Guyana Safe Injection Project

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Final Report

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Acronyms

CRSON	Charles Rosa School of Nursing
CMO	Chief Medical Officer
CE	Continuing Education
EHA	Environmental Health Assistants
EHO	Environmental Health Officers
EHU	Environmental Health Unit
EPA	Environmental Protection Agency
EDL	Essential Drug List
FWMP	Facility Waste Management Plan
GPHC	Georgetown Public Hospital Cooperation
GNA	Guyana Nurses' Association
GSIP	Guyana Safe Injection Project
HFLA	Health Facilities Licensing Act
HIV	Human Immunodeficiency Virus
IS	Injection Safety
MLT	Medical Laboratory Technicians
MOH	Ministry of Health
NAPS	National Aids Program Secretariat
HCWM	National Health Care Waste Management
NSI	Needlestick Injury
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
PAHO	Pan-American Health Organization
PMP	Performance Monitoring Plan
QAI	Quality Assurance and Improvement
QI	Quality Improvement
RDU	Rational Drug Use
REO	Regional Environmental Officer
RHO	Regional Health Officer
SAIU	Safe and Appropriate Injection Use
SHV	Senior Health Visitor
SLA	Service Level Agreements
STG	Standard Treatment Guidelines
STSU	Standards and Technical Services Unit
TOTs	Training of Trainers
USAID	United States Agency for International Development
HAP	US Embassy Humanitarian Assistance Program
WM	Waste Management
WP	Worker Protection

Executive Summary

The Guyana Safe Injection Project (GSIP) was a 12-month project designed to focus on country ownership and sustainability of injection safety practices and interventions in the health care system in Guyana. This one year project aimed to build on the gains made during the Guyana Safer Injection Project (2004-2010) by ensuring that key national and local stakeholders had developed the capacity—including knowledge, skills and resources—as well as the interest, motivation and institutional support to manage, maintain and improve injection safety in the future. The Ministry of Health (MOH) of Guyana was the primary partner in this endeavor.

GSIP's activities were organized under four functional areas: safe and appropriate injection use, worker protection, waste management and quality assurance and improvement. Among the key activities GSIP successfully carried out were:

- Building the capacity of 71 health workers to serve as Injection Safety Trainers
- Supporting the Trainers to reach over 800 health workers with in-service injection safety trainers
- Integrating Injection Safety into the training curricula for four cadres of allied health workers
- Upgrading the capacity of Environmental Health Assistants to support health facilities to dispose of sharps waste safely
- Reinforcing the national Injection Safety Certification system, which assesses health facilities compliance with 30 Injection Safety Standards
- Supporting seven facilities to achieve Injection Safety Certification

These and other accomplishments are detailed in this report. The project faced several challenges which are also addressed. Annexes to the report present project-developed materials and respond to reporting requirements from USAID.

Background

The Guyana Safe Injection Project (GSIP) was a 12-month project designed to focus on country ownership and sustainability of injection safety practices and interventions in the health care system in Guyana. This one year project aimed to build on the gains made during the Guyana Safer Injection Project (2004-2010) by ensuring that key national and local stakeholders had developed the capacity—including knowledge, skills and resources—as well as the interest, motivation and institutional support to manage, maintain and improve injection safety in the future. The Ministry of Health (MOH) of Guyana was the primary partner in this endeavor.

Goal of GSIP

To promote *comprehensive, sustainable, country-owned and managed* infection prevention and injection safety (IS) programs that safeguard *health care workers, patients* and *communities*.

The central message of the program is: "A safe injection does no harm to patients, providers or the community." All stakeholders, including patients, providers, waste handlers and the wider community, must be informed and involved in promoting injection safety.

As the central message implies, injection safety entails ensuring that every injection provided is necessary, that the provision of an injection does not cause unnecessary harm to the recipient nor exposes health care workers to risk of needlestick injuries and does not result in waste that is dangerous for the community. Injection safety cuts across several programs and functions in a health system, including: procurement and supply chain logistics for injection, drug and waste management supplies, security and storage at facilities, prescribing, injection administration, waste management and patient/community sensitization.

When injection safety is not upheld by each stakeholder at all points, HIV, hepatitis B and other blood-borne diseases can be transmitted to patients, health workers or others in the community who receive needlestick injuries; another risk from poorly administered injections are abscesses at the injection site.

A major component of injection safety is the safe management of the waste created, including the needles, syringes and injection vials. After an injection is administered, the syringe and needle must be disposed of in an appropriate sharps disposal container to prevent needlestick injuries to the health care provider, the patient and the community. An appropriate sharps container must be available at injection sites, as well as in the homes of insulin-dependent diabetics. Medical waste must also be appropriately segregated for safe final disposal. The best practice for sharps disposal is incineration at high temperatures.

In order to focus on all of these aspects of injection safety, GSIP's 2011-2012 activities were organized under four programmatic functional areas:

- Waste Management (WM)
- Worker Protection (WP)
- Safe and Appropriate Injection Use (SAIU)
- Quality Assurance and Improvement (QAI)

In the following sections, GSIP's performance in each functional area over the past year will be discussed and assessed. Each section summarizes the key activities in the functional area and achievement of relevant indicators. The report also touches on the main challenges that GSIP encountered and provides relevant recommendations to the Ministry of Health and other partners. Finally, the report includes a brief overview of activities conducted in the final quarter (Annex 1).

Overall assessment of performance against 11-month action plan

Functional Area #1: Waste Management

Safe handling, transport and final disposal of needles, syringes, vials and other hazardous waste generated by the use of injections—and health care in general—is fundamental to overall injection safety. Failing to manage waste properly can lead to accidental needlesticks, infections and environmental degradation. GSIP's work on waste management included support for proper waste management planning, waste segregation from point of generation to final disposal, and strengthening the regulation and monitoring of these and other relevant practices.

PMP Indicators:

1		***Waste Management***	***Baseline***	***Target***	***Achieved***	***% of Target***
	a	Number of facility managers/incinerator operator TOTs trained by GSIP	0	40	23	58%
	b	Number of incinerator operators trained by TOTs	0	45	30	66%
	c	Number of EHO/EHAs trained in WM	0	50	29	58%
	d	Percentage of trained EHO/EHAs using supervision checklist	0	50%	67%	133%
	e	Percentage of facilities with no stockouts of safety boxes in the previous six months	100%	100%	100%	100%
	f	Percentage of health facilities with final disposal method for health care waste	6	6	6	100%
	g	Number of facilities with access to safety boxes for sharps waste	6	6	6	100%
	h	Percentage of facilities using safety boxes for sharps waste disposal	100%	100%	100%	100%
	i	A mechanism exists which EHU uses to follow up on WM problems identified by EHO/EHAs during routine supervision and monitoring.	No	Yes	Yes	n/a

Development and implementation of EHO/EHA Checklist

In collaboration with three MOH Principal Environmental Health Officers (EHOs), GSIP aided the development of a checklist for use by the regional EHOs and Environmental Health Assistants (EHAs). The tool is attached in Annex 2. The objective in developing this tool and a procedure for its use was to give the EHO/EHA working at the regional level a tool to guide

monthly monitoring visits to health facilities. Prior to this project, EHO/EHA had no standard procedures or tools to support health facilities' compliance with national standards in health care waste disposal practices and other relevant issues (such as structural integrity and food preparation standards).

