct links with several of these vendors, independent from MISP.

Procurement of some IP/IS commodities was being done before MISP, although there was no consistency and no budget line at district or facility levels specifically for IP/IS commodities. Although funds spent on starter stocks and supporting activities were relatively modest, this was an exciting effort, as it served as a catalyst for facilities to create budget lines for IP/IS commodities and to include them in district action plans.

SUCCESS STORY

Generating Demand on the Local Market

MISP generates demand for IP/IS commodities in Zambia, making local procurement a reality.



The director of Pharmanova Pharmaceuticals, Mr. Shah, makes a presentation on its locally made 'bleach' (sodium hypochlorite 3.5%)

In Zambia, most health-related products, including IP/IS commodities, are manufactured outside of the country, resulting in delays from long delivery times and high costs. By creating demand in local markets, it is possible to produce IP/IS commodities in-country, ensuring that facilities can afford essential equipment and that commodities are readily available at the point of use within the shortest period of time.

MISP baseline assessments revealed that public health facilities experienced regular stock-outs of basic IP/IS medical and surgical commodities. Only eight of 22 essential commodities were readily available on the Zambian market, with the rest imported. To address this issue, MISP and the Ministry of Health encouraged local firms to produce and stock the commodities.

MISP assured local firms of demand through routine meetings that facilitated information-exchange on commodities essential to improved IP/IS. By developing and sharing specifications, manufacturers understood the requirements. The project also trained local health care workers and health care facility managers in IP/IS, increasing demand from all district health facilities and hospitals and encouraging local firms to continue stocking these commodities.

Pharmanova Pharmaceuticals took up the challenge and began manufacturing sodium hypochlorite — “bleach” — at a cost 50 percent less than imported versions. Ngansa Pharmaceuticals and Shelda Investment studied producing sharps disposal boxes of different sizes. The National Drug Company started manufacturing alcohol hand rub in 5 L containers.

As a result, many essential IP/IS commodities can now be procured in Zambia, reducing delivery time from 60 to 14 days. This, combined with lower costs, has made commodity procurement more efficient, addressing a major barrier to improved IP/IS practices.

SUCCESS STORY

Changing Trends in IP/IS Practices

USAID faces challenges in promoting IP/IS best practices to reduce medical transmission of HIV/AIDS.



A health care provider washes his hands using dishes and basins procured with MISP support.

Occupational exposure to HIV/AIDS and other blood-borne infections through unsafe injection practices and poor infection prevention methods pose a great risk to medical professionals in Zambia. A baseline assessment conducted by MISP in 2006 identified behaviors and practices that expose health care providers to infection. Commonly observed practices included two-hand recapping of used needles, improper disposal of sharps, and lack of basic hand-washing before and after injection procedures.

Between June 2006 and February 2009, MISP conducted training in infection prevention and injection safety in all 72 districts in Zambia to improve IP/IS behavior among health care workers and reduce their exposure to infection. Behavior change communication tools were developed (for example, hand-washing job aids placed above wash basins) to support improved practices and reinforce messages conveyed by the project.

By May 2008, an evaluation of health care providers conducted by MISP showed significant improvements in IP/IS practices that were promoted by the project. Rates of two-handed recapping of used needles were reduced. Proper disposal of sharps and hand-washing before and after procedures was increased. Managers were trained on the importance of providing post-exposure prophylaxis and ensuring its continuous availability to health care staff. As a result, most facilities have made post-exposure prophylaxis available.

Continued training on the importance of IP/IS best practices and promotion of safe behaviors is essential to reducing the medical transmission of HIV/AIDS and other blood-borne infections. As Matron Kunda from University Teaching Hospital said, "If it wasn't for MISP training, most of us as health workers would have been infected unknowingly."

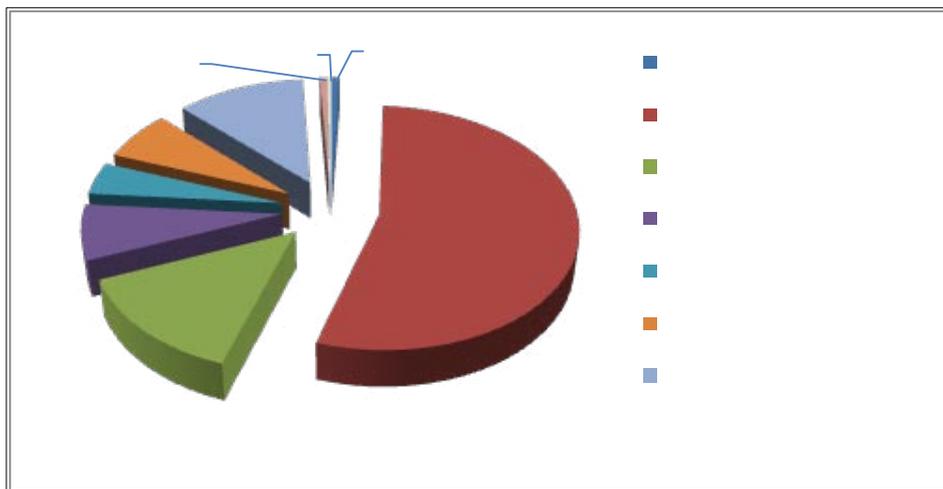
SECTION II. CAPACITY BUILDING

MISP worked to build the capacity of provincial health officers, district health management teams, and hospital and other facility management staff to understand the importance of IP/IS procedures, and to secure their support in championing and implementing IP/IS interventions.

As part of capacity building, and before training, the MISP team held one-day orientation meetings with health care managers and supervisors. The meetings were an opportunity for the project to sensitize senior health facility managers to the importance of IP/IS and help them identify their roles within the system. By gaining their support, the project was able to encourage the sustainability of project efforts. During the orientation meetings, health care managers and supervisors were asked to participate in identifying health care providers in their districts who would benefit from training on updated IP/IS practices, as well as supervision and monitoring techniques to promote improved IP/IS practices within their own facilities. This participatory approach contributed to the success of the program. A total of 341 managers and supervisors were oriented in 61 districts across all nine provinces.