The relevant standards from the following existing regulations and guidelines were thus extracted and organized into an easy-to-use checklist:

- Food and Drugs Act (1971)
- Environmental Protection Act (1996)
- Occupational Safety and Health Act (1997) Act No. 32
- Health Facilities Licensing Act (2007)
- Health Facilities Licensing Regulations (2008) No. 7
- Public Health Ordinance, Chapter 145 (2009)
- Injection Safety Standards (2010)
- Municipal and District and Councils Act Chapter 28:01
- Local Government Act Chapter 28:02
- Draft National Health Care Waste Management Regulations

When an EHO/EHA visits a health facility, the checklist should be completed in triplicate. One copy is given immediately to the facility's administrators so they can follow up on any gaps identified. The second copy is sent to the Regional Environmental Officer (REO); the REO can then use the information to inform his or her quarterly report submitted to the MOH EHU. The original is kept by the EHO/EHA in his or her personal records and referred back to before future visits to the facility.

To introduce and familiarize EHOs and EHAs with the use of the checklist, EHU and GSIP developed a training module. The training also covers the Facility Waste Management Plan (FWMP) template that GSIP has introduced to facilities. Two Checklist/FWMP trainings were jointly conducted by EHU and GSIP, one in Region 2 and one in Region 5, during which 21 EHO/EHAs were oriented. EHU has secured the budget to complete similar sessions in all remaining regions independently of GSIP. By the end of September 2012, two additional sessions had already been conducted, in Regions 7 and 8.

Incinerator Operator Training of Trainers and Follow-Up

The destruction of medical waste, particularly sharps waste, within Guyana's health care system has been significantly improved over the last three years. With support from donor and government funding, some of which was leveraged by GSIP, seven De Monforte incinerators, two improved De Monforte incinerators, one fuel jet incinerator, and one hydroclave are now located at facilities across the country. However, these have plagued by problems. Improper use, poor care, and lack of proper maintenance have resulted in slow start-up, frequent breakdowns, and long periods of inoperability.

Among the causes of the poor use and maintenance is lack of knowledge, particularly due to frequent staff turnover among the incinerator operators, and lack of adequate oversight by facility managers. GSIP, therefore, in collaboration with EHU and PAHO, developed a Trainer of Trainers (TOT) module to build the capacity of both health facility managers and incinerator operators in incinerator operation principles and practices. The intention was to both develop a cohort of skilled trainers and also to instill in facility managers a deeper understanding of incinerator operation so that they can provide appropriate support to these staff.

EHU, PAHO and GSIP then organized two Incinerator Operator TOT sessions. The training is comprised of classroom sessions, presented by agency staff, and a practicum conducted by the contractor who constructs incinerators. The training sessions addressed: principles of safe health care waste management, worker safety practices (including pre- and post-exposure guidelines, care and use of personal protective equipment), proper use of the incinerators, including operation and regular maintenance, and how to document the quantity of waste destroyed by the unit. The TOT sessions also addressed principles of adult education and training so that the participants will also be able to effectively train others in their facilities.

A total of 23 managers and operators from seven regions were trained during the two GSIP-supported TOT sessions. These trainees are expected to follow up on their training by conducting "cascade trainings" for co-workers in their home institutions. By the end of September 2012, GSIP staff had attended and supported three follow-up trainings conducted by TOTs, in which thirty additional facility staff people were trained on proper techniques for care, use and maintenance of the De Monforte Incinerators. Additional cascade trainings will be supported by EHU.

The training modules on incineration operation also remain with EHU and PAHO, which are currently jointly working with the US Embassy's Humanitarian Assistance Program (HAP) to construct additional incinerators in several locations. All three agencies are committed to supporting incinerator operator training sessions whenever new incinerators are commissioned.

Leveraging funding for incinerators

Incineration is key to safe final disposal of sharps waste; however, GSIP's budget did not include direct support for construction of new incinerators in regions that lack them. Instead, GSIP worked to leverage resources for new incinerators. GSIP helped facilitate collaborations among HAP and Regional Health Services for the construction of two improved De Monforte incinerators, one in Region 1 and another in Region 9. The regional administration in Region 3 has also allotted funds to construct an improved De Monforte at West Demerara Hospital.

Health Care Waste Management Regulations

Guyana lacks approved national regulations for the effective management of health care waste. GSIP has long been supporting the EHU in its efforts to develop national regulations and guidelines, and a draft was compiled in 2009. During the past 12 months, GSIP mobilized EHU to call three meetings of the National Health Care Waste Management (HCWM) Committee to continue refining the draft regulations. GSIP integrated changes to the draft recommended by Environmental Protection Agency (EPA) and organized the document into an appropriate format.

The document has been shared with both the Chief Medical Officer and the office of the Minister of Health for review and presentation to the MOH's policy committee. Due to the short time frame of this project, GSIP has not managed to see the document to its final stage; PAHO and other members of the HCWM committee will continue to support the process of moving the document to completion, followed by approval and implementation. During GSIP's end-of-project meeting, Minister Ramsaran further committed to support the process.

Regional and Facility Waste Management Plans

The implementation of the EHO/EHA checklist has re-emphasized the need for the development of both facility and regional waste management plans. The EHU directorate has already been working with the large hospitals to develop detailed plans for all categories of health care waste; GSIP has supported the EHU in developing a standard outline for the content of the detailed plan, and promoted the adaptation of the format for use by health centers and health posts. Each plan outlines an individual facility's management of infectious and non-infectious waste from point of generation to final disposal. The plans are developed through collaboration with the facility staff and the regional EHO, RHO and/or Senior Health Visitor (SHV). During this phase GSIP has assisted several facilities in Regions 2 and 5 to prepare or update their plans, and then laminated the plans to be posted at the facilities.

Drum incinerators at health centers

At the beginning of the project year, GSIP received technical information from PAHO on the construction and use of drum incinerators. PAHO has demonstrated their effectiveness as a preferred waste disposal option for small health facilities: drum incinerators are low cost, require limited materials, are easy to construct and install, safely destroy hazardous waste and allow for safe containment of ash after every burn cycle.

The information and guidance on construction, use and maintenance of drum incinerators was shared with facility staff during Certification and Incinerator Operator workshops. Figure 1 shows a slide from a GSIP presentation showing a cross section of a drum incinerator.