Health care facility managers and supervisors identified a broad range of medical personnel for training participation, extending beyond doctors and nurses (see Exhibit 2 below). Training workshops included awareness-building activities and were followed by supportive supervision visits by the MISP team in district health facilities. Through training health care providers, MISP sought to institutionalize and normalize safe and necessary IP/IS practices among providers within the public health sector. A total of 1,063 providers completed the initial training.²

Exhibit 2. Health Care Workers Trained in IP/IS, by Profession



² The project only counted those trained as those who received a passing mark of 85 percent or higher on the mid-course test (i.e., the test provided after classroom training but before follow-up.) All training lasted three to five days, and the average number of people trained at once was 15 per district (30 people at one training.) NB: This figure also does not include those who were trained by those who received MISP training, or those trained in the private sector.

Training workshops for health care providers. The project organized training in all 72 districts, with the MOH Directorate of Public Health financially sponsoring the training in the final five districts. The workshops incorporated the following competencies:

- *Procurement and commodity management* included a detailed overview of the public logistics system (or supply chain cycle) and the role of health care providers within it. The training also included forecasting supply requirements based on stock-at-hand and consumption rates and proper recordkeeping.

- *Infection prevention and injection safety* provided an overview of disease transmission cycles, identifying and mitigating transmission risks and basic principles in infection prevention. The training also included in-depth training on standard injection health care administration precautions, techniques, and practices. Participants were taught the importance of using personal protective equipment during certain injection procedures (i.e., wearing gloves when drawing blood, when putting in IVs, when giving IV drugs, when handling contaminated instruments.) Phlebotomy procedures were incorporated as a specific element of MISP assessment, training, and follow-up activities. Participants were also taught about the need for use of PPE (i.e., utility gloves, gum boots/protective show wear, and aprons) during waste disposal, to mitigate disease transmission. Participants also undertook field visits as part of the training.

- *Post-exposure prophylaxis.* IP/IS training included education of district supervisors, facility managers, and health care providers on the importance of procurement, provision, and use of post-exposure prophylaxis (PEP). Moderate increases were seen in post-exposure prophylaxis availability in facilities (42.6 percent at final evaluation compared to 37.3 percent at baseline). Low PEP demand and availability continue to be significant challenges, highlighting the need for more PEP interventions (e.g., training, BCC, and procurement.)



A trainer demonstrates preparation of chlorine solution for instrument processing at a MISP training event.



Training participants practice assembling safety boxes in Kabwe District.

- *Interpersonal communication with patients.* The behavior change communications component built (1) knowledge of interpersonal communication and communications processes (2) insight into knowledge, attitudes, and beliefs of patients that might cause them to resist change, and (3) skills in interpersonal communication techniques and proper use of BCC materials. The interpersonal communications skill was practiced during hands-on learning sessions held as part of the workshop.
- *Medical waste management* provided an overview of proper medical waste management and educated managers in best practices for disposal of medical waste. The training included a demonstration and hands-on training on assembling and use of a sharps box and use of bin color-coding systems.
- *Enabling environment* training provided instruction on how to establish and manage comprehensive infection prevention at district and facility levels.
- *Monitoring and evaluation of provider practices and behavior* included an overview of IP/IS indicators and how to monitor provider practices, as well as helping institutions set targets against indicators and develop action plans.

Sustainability of Training Approach

Thirty-two training sessions were conducted during the project. Workshops lasted three to five days and were conducted with assistance of representatives of the NIPWG to “embed” the training process into a sustainable national body.

Following completion of the training, participants were selected to serve as IP/IS focal persons to champion implementation of IP/IS activities in their workplace. Nearly all districts trained have appointed focal point persons and IP committee activities in their respective institutions and districts. Some institutions have organized their own orientation meetings using these focal persons and the staff trained by MISP.

The Ministry of Health is working toward strengthening identified focal persons and facility-level IP committees as a means of sustaining IP/IS activities in institutions, which should help the institutions take full ownership of the program. DHMTs were responsible for appointing facility-level IP/IS focal persons. The MOH has included in its budget and action plan instructing IP/IS providers in clinical training skills. Participants will include those trained by MISP in IP/IS, to create a cadre of IP/IS master trainers in-country, fostering further sustainability. The NIPWG now plans to conduct quarterly performance assessments, which include M&E to determine whether focal persons and IP committees are carrying out their respective roles.

Facility-level supportive supervision. MISP sponsored and participated in supportive supervision visits in 53 of the trained districts. MISP staff conducted visits with representatives of the district and/or provincial health offices to promote continuity of oversight to the facility and to inculcate sustainability of project interventions, including supportive supervisory visits themselves.

These visits took place two to three months after training activities and procurement of commodities were completed, although this was sometimes later if there were delays in commodity delivery. During the visits, the supervisory team assessed provider behaviors and practices, use of BCC materials, health care waste management systems and practices, and institutional policies and management systems that affect infection prevention and injection safety. Upon completion of the follow-up assessment, observed

gaps were immediately discussed with district and facility administration to allow appropriate corrective measures to be taken. In this sense, the supervisory visits introduced an on-the-job training element into MISP capacity building activities. Once assessments were complete, MISP forwarded the resulting reports to the relevant provincial health office and the Ministry of Health for their reference.

The assessment encompassed direct observations of and interviews with health care providers and facility administrators. Because MISP originally trained personnel with the understanding that each person trained would orient fellow staff on IP/IS and encourage IP/IS initiatives upon return to his/her institution, the team also assessed the degree to which knowledge had been transferred to other health care personnel who had not participated in training. During the supportive supervision visits, assessors found that facilities had begun to independently provide IP/IS orientation workshops to their staff.

Health care waste management. During follow-up and supportive supervision visits, project staff focused on the type of PPE used by health care workers and waste handlers, proper placement and use of waste receptors, and any other initiatives facilities put in place to support waste management. It was encouraging to find that the number of health care facilities with satisfactory disposal of used injection equipment had increased as shown below.

Training Activities Directly Resulting from MISP Activities

The Lusaka District health management team, with support from the NIPWG, conducted IP/IS-focused on-the-job training for providers working in the Kanyama, George, Mtendere, and Matero health centers in Lusaka District.

The Senanga DHMT had conducted two workshops on IP/IS for support staff and waste handlers. Twenty-eight staff members attended these workshops. The DHMT also ensured that an additional 38 health care providers were oriented in IP/IS activities. The 15 health care providers trained by MISP led the workshops.

Lewanika General Hospital had conducted an orientation on IP/IS for health care providers and support staff. This orientation was attended by 77 staff members and introduced a tool to monitor IP/IS practices and activities and developed a system to grade the performance of its departments and wards in IP/IS.

Nyanje Mission Hospital in Petauke created an IP/IS committee that has been exceptionally active in promoting and implementing IP/IS activities. IP/IS training has been conducted for 64 health care providers and 12 support staff, and regular supportive supervision visits to assess compliance have been instituted. Posters promoting proper IP/IS practices have been produced and placed throughout the facility. The committee has actively worked with facility administration to incorporate IP/IS equipment, such as gum boots and overalls, into the hospital's procurements.

Nyimba DHMT created an IP/IS committee at the district hospital level immediately after MISP training activities in the district. The Nyimba DHMT has also included training for providers and support staff in its district action plan and budget (ZK 2,875,000 or \$737), as well as the procurement of IP/IS commodities. Additionally, the district hospital has held an IP/IS orientation session for its support staff and waste-handlers.

Lewanika General Hospital in Western Province introduced a tool to monitor IP/IS practices and activities and developed a system to grade the performance of its departments and wards in IP/IS. The hospital has strengthened the facilities IP/IS committee and has been procuring additional IP/IS commodities.

Exhibit 3. Rate of Satisfactory Disposal of Used Equipment

Disposal Issue	Baseline Result	Mid-term	Final
Overflowing sharps containers	10.2%	0%	5.9%
Presence of used sharps in immediate surroundings	22.0%	4.3%	0%
Secured disposal site	23.7%	21.7%	35.8%
Labeling of disposal site	1.7%	5.8%	34.8%

Taking advantage of private sector opportunities. MISP capacity building activities were not limited to the public health sector. Organizations, programs, and facilities routinely requested MISP assistance in providing IP/IS training activities for their health care staff. The partnering organizations bore the costs of the training, allowing MISP to reduce or eliminate the usual costs associated with project training activities. See illustrative examples, on the following page

Establishing links and leveraging resources. MISP worked with the Health Services and Systems Program, the General Nursing Council, and the Medical Council of Zambia to incorporate IP/IS into pre-service curricula for health care personnel. During the project life, MISP provided technical input into revision of the following pre-service curricula for health care personnel, ensuring IP/IS components were adequately incorporated.

- Registered nurse program (finalized October 2007) procedures manual and evaluation manual
- Curriculum for diploma in clinical medicine, clinical officer general (finalized January 2007) procedures manual and evaluation manual
- Pregnancy, childbirth, post-partum, and newborn care guidelines (finalized 2006)
- Curriculum for military medical assistants (finalized August 2007) procedures manual
- Curriculum for midwifery nursing program (finalized March 2004)
- Curriculum for enrolled nursing program (finalized March 2004)
- Curriculum for the School of Medicine (ongoing as of project end)

It is notable that in all the above programs, MISP did not make any financial contributions.

Conclusion. Through MISP capacity building activities, all 72 districts have health care providers trained in IP/IS best practices. All have appointed focal point persons to manage IP/IS programs in hospitals and other health care facilities. In addition, MOH sponsorship of IP/IS training in the five final districts in Northern Province demonstrated its commitment to IP/IS and its willingness and interest in supporting these activities. At project end, NIPWG was planning to use the MISP training package for 2009-2010 training activities. The MOH also took over the secretariat role for the NIPWG, and after project activities stopped, it was expected to continue in that role.

MISP Leveraging of Public and Private Sector Funds

Copperbelt Province

- The Konkola Copper Mine Hospital in Copperbelt Province, a private hospital for mine staff managed by Konkola Copper Mine Plc., organized and financed a full four-day workshop for 31 of its health care providers to build their capacity in IP/IS. MISP conducted the workshop with assistance from representatives from the NIPWG.
- Ndola Central Hospital requested technical assistance from MISP for the IP/IS hands-on training it organized for its staff from October 31 to November 4, 2005. The institution fully sponsored the training with ZK 21,000,000. Twenty-five participants attended, including doctors, nurses, midwives, dental and lab technicians, psychiatric nurses, clinical officers, and physiotherapists.

Central Province

- The Mumbwa DHMT in Central Province organized and financed an orientation workshop for facility and ward administrators. The workshop provided instruction on management of a facility-level IP program, health care waste management, post-exposure prophylaxis, procurement and commodity management, and monitoring and evaluation of provider practices. A total of 24 health care personnel participated in the workshop.
- Provided assistance to the Mkushi DHMT in development and implementation of an orientation workshop for health care facility administrators on IP/IS best practices. Twenty-six facility administrators attended the workshop.

Lusaka Province

- At the request of the Society for Family Health, MISP conducted an assessment of IP/IS practices at the new male circumcision clinic based at the New Start Center at the Young Women's Christian Association. Upon completion of the assessments, recommendations were made to the facilities and the on how the identified gaps (notably poor injection safety practices and waste management) could be addressed.
- The General Nursing Council of Zambia organized a capacity-building workshop for pre-service nurse educators and senior nurses in Zambia in February 2006, and MISP staff were invited to provide technical assistance on IP/IS practices.
- MISP provided assistance to the Kafue District Hospital in development and implementation of IP/IS training of health care providers and support staff. Through this activity, 17 health care providers and 33 support staff were trained in IP/IS best practices.

Southern Province

- Livingstone General Hospital sent its IP/IS focal point person to the MISP office in Lusaka for guidance on the roles and responsibilities of an IP/IS focal point person. The University Teaching Hospital Department of Theatre conducted a hands-on IP/IS training for theater staff in December 2005.
- The project led the Mazabuka District health management team in development and implementation of an orientation workshop for health care facility administrators on proper use of IP/IS commodities. Thirty-three facility administrators attended. At the conclusion of the workshop, the managers developed action plans to improve IP/IS practices in their facilities and wards.

Department of Defense

- MISP provided technical assistance to the department, which has an injection safety component as part of its activities, and trained 16 participants in three districts on proper IP/IS practices from April to June 2006.

Ministry of Health

- MISP has also provided technical assistance to the MOH Child Health Technical Committee and the Global Alliance for Vaccines and Immunizations to design and implement child health activities, notably immunization campaigns. Through participation in the Child Health Technical Committee, MISP provided technical input on disposal and management of waste resulting from immunization campaigns, as well as IP/IS best practices.