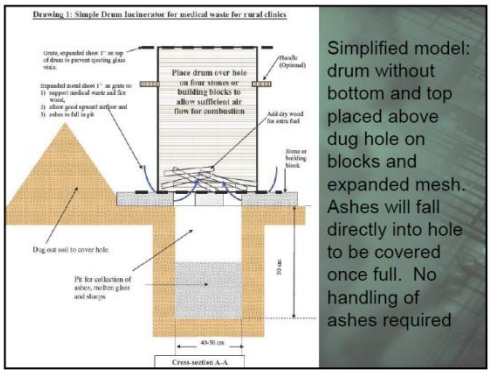

Figure 1

Figure 2

Several health centers and health posts have already begun benefiting from the new technology. With support from regional authorities and local communities, which donated the necessary materials, three health facilities installed and are now using drum incinerators to destroy their waste. Figure 2 shows the Senior Health Visitor in Region 5 examining one of the newly installed drum incinerators.

End-line Survey: Results on Waste Management

GSIP was pleased to find in the end-line survey of sentinel facilities the following waste-management related results:

- None of the facilities had experienced stockouts of safety boxes in the previous six months, indicating that supply chains were functioning properly. This was the same result found in the baseline study.
- All of the facilities now had waste management plans in place, a major improvement from the baseline, during which just one-third of them had WM plans.
- Two sentinel health centers had shifted from open burning to a drum incinerator as their means of final disposal. One hospital had improved its final waste management of non-infectious waste by contracting with a service to move waste off site to an appropriate dump site.
- Half of the sites were getting regular feedback from visiting EHOs at end-line, up from just 15 percent at baseline.

Functional Area #2: Worker Safety

Health workers, by the very nature of their jobs, are constantly at risk from unsafe injection use and disposal. Injection providers and waste handlers alike are exposed to both injury and infection from used needles; incinerator operators also face risks when sharps boxes are used for other forms of waste that can explode in the incinerator. GSIP worked with health workers and institutions to ensure that systems and procedures are in place—and in use—to protect health workers.

PMP Indicators:

2		***Worker Safety***	***Baseline***	***Target***	***Achieved***	***% of Target***
	a	Number of facilities with staff vaccination ledgers	5	6	6	100%
	b	Percentage of facilities with staff vaccinations up-to-date	0	85%	100%	118%
	c	Number of facilities doing documentation of NSI or other sharp injuries	6	6	6	100%
	d	Percentage of facilities with posted guidelines for post-exposure prophylaxis	86%	95%	100%	105%
	e	Percentage of health facilities with HIV post-exposure prophylaxis	100%	100%	100%	100%

2	Worker Safety		Baseline	Target	Achieved	% of Target
	f	Number of facilities reporting to MOH on staff vaccination status	0	6	6*	100%

Pre-Exposure Vaccination Records

The 2007 MOH Worker Safety Policy requires various pre- and post-exposure protections for all health care workers. For example, in order to work in a health care facility, all workers should have three doses of the Hepatitis B vaccine and an up-to-date booster dose of the tetanus vaccine. The Georgetown Public Hospital Cooperation (GPHC) has thus made it mandatory that all staff within the first three months of employment must be either fully immunized or in the process of completing immunization series; if they are not fully protected, their paychecks are withheld until they bring proof of vaccination. However, no other health facilities in the country have that policy in place, though they may encourage staff to comply with the MOH Worker Safety Policy.

To ensure that staff are protected, and in compliance with the national policy, vaccination must be documented at all levels of health facilities. Thus GSIP promoted the practice of having a ledger for documenting staff vaccination at all health centers, health posts, districts and hospitals; this is one of the requirements for Injection Safety Certification.

GSIP also developed a vaccination database template (Figure 3), which was shared with regional hospitals and pre-service training institutions with adequate computing capacity. Other relevant

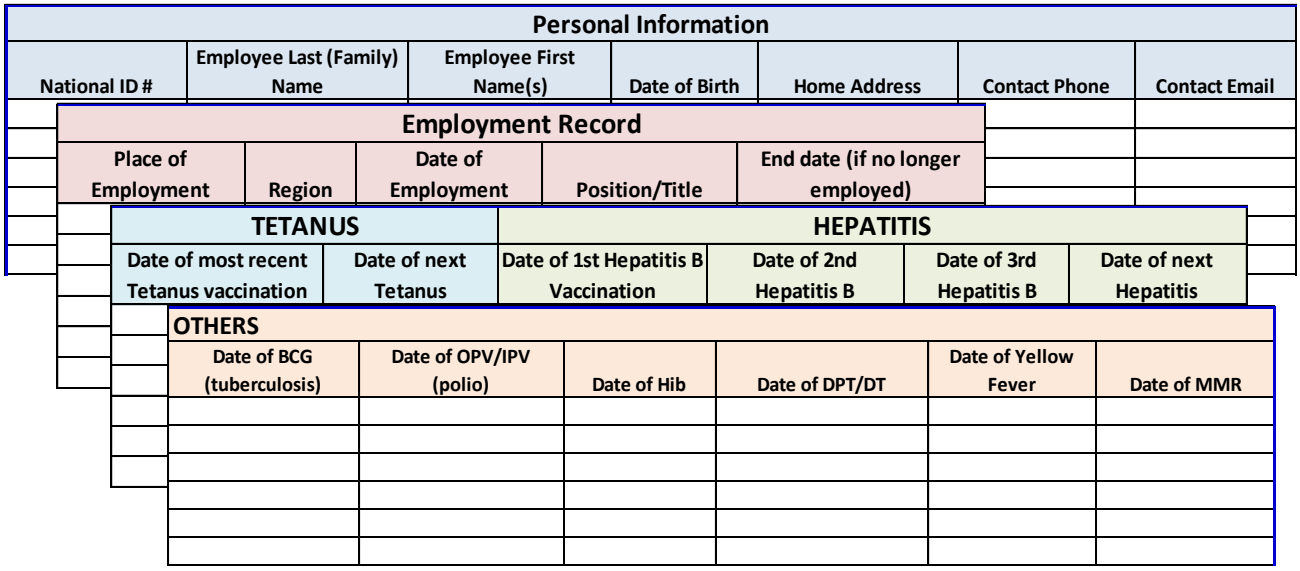

Figure 3: Screen shots from the Vaccination Database

staff information is also stored in this database, thus supporting easy retrieval and the identification of staff that are due for vaccination. The electronic format was well received:

* There is no formal system within the MOH to track vaccination status of facility staff; however, the baseline/end-line sites had all had their ledgers inspected by MOH Inspectors. Further, Senior Health Visitors were observed reporting on the topic at EPI meetings.

GPHC, for example, has adopted it and already entered data going back to 2009. Linden Hospital Complex, New Amsterdam Hospital and West Demerara Regional Hospital have also adopted it.

GSIP helped to foster collaborations among the public health department (which oversees immunization services) and the regional and district hospitals, which has resulted in public health nurses regularly visiting hospitals to support the staff vaccination process. The end-line findings showed that all the facilities under review had completely up-to-date vaccination ledgers in use.