SUCCESS STORY

Sustainability of IP/IS Programs: The Ndola Central Hospital Experience

Ndola Central Hospital, with the help of MISP, has become a role model for sustainable IP/IS programming in public health care facilities.



Charity Mwase displays recently purchased IP/IS commodities.

“The teams receive a lot of support. The other staff members sometimes are jealous because of the huge allocation to IP/IS.”
– Charity Mwase

MISP carried out IP/IS activities in Ndola District, beginning with the pilot phase of the project in 2004. Ndola Central Hospital consistently stood out among the institutions the project worked with as a leader in providing management support. From the beginning of MISP, Ndola’s hospital administration allocated a monthly budget of ZK 3,500,000 (\$887) to purchase additional IP/IS supplies after formulation of an IP/IS committee. The chair of the committee sits on the management board, and the hospital continues to dedicate necessary funds and resources to IP/IS.

Since Ndola Central Hospital’s initial involvement with the project, management of waste has improved tremendously. Clinical waste is now incinerated every two days, and a local company has been contracted to collect domestic waste. Chlorine and other disinfectants are purchased on a regular basis, and all new members of staff (including support staff) are oriented to IP/IS best practices such as hand hygiene and instrument processing. The hospital also purchased overalls, gum boots, and heavy-duty gloves for waste handlers, and 10 linen trolleys for transporting linen to and from laundry.

Charity Mwase, the new IP/IS focal point at Ndola Central, was happy with the way management supported her and her two teams. “The teams receive a lot of support. The other staff members sometimes are jealous because of the huge allocation to IP/IS.”

The hospital’s executive director, Dr. Malawo, explained, “Our role as an institution is to ensure that we prevent infections. It’s better to prevent than to spend a lot of money trying to treat infection. So as management, we have attached great importance to the infection control committee.”

Ndola Central Hospital’s commitment to IP/IS serves as a guide to other institutions and demonstrates that programs such as this can be sustainable.

SECTION III. BEHAVIOR CHANGE COMMUNICATIONS

MISP supported the MOH in influencing changes in IP/IS perceptions and behaviors among health care providers, clients/patients, and community members. To ensure that its BCC activities were well grounded and truly focused on strategic communications, rather than merely giving standardized messages, MISP conducted initial formative research with providers, clients, and community members in Chipata and Ndola provinces. The project then conducted additional, small-scale formative research to verify that the pilot findings were valid for the expanded program. Finally, it conducted formative research with private sector providers and clients. MISP worked with partners to incorporate findings into an initial BCC strategy for the public sector and later into a distinct strategy for the private sector.

Although specifics of the strategies differed, the basic behavioral objectives were similar.

- *For managers and administrators:* support IP/IS through training, supportive supervision, and provision of essential commodities
- *For health care providers and support staff:* prescribe only necessary injections, follow safe injection practices in administering injections, and follow recommended practices in segregating, storing, and disposing of medical waste
- *For clients:* accept providers' treatment recommendations, do not seek injections from different providers, ask questions, and follow providers' instructions carefully
- *For the public:* avoid injections or skin-piercing from untrained providers, report accessible medical waste in the community, and warn children to avoid and not to play with medical waste

MISP carried out initial assessments to understand knowledge, attitudes, and practices of health care providers, clients, and community members regarding injection safety. The formative research included trials of improved practices, in which providers and clients were asked to try new, improved practices for a trial period. During the pilot phase, the project conducted assessments in five districts: Ndola, Chipata, Mansa, Mwinilunga, and Sesheke. Upon extension of the project, the team conducted a baseline survey covering Chingola, Monze, and Solwezi districts.

Key Findings from the Formative Research and Baseline Study

Policy-makers, administrators, and district health and hospital managers were not adequately supervising and managing injection safety. Most facilities lacked the financial and human resources to support proper IP/IS activities. Facilities suffered from poor logistical systems, waste disposal sites were not well secured, and little support was given to providing proper incinerators in facilities.

Health care providers had a number of practices that contributed to the transmission of infection, including:

- Administering injections when oral medication was indicated

- Inadequately washing hands before and after every procedure
- Keeping unhygienic environments
- Improperly disposing used needles
- Two-handed re-capping of used needles
- Open dumping of medical waste in insecure pits
- Inconsistently and inappropriately using safety boxes

Neighborhood health committees, community health workers, traditional birth attendants, and local nongovernmental organizations were not:

- Discouraging unnecessary injections
- Educating communities about dangers of unsafe injections due to insufficient information and inadequate knowledge on IP/IS
- Monitoring the disposal of wastes from health institutions

Patients, clients, caretakers, and community members preferred medicine by injection, and some requested medication in injection form, even for ailments in which an equally effective oral medication exists, because of a belief in its improved efficacy. In other cases, patients were self-medicating using their own needles without knowledge of proper safety precautions.

Behavior Change Communications Interventions

The goal of BCC activities was to reduce the demand for injections, thereby reducing the number of unnecessary injections administered by health care providers. MISIP took a multi-sectoral approach, aimed at developing a national program that included advocacy and social mobilization strategies for increased awareness of managers, communities, health care providers, and clients about the rational use of injections, effective supply chain management, universal precautions, and appropriate waste management.

MISIP developed the BCC approach based on behavior analysis conducted at the onset of the project. Ideal behaviors, problem behaviors, feasible behaviors, major resistance/barriers, and major motivations were identified. With partners, MISIP then developed a strategy to overcome identified barrier/resistance and encourage good practices. Using information, education, and communication tools like print media and folk media performances, training, service delivery development, new technology, and new developments like policies, strategies included:

- Development of a system for ongoing improvement of prescribing practices for health care providers to reduce unnecessary injection
- Development and implementation of community and multi-media interventions (focus group discussions through drama) to reduce the demand for unsafe and unnecessary injections (including pre-testing and reproduction of BCC/information, education, and communication materials used in the pilot phase)

Interpersonal communications. Improved interpersonal communication was promoted, first, through training of 1,063 health care providers, with the aim of imparting knowledge and skills so the providers could make informed decisions and influence attitudes/behaviors in the long term as they interacted with their clients. The BCC element of the training provided participants with an introduction to communication processes, methods for dealing with resistance to change, and appropriate use of print materials in interpersonal communication.

Print materials. The focus of the print communication messages was to give health care workers and community members' information on safe injection practices and motivate people to adopt safe practices. Print BCC/information, education, and communication materials were distributed to all 72 districts, covering 1,186 health facilities and 7,641 neighborhood health committees in the public sector and four health facilities in the private sector where training had taken place. Print materials distributed included:

- Four posters promoting IP/IS best practices: two posters targeting health care providers which were placed in clinics and two targeting community members which were placed in public places, to trigger discussions among community members
- A packet with materials on IP/IS: to health policy-makers and health care facility administrators
- Two fact sheets on IP/IS: one targeting community health workers and one targeting policy-makers and health care facility administrators
- Two types of stickers promoting recommended IP/IS practices: one sticker targeting health care providers and the other targeting community members



Exhibit 4. Two Job Aids and One Poster

In the final project evaluation, hand-washing before and after injections increased 73.6 percent and 71 percent respectively, from 26.4 percent and 35.5 percent at baseline. However, MISP continued to observe poor behavior among providers, such as recapping after injections, which increased from 12.6 percent at baseline to 16.8 percent at final evaluation. See the final evaluation report in CD-ROM Annex for further discussion of these and other evaluation results.

Community-level BCC. MISP used folk drama as a key strategy for influencing community members' perceptions and actions related to injection safety and waste management. MISP worked hand-in-hand with DHMTs, neighborhood health committees, and youth clubs to select and contract drama troops in many districts. Once the troops were selected and their dramas rehearsed, observed, and improved, they began community performances, each followed by a discussion led by a local health care provider. MISP contracted 36 drama groups, which implemented 801 drama performances, each leading to a community discussion on IP/IS and dangers of medical waste. The performances aimed at motivating people to avoid unnecessary injections, get necessary injections, discuss injection safety with providers, and report dangerous medical waste in their community. The project reached an audience of more than 165,000 people with drama performances in the 24 funded districts.



Wallance Tembo (playing a 'doctor') of Omodzi Theater emphasizing a point about safe injections.

Promoting Behavior Change Communications in the Private Health Sector

MISP worked with the MOH and other partners to promote safe injection and disposal practices among private providers, including in the informal health sector. Activities included dissemination of results from formative research to key stakeholders, development of a BCC strategy for the private sector, and provision of technical assistance to private health institutions and organizations upon request.

MISP completed formative research and follow-up analyses in three districts where there is considerable representation of the private sector among service providers (Lusaka, Luanshya, and Kitwe). MISP conducted 105 observations with 57 health care providers. Two dissemination workshops of the research findings were held in Lusaka and Copperbelt provinces, with representation from private and for-profit providers including mine hospitals, the Medical Council of Zambia, and local government councils. As a result of this research, MISP (with full participation from all stakeholders) formulated a BCC strategy for the private sector. The strategy covered issues including capacity building, ensuring the availability of essential IP/IS supplies, and management of health care waste.

MISP was unable to determine the final impact of the community theater approach and would suggest this as a next step in operational research. MISP data on the community-level theater focused on the number of people reached (and therefore presumed to be interested) by drama. Following drama, random audience "samples" to confirm understanding of drama content occurred as part of follow-up focus group discussions, but this information was not formally collected as part of the MISP M&E plan.

In the final project evaluation, negligible decreases (see CD ROM Annex) were reported in the number of patients requesting injections, implying that MISP community BCC activities were unable to change perceptions and behaviors in such a short time frame. Additional research is required to understand whether these results were caused by poor design of intervention, or rather reflect the inherent difficulty in changing entrenched and sometimes culturally based beliefs and practices.

SUCCESS STORY

Improving IP/IS Practices among Community Members in Zambia

MISP supported the MOH in influencing changes in infection prevention/injection safety perceptions and behaviors among health care providers, clients/patients, and community members to reduce the demand for and use of unnecessary injections



IP/IS community drama performance in Mwinilunga.



Umodzi Theatre question-and-answer session after a performance in Lusaka.

The responsibility for preventing the medical transmission of HIV/AIDS in Zambia does not rest solely with health care providers. A MISP baseline study in 2006 found that many people had poor knowledge, attitudes, and practices about medical injection safety. Community demand was high, with health care providers reporting 73 percent of outpatients requesting injections. Reducing individuals' demand for injections prevents needle-stick injuries, in turn reducing the chances for medical transmission of HIV and other blood-borne infections.

MISP, through community theater groups, targeted desired health behaviors among health providers and community members. Community theater is a culturally acceptable and inexpensive means of reaching communities and influencing behavior change. The performances aimed at motivating people to avoid unnecessary injections, discuss injection safety with providers, and report dangerous medical waste in their community.

Through neighborhood health committees and youth clubs established by the Ministry of Health's district health management teams, MISP contracted 38 drama groups that gave 801 performances in 24 districts, reaching more than 160,000 people. In addition, 2,098 neighborhood health committees continue to provide IP/IS community sensitization messages.

"The drama performances have helped the DHMT in changing the perception on injections. There is now less demand for injections by the communities," said Chansa Daphine from the Samfya DHMT.

SECTION IV. POLICY ENVIRONMENT

Policy development. MISP supported the MOH in developing the National IP/IS strategic plan (2005 to 2007) which was then incorporated into the National Health Strategic Plan (2006 to 2010). In addition, MISP supported the MOH and other partners to put in place a National Infection Prevention Policy and appropriate guidelines to provide an enabling environment for implementation of standardized IP/IS activities. MISP took on secretariat duties of the National Infection Prevention Working Group by organizing and facilitating monthly meetings of the NIPWG and taking a lead role in national IP/IS activities in collaboration with the MOH Directorate of Clinical Care and Diagnostic Services (which held the chair of the NIPWG). As mentioned previously, the MOH has taken over the secretariat role.

The National Infection Prevention Policy and guidelines. MISP, in collaboration with MOH and other partners through the NIPWG, supported initial development of the National Infection Prevention Policy through technical support during monthly meetings. In March 2008, MISP participated in a four-day workshop organized and financed by the MOH to review and draft a national infection prevention policy. The MOH and NIPWG have reviewed the draft policy and finalization by the Cabinet is anticipated. One key policy issue covered in the draft is the standard provision of post-exposure prophylaxis hepatitis B vaccination to health care workers. The project continued to work with the MOH to develop and enact policies to drive implementation of post-exposure prophylaxis and hepatitis B vaccination programs.