Post-Exposure Prophylaxis after Needlestick Injuries

Prevention of, and HIV post-exposure prophylaxis in the event of, needlestick injuries were, in many ways, the driving force behind USAID's initial support for GSIP. Prevention activities fall under Functional Area #3, while post-exposure prophylaxis with anti-retroviral drugs is part of Worker Safety interventions.

GSIP collaborated with the National Aids Program Secretariat (NAPS) to ensure that the revised national Guidelines for Post-Exposure Protection were included and thoroughly covered in all GSIP trainings and training materials. The topic was addressed with all GSIP project participants: injection safety trainers, providers, waste handlers and incinerator operators, and facility managers. NAPS provided GSIP with 200 copies of a poster (Figure 4) that shows the updated protocol for treating people who experience a needlestick injury; these were distributed by GSIP's staff and trainers to all the facilities they visited.

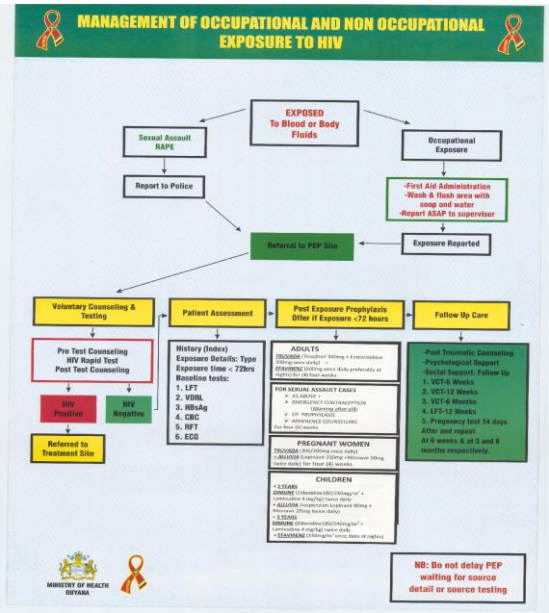

Figure 4: Poster distributed by GSIP

GSIP has strongly emphasized the documentation of all needlestick injuries in order to track incidence and allow for follow-up with injured staff. Maintaining a ledger for needlestick injuries is a certification standard (certification is described in detail in a later section), and a procedure that was strengthened at all the facilities that GSIP supported. GSIP's end-line survey showed that both documentation and an appropriate procedure for post-exposure response are in place at 100 percent of the sites.

Functional Area #3: Safe and Appropriate Injection Use

Injection safety for patients, providers and the wider community depends on providers' knowledge and compliance with proper prescribing and administration procedures, in addition to waste management and worker protection. Supporting health care providers to prescribe injectables appropriately and to administer injections safely requires training, monitoring and

regular reinforcement. Creating consumer demand for *safe* injections is another strategy that GSIP has periodically employed—clients need to reduce their demand for inappropriate injections and engage in monitoring health services for appropriate injection procedures. Thus, this functional area forms the core of GSIP's approach to injection safety.

PMP Indicators:

3		*Improving Safe and Appropriate Injection Use*	*Baseline*	*Target*	*Achieved*	*% of Target*
	a	Number of health workers trained as TOTs in IS/WM	0	75	71	95%
	b	Number of health workers trained in IS/WM	0	500	847	169%
	c	Inclusion of key injection use indicator(s) in STG monitoring	YES	YES	YES	n/a
	d	Number of national professional association CE sessions on IS, RDU and/or WM	0	3	4	133%
	e	Number of tutors trained in use of IS materials in pre-service education	0	4	8	200%
	f	Number of curricula for allied health staff that include IS materials	0	4	4	100%
	g	Percentage of health facilities with no stock outs of new sterile syringes (standard or safety) in the prior 6 months	83%	100%	100%	100%

Injection Safety in Pre-Service Training and Assessment

Injection safety is a cross-cutting issue that affects, and is affected by, all cadres of health workers. This year GSIP worked with four training programs to integrate injection safety into their curricula in order to equip new health workers with the requisite skills and information even before they begin providing care. The four pre-service training programs that participated were the programs for training new medexes, medical laboratory technicians (MLT), environmental health assistants (EHA) and pharmacy assistants. All four training programs are managed by the MOH Department of Health Sciences Education.

The integration process began with getting buy-in from the Department leadership; with their enthusiastic support, GSIP began meeting with the coordinators and selected tutors from each of the four programs to outline strategies to guide the process of integrating IS into the curriculum and making it a component on which students are assessed. With input from both GSIP and the coordinators and tutors, the curricula were reviewed, points of entry for injection safety content were identified and the identified sections were updated sections as recommended. Eight tutors were subsequently trained to deliver the newly added material and were provided with Injection Safety Manuals to ensure that the content is accurately disseminated to the programs' students.

In-Service Training Capacity

One of GSIP's central strategies for cultivating the sustainability of injection safety was to build Guyana's human resource capacity to conduct on-going training on injection safety and waste management, even with limited inputs in the future. Given the structure of the health system in Guyana, GSIP elected to build peer training capacity at the facility and regional levels in addition

to pre-service training capacity. In all instances, national, regional and institutional leadership were also apprised of the training events and materials.

In the first quarter of the project, GSIP conducted four Trainer of Trainers (TOT) sessions. Each TOT session lasted two days and included both didactic and interactive sessions. Teach-back sessions, in which the trainees practiced presenting sections of the materials, were particularly important, as they gave the prospective trainers an opportunity to test their new skills and get feedback on effectively conducting training.

A total of 71 health workers were trained to become Injection Safety Trainers. The TOTs, as they were called, included nurses, medexes, administrative staff, and others from both public and private health care facilities. The trainers were selected to participate in the training by the region or facility where they were employed.

Ongoing In-Service Injection Safety Training at Facilities

For the rest of the project period following the TOT sessions, GSIP supported the participants and their facilities to conduct in-service injection safety trainings for co-workers. Support from GSIP began with guidance on how to organize a training event and advance coaching on teaching methods and the materials. GSIP staff or consultants then attended one or more of the trainings conducted by each TOT to provide on-the-spot feedback, guidance and assistance as needed.

In most cases, GSIP also supported replication of training materials for participants. GSIP also assisted TOTs from the same or nearby facilities to collaborate on conducting training events. By the end of September, 2012, three-quarters of the trained TOTs had conducted one or more in-service injection safety training sessions for 847 health workers throughout the country.

TOT conference

In June, 2012—six months after they began conducting injection safety trainings—GSIP re-convened with the 71 trainers at an "Injection Safety Trainers Conference." Several injection safety trainers and consultants from GSIP I who had continued to be active also attended. The aims of the event were to encourage the TOTs to share their best practices, to acknowledge the efforts of the trainers, and to identify challenges and developing strategies to address them.

The special invited guests at the conference were the Honorable Ambassador of the US Dr. D. Brent Hardt, the Officer-in-Charge of USAID Mr. William Gelman, and the MOH Director of Health Sciences Education Mr. Noel Holder. All three spoke to the assembled trainers, congratulating them for their accomplishments to date and encouraging them to continue promoting and sustaining Injection Safety.

Figure 5: TOT Judah Bayley presenting

Four exceptional TOTs then presented their best practices to

encourage and inspire their fellow TOTs to consider how they might also build on the standardized training materials and strategies (Figure 5). The TOTs also met in small groups to share the challenges they had encountered as they conducted their trainings and then develop possible plans of action to address these issues.

At the close of the conference, the trainers were presented with their certificates and given a badge to wear that symbolize their injection safety training skills and responsibilities. The TOTs "pinned" each other with the badges at the close of the conference; this act brought the group together, created a sense of solidarity and gave them an additional opportunity to meet each other.

Figure 6: CIO William Gelman presented certificates to TOTs

Sustainability

As noted above, over 800 health workers were trained by the 71 new trainers during the course of the project. While the volume may decrease after GSIP has ended, we expect that the trainings will continue. Several TOTs developed strong working relationships with the human resources staff at their facilities and regional administration. The TOTs are notified when new staff are hired by a facility so that they can arrange to provide injection safety training.

In addition to being well-known to the Regional Health Officers and Senior Health Visitors in their home regions, the TOTs are also known to the MOH. The names and contact information for all the Injection Safety Trainers has been provided to central MOH training and human resources administrators, who can call on them if they need to organize additional trainings.

Continuing Education on Injection Safety

Clinical health workers are required to undergo periodic continuing education sessions on various topics to keep their skills and knowledge current; these sessions can be organized by MOH, individual facilities or by the professional associations of health workers. GSIP promoted the topic of injection safety to several Continuing Education providers, and assisted three to conduct sessions based on GSIP materials:

- A two-part CE for nurses was developed in collaboration with the Guyana Nurses' Association. GSIP's module on supervision of injection safety was expanded with GNA; its members attended two sessions held a month apart. At the first session, GSIP and GNA leaders presented the supervision strategies and methods; in the intervening month participants were expected to practice using them. In the second session, participants reported back on their experiences.

  This adaptation of the GSIP supervision module is now available for CE for nurses offered by GNA and other organizations. The CE training addresses: the role of supervisors in improving performance; the development and use of performance standards checklist in enhancing quality of care; and, the use of injection safety standards by nurses.

- GSIP updated its module on Rational Drug Use (RDU) for physicians and presented it to 22 physicians newly joining the MOH following medical training in the Cuban system. Further, the MOH's Chief Medical Officer has instructed that the RDU module be integrated into the orientation package for all medical practitioners. Hard and soft copies of the complete module have been handed over to the Regional Health Services and Chief Medical Officer's office for this purpose.

- With support from GSIP, the Pharmacy Council developed a CE session entitled "Giving the Right Drug in the Right Dose" to support rational use of drugs administered by nurses. It combines general reinforcement on calculating dosages with a focus on the conversions required for preparing injectable formulations. In September, the session was presented by the Chief Pharmacist to 30 students at the Georgetown School of Nursing. The Pharmacy Council has committed to sharing this tool with pharmacology tutors at the nursing school to support the rational use of prescription medicines.

Study on Injection Prescribing Practices

GSIP conducted a record review study to characterize the use of injections in primary care in relation to the Standard Treatment Guidelines (STGs) and Essential Drug List (EDL). The purpose was to determine whether anecdotal descriptions of overuse of injections were correct and to inform the project's and the MOH's approaches to decreasing unnecessary injections.

The study was conducted at health centers and the out-patient primary care departments at hospitals. At each site, GSIP reviewed the facility injection ledger, which is supposed to be used to document each injection given. All injections recorded in the ledger in the month of February, 2012, were recorded and reviewed to provide an overall picture of the frequency and types of injections used. In addition, instances of injections of three focus drugs (Rocephin, Seclopen and Dextran Iron) were also reviewed, and additional records were examined to capture more detailed information on the use of those drugs.

Among other findings, GSIP showed that a wide range of injections are in use in primary care. As shown in Figure 6, the most commonly injected medications were Novalgin, Voltaren and Buscopan—these three come from two EDL categories that were the most frequently used: "Analgesics, anti-pyretics, NSAIDs" and "Gastrointestinal drugs." The full report is attached in Annex 3.

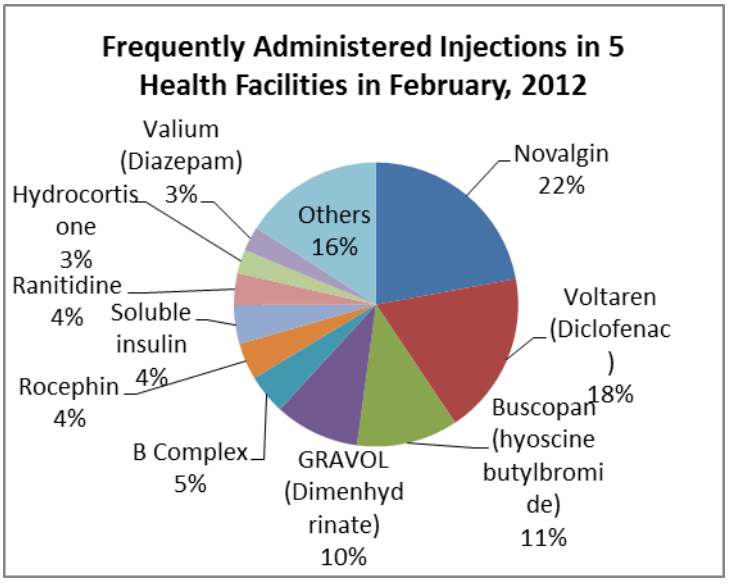

Figure 7

While the information collected from the study provided descriptive data, the analysis of adherence to the STGs was difficult, and the short time-frame of GSIP limited follow-up. A primary challenge was the availability of the necessary data. Although injection ledgers are supposed to be in use at all facilities, they were not always in place, up-to-date or complete. Further, patient and prescription records at some facilities were essentially non-existent; in other instances many of the records lacked key data. This not only undermines research but must also have implications for the continuity of care provided to patients when previous files cannot be traced.

Thus the primary results of the prescribing study were a set of recommendations to MOH for additional follow up. These are presented in Table 1.