Dissemination of health care waste management guidelines. MISP worked with the MOH, the Zambia National AIDS Response Project, and the Environmental Council of Zambia to disseminate health care waste management guidelines. The minister of tourism and environment hosted the launch of the guidelines in March 2008. The guidelines were distributed to health facilities in all 72 districts through PHOs. MISP supported dissemination of the guidelines by incorporating them into health care training activities.

Sectoral and sub-national working groups. At the national level, MISP participated in monthly meetings with the National Infection Prevention Working Group and partners to advocate for incorporation of IP/IS activities into MOH action plans and encourage the MOH to take ownership of IP/IS activities. With MISP support, the NIPWG held weekly Child Health Technical Committee Social Mobilization Subcommittee meetings to ensure implementation of immunization activities in line with infection prevention and injection safety best practices.

MISP also participated in other MOH technical groups, such as those focused on emergency obstetric care, post-abortion care, prevention of mother-to-child transmission, and antiretroviral therapy, in an effort to incorporate IP/IS considerations and activities into these initiatives.

At the provincial and district levels, meetings were held with facility managers and DHMT officials in each district where supportive supervision took place. IP/IS best

practices were encouraged, while poor IP/IS practices were identified and solutions proposed. In addition, MISP lobbied for inclusion of BCC activities, such as production of job aids, in health facility and district action plans. MISP held these advocacy/ orientation workshops with health care managers and supervisors from all districts.

MISP further continued to work with key partners such as the Health Services and Systems Program, Zambia Medical Association, the Medical Council of Zambia, the Nursing Council of Zambia, and the School of Medicine, in revisions to pre-service curricula for health care personnel. The MOH, the Environmental Council of Zambia, and the Zambia National Response to HIV/AIDS project developed a train-the-trainers program to build the capacity of health care personnel in waste management. MISP provided technical input into the development of the curriculum for this program.

Monitoring and evaluation. MISP collaborated with the MOH in improving injection safety through the incorporation of IP/IS into existing M&E systems of the MOH. This included institutionalization of a system for continuous monitoring of the content and process of care, identifying quality gaps, reporting results, and developing and implementing improved interventions based on the results.

In addition, the project worked with the ministry's HMIS coordinator to develop baseline study data collection tools, supportive supervision tools, and the project performance monitoring plan.

Project performance continued to be monitored and evaluated via three mechanisms: active surveillance, trials in improved practices, and follow-up and supportive supervision activities. To meet the project's M&E goals, the project team worked with the Ministry of Health to incorporate IP/IS indicators into the HMIS and with the provincial and district health offices to incorporate IP/IS indicators into existing monitoring and evaluation tools. The HMIS is the MOH's data management system, capturing indicator data from district-, provincial-, and national-level health facilities. Indicators incorporated as a result of MISP advocacy included:

- *Facility compliance with IP standards.* This indicator targets 80 percent compliance of public health facilities with infection prevention standards for processing (decontamination, cleaning, sterilization, and high-level disinfection). The standards also require that PPE be provided to staff, post-exposure prophylaxis be available to health care workers, and guidelines are clear and known.
- *Facility compliance with waste management standards.* This indicator targets 100 percent compliance with health waste management guidelines and standards appropriate for each facility type. To measure this, facilities are monitored on the type of health care waste management system is in place and how the waste is managed from the point of generation to its final disposal.

In addition to inclusion of IP/IS indicators in the HMIS, MISP worked with provincial and district health management teams to improve monitoring and capturing of IP/IS data.

MISP helped assess how the IP/IS indicators included in the HMIS are being captured in performance assessment tools. The project further reviewed the action plans for the districts to assess whether IP/IS activities had been included. It was found that most provinces visited had included infection-prevention activities in their action plans, which suggest that provinces are planning, budgeting, and carrying out IP activities with funds from the MOH.

Output performance indicators, such as number of health care providers trained, districts funded for drama performances, and amount spent on IP commodities, were collected using project monitoring tools. Other IP/IS data were also collected and analyzed from secondary sources, such as surveys conducted by the MOH or the CSO. However, IP/IS data obtained from secondary sources were used to augment reporting on project performance, and not as the primary means through which performance was determined.

SUCCESS STORY

National IP Working Group Strengthened

After launching the country's first national infection prevention guidelines in 2003, Zambia's Ministry of Health established a National Infection Prevention Working Group to oversee and coordinate efforts.



A NIPWG meeting at the MISP office.

MISP had a longstanding partnership with the National Infection Prevention Working Group, chaired by the Directorate of Clinical Care and Diagnostic Services of the MOH. The project was actively involved in spearheading NIPWG activities, as secretariat of the group. MISP helped fund development of the National Infection Prevention Strategic Plan (2005-2007). Many of the activities and strategies were subsequently included in the National Health Strategic Plan (2006-2007). As a result, the NIPWG developed a set of national IP guidelines that the project distributed to all districts in the country and to nearly all health facilities in targeted districts.

With support from MISP, the NIPWG held regular monthly meetings. The working group's membership grew to more than 10 major partners and statutory bodies, including the Environmental Council of Zambia, National AIDs Council, Medical Council of Zambia, Nursing Council of Zambia, Churches Health Association of Zambia, Zambia National Response to AIDS, University Teaching Hospital, Private Practitioners Association of Zambia, and Traditional Health Practitioners Association of Zambia. The group developed terms of reference, which were endorsed by the permanent secretary of the MOH.

As MISP closed, the NIPWG Secretariat moved from project offices to the MOH, and the ministry took over the chair. The MOH, through the NIPWG, incorporated MISP activities, such as providing financial and logical support for training health care providers, into its scope of work. The NIPWG revised the national infection prevention guidelines, as well as the national infection prevention and control policy, and prepared for a National Infection Prevention Day and Week. Five years after its inception, the NIPWG has become a strong advocacy body for IP/IS concerns in Zambia.

CASE STUDY

MISP Advocacy Efforts Pay Off

MISP used a multi-pronged approach to involve staff at all levels within health care facilities to effect systemic behavior change, resulting in improved IP/IS practices.



Mr. Nyasulu, storeroom manager at Kabwe DHMT, stands next to sodium hypochlorite procured by the DHMT.