Table 1: GSIP Recommendations from the 2012 Prescribing Practices Study

To promote and sustain good practices:	
	Continue to promote oral alternatives to injections whenever possible, both with providers and patients
	Continue to provide periodic refresher trainings to providers in injection safety and rational drug use, particularly for pharmacy staff
To ameliorate existing problems:	
	Develop additional STGs to address diagnoses that providers are regularly encountering in order to regulate and ensure appropriate treatment
	Re-train prescribers in prescription writing standards to promote clear communication among prescribers, dispensers and patients about medication use
	Review and improve guidance for, and supervision of, record-keeping practices to promote continuity of care for patients and allow for review of records for adherence to STGs
	Train staff members who are responsible for procurement to better understand and use the EDL so that uncontrolled medicines are not available for use. This includes pharmacy assistants, facility managers and regional health officers, as well as staff at MMU.
To deepen understanding of this area:	
	Conduct similar reviews focused on prescribing practices related to Buscopan, Novalgin and Voltaren to determine whether providers are using them in line with STGs
	Compare prescribing practices at different facilities to see whether – and why – significant disparities exist
	Expand stock management studies to determine the existence and causes of any discrepancies between ordered and administered drug supplies

Functional Area #4: Quality Assurance and Improvement

Health care quality improvement is a continuous process; capacity building—such as the activities reported on above—is an integral part. Another critical component is the establishment of clear quality standards and follow-up supervision and monitoring against the standards. GSIP therefore has continued to work closely with MOH partners and facilities to establish clear quality improvement guidelines and procedures.

PMP Indicators:

4		Quality Assurance and Improvement	Baseline	Target	Achieved	% of Target
	a	Number of Service Level Agreements (SLAs) that include key IS, WM and worker protection indicators	0	12	†	n/a
	b	Inclusion of additional IS, WM and worker protection standards in HFLA checklists	NO	YES	YES	100%
	c	Number of sites meeting injection safety standards	0	6	7	117%
	d	Proportion of prescribers complying with STG guidance on oral formulations	n/d	n/d	‡	n/a
	e	Number of prescribers trained in RDU	0	n/d	22	n/a
	f	Number of local organizations provided with technical assistance for improving injection safety and waste disposal	0	63	62	98%

(n/d = not defined, n/a = not applicable)

Certifying "Injection Safe Facilities"

An Injection Safety Certification process was developed in collaboration with the MOH Standards and Technical Services Unit (STSU) and its Health Inspectorate in the first phase of GSIP. The Certification process assesses facilities according to 30 stringent Injection Safety Standards; GSIP also developed a set of strategies for helping facilities to prepare for the certification inspection. During the first phase, 14 facilities were awarded Injection Safety Certificates. In the current project year, seven more facilities (listed in the box at right) in Regions 2 and 5 achieved *Injection Safety Certification*, with support from GSIP and their regional management, and as determined by STSU. This exceeded GSIP's original target of supporting six facilities to achieve certification.

Health Facilities Newly Certified as *Injection Safe Sites*:

Anna Regina Health Center
Belladrum Health Center
Bush Lot Health Center
Charity Hospital
Cotton Tree Health Center
Mahaicony Hospital
Queenstown Health Center

GSIP guided the participating facilities—five health centers and two hospitals—through a six-month period of upgrading their practices, self-assessment and peer evaluation. Team meetings were held periodically in both regions so the participating facilities could support each other as they addressed their challenges and weaknesses. Regional Injection

Figure 8: The Senior Health Visitor (far left) celebrates with representatives from the four certified facilities in Region 5.

† The 2012 Service Level Agreements have not been made public on the MOH's website. However, in response to an invitation from the Chief Medical Officer, in January, 2012, GSIP submitted a memo with recommendations on injection safety indicators for inclusion in the SLAs.

‡ Following consultation with stakeholders, the prescribing study was redesigned and did not collect data to answer this particular indicator. The results of the study are detailed in TITLE and summarized in section c.iv above.

Safety Inspectors also worked with the facilities to ensure that they were prepared to meet at least 90 percent of the standards.

At the end of July, 2012, inspectors from the MOH Health Inspectorate and regional inspectors conducted assessments at the seven facilities. Five of the facilities were found to be in full compliance at the time of the first assessment; two had remaining issues and were given two weeks to address these. The inspectors re-visited the two facilities after two weeks and found that both had managed to ameliorate their problems.

All seven facilities were awarded their certification plaques at recognition ceremonies; the Region 5 Recognition Ceremony was held at Bush Lot Health Center on September 11, 2012, and the Region 2 Recognition Ceremony was held the following day at Charity Hospital. STSU Director Dr. Julian Amsterdam delivered the key note address and handed over the plaques to the facility staff in Region 2, while Dr. Raellyn LaFleur-Williams, the Infection Prevention and Control Director, presided at the Region 5 ceremony.

Figures 9 and 10: STSU Director Dr. Julian Amsterdam presented certificates to two health centers (above) and one hospital (below) in Region 2.

Holding the recognition ceremonies at regional level, rather than in Georgetown, allowed more regional administration staff and representatives from other local facilities to participate in the event. Both the representatives from the certified facilities and GSIP hoped that this would motivate other facilities in the region to work towards becoming certified sites.

Sustainability

The end of GSIP does not spell the end of Injection Safety Certification in Guyana; this is important not only because many facilities have never been assessed for Injection Safety, but also because the current Certification is supposed to be renewed every two years.

The certification process is now housed at MOH's STSU, and two pathways exist for facilities to be certified, as shown in Figure 11.

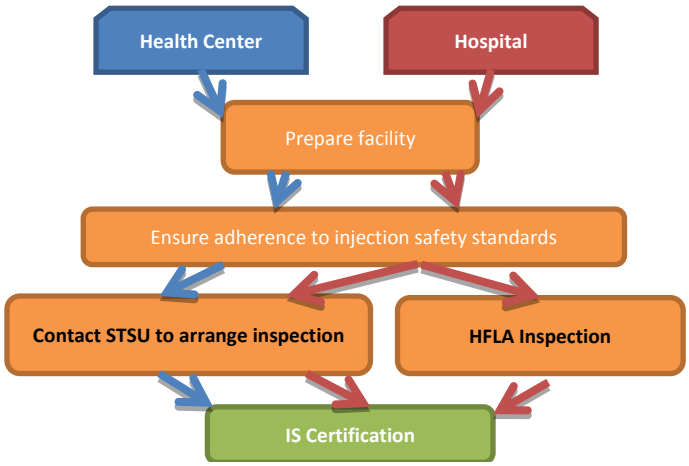

Figure 11

Facility-Initiated Certification

Health centers and hospitals that seek Injection Safety Certification can call on the IS Trainers, regional inspectors and other regional technical support providers to help them prepare the facility to be reviewed according to the 30 IS Standards. In fact, as GSIP was closing out, two private hospitals—St. Joseph Mercy and Davis Memorial—had just embarked on the process, beginning with initial self-assessments and then creating action plans to upgrade their practices to qualify for certification. The East Bank Regional government hospital, meanwhile, is in the final stages of preparation for certification. When these—and other facilities that may in the future seek Injection Safety Certification—are prepared for an inspection, they can directly, or through their regional health officer, contact STSU to request a visit from inspectors to review their performance on Injection Safety Standards.

Integration of IS in the HFLA checklist

The other pathway to certification, which is currently only available to hospitals, is the Health Facilities Licensing process. This is the primary continuous monitoring system for hospitals in Guyana, which is mandated in the Health Facilities Licensing Act of 2007 and the 2008 Health Facilities Licensing Regulations. The process, which is managed by STSU, is still evolving; the long-term objective is to ensure that all hospitals are inspected and re-licensed annually. This year, STSU has scaled up its capacity to cover fifty hospitals.

GSIP worked closely and intensively with STSU since the HFLA process was initiated. While some aspects of injection safety were initially included in the HFL checklists, these did not reflect all of the injection safety standards defined for the certification process. This year, therefore, GSIP and STSU collaborated on an additional set of standards that will be integrated in the checklist being rolled out in November, 2012. With these additions, all injection safety standards and performance expectations are included in the HFL checklist. The process was further strengthened when GSIP trained nearly two-thirds of the MOH inspectorate team to understand, interpret and assess all injection safety standards and performance expectations.

Service Level Agreements

Another strategy used by the MOH to set and monitor performance standards for health facilities are Service Level Agreements (SLAs). This strategy, which was rolled out in 2010, is managed by the Regional Health Services department. In most regions, an SLA is worked out between the regional health services and the central MOH to outline performance expectations and targets for the year. Regions with large hospital facilities may have a separate SLA for hospital services.

As with the HFL checklist, most of the 2011 SLAs had some injection safety and waste management indicators. In response to a request from the CMO, in January 2012, GSIP prepared a memo outlining recommendations for improving the injection safety and waste management components of the SLAs to align completely with the injection safety certification standards. However, GSIP is unable to determine how many of these recommendations were accepted or acted on as more recent SLAs have not been made publicly available.

Adaptations of GSIP's Supervisory Tool

Effective supervision—of injection safety in addition to other functions—is an ongoing challenge in the health sector. Many supervisors have neither formal training nor national guidance or tools. GSIP's supervision tools and strategies, therefore, struck a chord with many of the project participants who encountered it, and during the past year GSIP responded to their requests to expand and adapt the strategies.

Linden Hospital Complex, for example, worked with GSIP staff and consultants to adapt the supervisory tool to meet their specific needs. GSIP assisted the newly created Quality Improvement team, which included the facility's IS Trainer and others, to conduct a two-day workshop on the theme "Creating A Quality Improvement Process."

The workshop took 22 participants through: the concept of quality; the purpose of a Quality Improvement team; Performance Improvement process steps and tools; preparation to conduct Performance Improvement Reviews. Workshop participants included the quality improvement team, supervisors, ward managers and tutors from the adjacent Charles Rosa School of Nursing (CRSON). As a result of the workshop, the facility has agreed to pilot tailored QI tools in two units at the hospital. They have also developed three performance standards to support the CRSON clinical instructors and ward managers in guiding and evaluating students doing clinical rotations.

Country ownership and sustainability

It was a given from the outset that this was the final year that USAID would be supporting a stand-alone injection safety project in Guyana. This reinforced the importance of the GSIP's long-standing emphasis on sustainability and national ownership, as Guyana's health system needed to be completely prepared to maintain injection safety independently by the end of the project. As should be apparent throughout this report, GSIP's approach to this challenge was to use it as a motivating factor and a primary organizing principle for all activities.

Country ownership and sustainability, however, are not easy to measure, especially in the short-term. However, as the project winds down, GSIP is confident that Guyana is well-situated to sustain the various initiatives that GSIP helped to set up.

National level

At the national level, GSIP staff frequently met with the MOH Permanent Secretary, Mr. Leslie Cadogan, in the final months of the project to ensure that the MOH had a clear understanding of all the activities that had been initiated. With Mr. Cadogan's guidance, GSIP has shared all its materials and strategies with the appropriate parties at MOH.

Further, the Honorable Minister of Health, Dr. Bheri Ramsaran, gave the keynote address at GSIP's final meeting on September 5, 2012. In his remarks, Minister Ramsaran noted that "while all good things come to an end, we have made this good thing into a regular thing" and reassured the attendees that there was no reason to have "anxious moments" due to the project's close-out.

He challenged the MOH unit heads in attendance to continue to promote injection safety, and promised to help them include injection safety supplies and activities in the 2013 budget. Finally, he pledged to fast-track the draft health care waste management legislation to Parliament in the upcoming session. This level of support means that injection safety activities will have the necessary political backing to continue.

Political backing, however, is not enough to actually get things done. Several MOH unit heads, who are responsible for policy implementation, have been continually and thoroughly engaged in all aspects of GSIP's activities. Throughout the year, the Environmental Health Unit, Standards and Technical Services and Health Sciences Education, the Chief Medical Officer, Chief Pharmacist, Director of Regional Health Services and other MOH staff have all worked closely with GSIP staff on developing strategies and materials and conducting training activities relevant to their various areas. The long-term involvement and complete familiarity of these national individuals and agencies gives GSIP confidence that they are fully prepared to completely take over all the national-level supervision, monitoring and leadership activities. PAHO has agreed to provide additional and ongoing technical support to GSIP's partners, particularly related to health care waste management.

Local level

The capacity of local actors to actually implement policies and procedures developed at the national level can limit the impact of high-level interventions. Further, while injection safety is greatly enhanced with national attention, it can be maintained at the facility and regional level even without that higher level focus. Thus, GSIP concentrated on nurturing capacity and commitment to promote injection safety at the regional and facility levels. In addition to the 71 TOTs who were trained and supported this year, regional inspectors from the previous stages of the project were fully involved and their skills reinforced and upgraded during training and certification activities. These health workers, who work in regional administration and provide care at both public and private facilities, are fully conversant with the 30 injection safety standards and are able to help facilities upgrade their practices to meet the standards. Beyond their knowledge and skills, these local resource people also demonstrate a strong *commitment* to injection safety. TOTs continue to proactively encourage administrators to address injection safety problems and to support their co-workers to upgrade their injection and waste management practices and skills. This commitment, along with the training materials, informational and educational materials such as posters and infomercials, and other resources are distributed widely throughout the country for continued use by committed injection safety advocates.

Problems/challenges

GSIP faced challenges and problems during the year, both expected and not. One hitch that GSIP faced on several occasions in the past 12 months was personnel changes at the Ministry of Health. Under the previous phase, GSIP had developed a strong working relationship with the former Minister of Health, who was shifted to another ministry following the national elections in late 2011. Three other key partners also left their posts during the project: the Director of

Regional Health Services, the Director of the Environmental Health Unit and the Director of Health Sciences Education. While GSIP had pre-existing working relationships with the Dr. Bheri Ramsaran, the new Minister of Health, as well as the other new directors, the transitional periods resulted in some slow-down for the project.