CHALLENGE. Successful IP/IS activities require the involvement and support of health care managers and administrators at all levels: central, provincial, district, and facility. Too often, activities are offered only to front-line staff (doctors and nurses) and do not offer a holistic approach.

INITIATIVE. MISP implemented multiple activities in health care facilities in all provinces. The project used a multi-pronged approach to address issues of injection safety that included advocacy and orientation meetings with health care managers and administrators, as well as training health care providers in IP/IS best practices. Key decision-makers at all levels were identified, and the most appropriate, highest-impact advocacy approaches with each segment of the target audience were used. In addition to training 1,063 health care providers across all districts, MISP trained 650 health care facility managers and administrators. The project conducted monthly National Infection Prevention Working Group meetings that brought managers into the national planning process with the larger IP/IS community and the MOH, and launched the National IP/IS Strategic Plan. These meetings were conducted to disseminate pertinent information, orientation, and training on IP/IS to the largest possible audience.

RESULTS. MISP initiatives were evaluated in 58 districts to assess the impact of interventions on provider behavior and ownership of the program among health managers. The evaluation revealed behavior change and subsequent ownership of IP/IS programming by facility managers and administrators. Managers understood the scope of the problem, and IP/IS activities were prioritized and supported so resources were effectively allocated. As a result, stock-out rates of sharps boxes, disposable needles, and disposable syringes decreased by 42.3 percent, 38.4 percent, and 26.8 percent respectively, highlighting the efficacy of interventions at this level. The project oversaw development of IP/IS guidelines with the involvement of DHMTs and hospital managers. Ultimately, all 58 districts designated a focal person to oversee IP/IS activities.

SECTION V. LESSONS LEARNED AND THE WAY FORWARD

Previous chapters have related the story of MISP's achievements through the pilot and extension phases of the project. This chapter looks ahead, summarizing the lessons learned and recommending next steps for future programs.

Lessons Learned

MOH ownership. The first lesson learned by the project was that MOH support for and ownership of IP/IS programs is crucial for successful implementation of IP/IS activities in-country. Involvement of central-level management from the onset of the program is important for any program to be sustainable.

Central-level officials coordinated and guided each activity. MOH officials facilitated MISP's first contact with district health facilities via administrative letters and continued their support through participation in activities (supportive supervisory visits, meetings, training). Management involvement is one of the most important factors in moving any program forward and in implementing activities such as monitoring of provider IP/IS practices and budgeting for IP/IS commodities.

Reaching scale with decentralized, sub-national involvement. Involvement of DHMTs is critical in proving impact and sustainability. The districts where the impact of project activities has been greatest are those where the DHMTs have been active in championing IP/IS initiatives. This is shown by incorporation of IP/IS activities into district action plans and implementation of such activities as monitoring of provider IP/IS practices and budgeting for IP/IS commodities.

It is important to identify a focal person in each province, district, and hospital, who will be in charge of leading the effort to coordinate IP/IS activities. This person should be supported by active and vibrant infection prevention committees. MISP encouraged formation of the committees in all 72 districts, including tertiary hospitals. DHMTs, and hospitals with active infection prevention committees performed well in implementing the IP/IS activities, including planning and budgeting of these activities.

Broad participation. The second lesson learned was that involvement of other organizations strengthened the National Infection Prevention Working Group. Based on the initial assessments and ongoing follow-up visits, the working group members were committed and enthusiastic about incorporating injection safety as a component of the infection prevention effort and recognized its potential impact on the health of health providers and the community. Involvement of members from other organizations, such as the Environmental Council of Zambia, the Zambia National Response to HIV/AIDS project, and the Institute of Waste Management, has helped make a more active and better-functioning NIPWG. From the beginning, MISP included stakeholders such as MOH, DHMTs, UNICEF, WHO, National AIDS Council, Health Services and Systems Program, the Zambia National Response to HIV/AIDS, ECZ, and others in the development process. This involvement led to the acceptability of key documents and

strategies, including the BCC strategy. Now, partners are willing to distribute and disseminate the BCC materials in their respective areas of project implementation.

The project supported the NIPWG by taking up the secretariat roles that have now been handed over to the Directorate of Clinical Care and Diagnostic Services, which will continue to support and advocate for IP/IS activities in the country. Incorporating the Medical Council of Zambia, the regulatory body that supervises and monitors provider practices in public and private health care institutions, into the National Infection Prevention Working Group resulted in a gradual increase in demand from the private sector for training in IP/IS.

Community participation in waste management. The involvement of neighborhood health committees facilitated improved IP/IS practices. For example, in some health facilities, communities helped in digging pits for waste disposal, fencing dumping sites, assisting in building incinerators, providing health education to other community members on the dangers of health care waste and unsafe injection practices. However, by the end of the project, the team did not have quantitative data on the extent of these activities, because this routine data was not part of the project's M&E plan.

Linking infection prevention and injection safety. Another important lesson learned was to incorporate injection safety practices into infection prevention training, as the two are inseparable. To achieve the goal of preventing the medical transmission of HIV, it was necessary to look at infection prevention in its totality. For example, application of standard and transmission-based precautions will help prevent clients and patients from acquiring nosocomial infections, reducing the number of infection or re-infections and subsequently reducing the prescription of injections by health care providers. It is therefore essential to improving the quality of services in (1) training senior managers, health providers, procurement officers, and the community, (2) information on behavior change communication, including BCC material, and (3) availability of required commodities.

Staggered procurements. As usage data from the first procurement was digested, subsequent procurement phases were planned with reasonable accuracy and in strict conformance to anticipated needs. This type of staggered procurement, responding to ever-changing requirements of the health care centers, made it possible to execute procurements that were in direct response to needs and reduced waste and idle stock levels. As such, considerable sums were saved. This approach works well when IP/IS commodities are prioritized and incorporated in the district action plans. Involvement of Medical Stores Limited in the phased approach to distribution (based on demand) helped the MOH/MSL and the project understand use of the commodities in all districts. Adequate stocks were critical to facility success in implementing IP/IS standards, because training without commodity support brings little or no result; equally, commodity support without proper training will not result in desirable change. Both need to be present for behavior change to occur. As explained above in the section on procurement, all project-supported procurement was coordinated at the central level through Medical Stores

Limited to achieve economies of scale in ordering, while preserving additional savings created by demand-based procurement.

Ongoing Challenges for Future Attention in Zambia

Ensuring sustainability. The medical transmission of HIV and other serious infections is largely preventable through application of strong national policy that includes standard IP/IS guidelines. MOH leadership, commitment, and support will be imperative going forward, as will be sourcing and provision of adequate supplies, and ongoing transmission of key information and skills.

Long-term maintenance of positive changes must be supported through strong human resource practices, including continued supportive supervision and feedback to health care personnel as well as sufficient incentives and motivation for health workers.

To encourage sustainability, MISP developed a handover plan with MOH in all the technical areas to ensure continuity of IP/IS activities. To further encourage sustainability of practices, the final IP/IS policy must be approved and disseminated. This will provide greater clarity to all levels in the health care system and make it easier for external support to be provided, because many donors will only provide support in conjunction with strong government commitments, as demonstrated through final approval of a policy.

Continuing MOH leadership and coordination. MOH should continue to establish links and leverage resources with key stakeholders on issues of IP/IS through the National Infection Prevention Working Group. The NIPWG should be encouraged to support the MOH so that it is able to continue to acquire the necessary commodities previously procured by MISP. As noted throughout this report, the NIPWG, under the MOH Directorate of Clinical Care and Diagnostic Services, has included IP/IS activities in its 2009-2010 action plan. Planned activities include:

- Conducting follow-up supportive supervision visits to all the districts
- Conducting continued training for providers and supervisors at all levels
- Continuing to procure IP/IS commodities for the facilities
- Conducting a trainer-of-trainers workshop in IP/IS
- Strengthening in-service training programs (including prevention of mother-to-child transmission, maternal child health, post-abortion care, emergency obstetric care, and antiretroviral therapy, by integrating IP/IS activities
- Continuing to work with pre-service institutions such as the School of Medicine to strengthen the IP/IS component of curricula

Continued Success Depends on Stakeholders

“The general impression by the GRZ and all partners is that MISP did a recommendable job, but more still needs to be done. It’s now up to the MOH and all stakeholders to map up a way forward to maintain the appropriate standards of Infection Prevention and Injection Safety in the country.”

– Velepi Mtonga
permanent secretary, Ministry of Health
MISP closeout event, June 2009

Although the inclusion of activities in annual action plans is a promising step, MISP recognizes that this does not ensure adequate implementation of plans. Continued support and monitoring with MOH partners will be necessary to foster follow-through on the above activities.

On the logistics side, the MOH should continue to encourage the production of IP/IS commodities by local firms. At project's end, the following commodities were being procured locally: utility gloves, bins, bin liners, gum boots, aprons, and sodium hypochloride solution. Some firms have started investing in manufacturing many of the injection safety commodities. This has reduced costs, decreased delivery times, and helped in preventing commodity stock-outs.

Encouraging and supporting staff retention. MISP provided technical assistance to the MOH Directorate of Clinical Care and Diagnostic Services in development of its annual action plans. Through this assistance, MISP contributed to the inclusion of IP/IS activities in the FY 2008-2009 and 2009-2010 action plans, notably through activities to build the capacity of facility and ward administrators in IP/IS and to strengthen supportive supervision systems. Lobbying for inclusion of IP/IS training for the health care workforce in action plans at all levels (central, provincial, district, and facility) should continue, with the expectation that public funds will continue to support training and supervision, in line with these district budgets and action plans. Despite this, Zambia faces high turnover among management and health care personnel, and this has contributed to continued observance of poor IP/IS practices in health care facilities throughout the country. More systems-level attention to human resources is needed to prevent turnover (and other personnel issues such as low motivation) from adversely affecting the impact of IP/IS training and other capacity building initiatives.

Increasing focus on waste management. Waste management has not received the attention it deserves, as evidenced by the lack of funds allocated and the relative low priority placed on it by policymakers. This has resulted in poor waste disposal infrastructure and equipment in many health facilities. Policy, planning (budgeting), and prioritizing this in national and district action plans is a priority.

Involving the private and informal health sectors. The inclusion of the private sector in national IP/IS activities still poses a challenge, yet carries significant urgency. Many private health institutions have been left out of important programs, not just infection prevention, but also other programs such as anti-retroviral therapy, prevention of mother-to-child transmission, and malaria. The MOH has acknowledged this as a major challenge in the provision of health care. It requires a more systematic approach to reach more private health facilities.

Speaking a common language. As MISP visited provincial and district health management teams to understand how IP/IS indicators were being monitored and captured, it became clear that the definitions of some indicators (i.e. infection prevention standards) were not equally understood at all facilities. Differences in interpretation of the indicators make data analysis across different facilities and districts difficult and can

lead to false conclusions. Therefore, there is a need to further clarify definitions used for monitoring IP/IS practices.

Understanding the impact of IP/IS activities nationwide. Although MISIP conducted a final evaluation of its activities (see CD-ROM Annex), significant additional research is needed to understand the impact country-wide of MISIP and other IP/IS strengthening activities that have occurred in the last decade. Operational research is also needed to confirm the usefulness of specific approaches, in particular, community-level activities such as drama and other BCC/outreach initiatives.

CD-ROM INDEX

1. Zambia MISP Final Report in PDF Format
2. Zambia MISP Project Tools
 - Assessment Form for IP/IS Safety Commodities
 - Standardized Procurement List for IP/IS Commodities
 - Orientation Package for Health Managers and Supervisors
 - IP/IS Training Manual for Healthcare Providers
 - Participant's Handbook for Healthcare Providers
 - Tools for Monitoring Interim Effects of BCC Activities
 - Formative Research Reports
 - BCC Strategy for the Public and Private Health Sector
 - Drama Performance Assessment and Audition Criteria
 - IP/IS Indicators List
3. Zambia MISP Baseline Evaluation Survey Report
4. Zambia MISP Midterm Evaluation Survey Report
5. Zambia MISP Final Evaluation Survey Report
6. Zambia MISP Annual Report: 2004-2005
7. Zambia MISP Annual Report: 2005-2006
8. Zambia MISP Annual Report: 2006-2007
9. Zambia MISP Annual Report: 2007-2008
10. Zambia MISP Performance Monitoring Plan
11. Success Stories



U.S. Agency for International Development

1300 Pennsylvania Avenue, NW

Washington, DC 20523

Tel: (202) 712-0000

Fax: (202) 216-3524

www.usaid.gov