As always, GSIP's ability to work with and through partners—a strategy key to our focus on sustainability and national ownership—was limited by their availability and flexibility. Start-up activities were slowed by the attention to the elections that took place in the last quarter of 2011. Further, our primary partners, the Ministry of Health and staff of health facilities, all have multiple priorities and responsibilities which, at times, prevented GSIP activities from being implemented as planned. This presented a particular challenge given the short time-frame of the project—little time was available to reschedule or postpone activities to better fit the partners' availability. Two activities in particular suffered from the lack of time: GSIP had hoped to support the office of the Chief Pharmacist to print an expanded reference handbook for pharmacy assistants, but it was not approved at the MOH during the project period.

Follow-up on the prescribing practices study also suffered, partly because of the schedules of the stakeholders and partly because other activities that were postponed from earlier in the year ended up taking precedence over dissemination of the study.

Conclusion

Initiatives Inc., the implementing agency for the USAID Guyana Safe Injection Project, is grateful for the opportunity to spend the last 12 months focused on sustainability and country ownership of injection safety in Guyana's health care system. The gains made during the first phase of GSIP are now protected and systems are in place for the continued monitoring and expansion of injection safety in Guyana.

ANNEXES

Annex 1: Q4 Activity report

GSIP implemented several activities in the period following the third quarterly report (from June through September 14, 2012). The activities conducted during this period included:

Safe and Appropriate Injection Use:

- GSIP conducted training on rational drug and injection use for Cuban-trained physicians newly joining the MOH. GSIP was invited by MOH to conduct the training session as part of the larger orientation program provided to the new physicians.

- The integration of injection safety content into MOH curricula for training of medical laboratory technicians (MLT) and Medex programs was completed in partnership with the Health Sciences Education unit and the tutors who lead the programs.

Quality Assurance and Improvement

- During the final quarter, GSIP assisted staff at seven facilities in two regions to complete their preparations for certification inspections. At the end of July, the five health centers and two hospitals were inspected by teams from the MOH national health inspectorate.

  Four had 100% compliance with the standards at the time of the inspection; at the other three, some problems were identified. These facilities were given two weeks to remedy the problems; upon the repeat inspections in mid-August, these three also were found to be 100% compliant. **Thus all seven facilities qualified for injection safety certification.** The certificates were presented to facility representatives by the MOH Standards and Technical Services unit at regional events during the second week of September. A press release prepared following these events is attached in Annex 1a.

  Three other facilities have indicated their interest in working towards certification; GSIP has provided them with the necessary documents and materials and helped them to initiate their improvement activities. These facilities will contact STSU when they are ready for inspection.

  In advance of the July certification inspections, GSIP held a training workshop and mock survey on the process and injection safety standards for the inspectors who were participating in that activity. An additional, more general, training was held in September for 15 members of the inspectorate, to discuss injection safety standard integration into the Health Facilities Licensing process and checklist.

- Supervisors trainings

  GSIP prepared and presented trainings on quality improvement and supervision for staff at the Linden Hospital Complex and New Amsterdam Hospitals in response to requests from the facility leadership. Twenty-two participants at Linden Hospital spent two days reviewing the concepts in creating a quality improvement process and developing performance standards; follow up there will be carried out by the Quality Assurance Committee, who helped to organize

the event. At New Amsterdam Hospital, six members of the nursing team participated in sessions on the steps in implementing the supervisory tool in the maternity unit.

- CE sessions: GNA, Pharmacy Assistants, drug calculations

  Continuing education (CE) sessions were prepared and presented in partnership with both the Guyana Nurses' Association (GNA) and Pharmacy Association. The GNA CE program focused on supervision; it was presented as a two-part workshop. The second session was held a month after the first; in the time in-between the participants practiced the techniques taught and prepared supervision checklists that they brought for discussion during the second session. A brief overview is attached in Annex 1b.

  The session with the Pharmacy Association was designed to help nurses and pharmacy assistants accurately carry out dosage calculations and conversions, a key component of safe injection use. The presentation slides are attached in Annex 1c.

- During this quarter, GSIP prepared the report on the injection prescribing practices study carried out in the third quarter. The final draft is now ready for USAID approval. It is attached in Annex 3.

Waste Management

- In this quarter, GSIP rolled out a new training-of-trainers (TOT) program designed to address the final disposal of sharps and other hazardous waste. Twenty-three incinerator operators and health facility operations managers participated in two TOT sessions, which addressed key elements of incinerator operation as well as training strategies and techniques.

  In addition to GSIP staff, representatives of the MOH's Environmental Health Unit, PAHO and the local contractor who constructs the de Montfort-type incinerators in use at the facilities all presented material to the participants. The workshops combined didactic sessions with demonstrations of incinerator use.

  Following these TOT sessions, five cascade trainings were conducted by the newly trained TOTs with support from GSIP staff. While GSIP has not met its target number of participants in this activity, PAHO and EHU, along with the USG Humanitarian Assistance Program, which finances the construction of the incinerators, have plans to continue to expand the training to other facilities with existing or new incinerators.

- GSIP staff met with members of the Georgetown, West Demerara and Linden Diabetic Associations to disseminate the infomercial on insulin use and needle disposal. Each diabetic association has its own copy to continue reviewing in the future.

Cross-cutting

- Meeting with Permanent Secretary

  During this quarter, GSIP held two meetings with the MOH's Permanent Secretary, Mr. Leslie Cadogan, Chief Medical Officer Dr. Shamdeo Persaud, Director of Regional Health Services Dr.

Irv Chan, and other MOH staff to review injection safety sustainability. GSIP prepared summaries of the activities it has accomplished, along with copies of all the materials developed and memos on sustainability for future reference by the MOH.

- Final National Meeting: “Sustaining Successes in Injection Safety”

  To mark the end of GSIP II and the final handover of injection safety activities to the Ministry of Health and its partners, GSIP held an end-of-project meeting on September 5, 2012. The Minister of Health, Dr. Bheri Ramsaran, and Mr. Thomas Pierce, chargé d’affaires of the US Embassy, were the guest speakers who addressed injection safety issues overall. Other key unit heads from MOH and one Injection Safety trainer also presented on the aspects of the program they had been most involved in, while GSIP and Initiatives staff focused on acknowledging the many stakeholders that had made GSIP possible. The event received excellent coverage in the Guyana Times (article included in Annex 4) and in other media.

Annex 1a: Press Release

USAID | GUYANA
FROM THE AMERICAN PEOPLE

PRESS RELEASE

FOR IMMEDIATE RELEASE

USAID Congratulates Seven "Safer Injection" Certified Health Facilities

Seven health facilities were awarded "Safer Injection Site" certificates by the Ministry of Health this week. The United States Agency for International Development (USAID) and the USAID/Guyana Safe Injection Project (USAID/GSIP), which provided technical assistance and guidance to the facilities as they prepared for the certification inspections, offer heartfelt congratulations to these facilities for their achievements:

Region 2	**Region 5**
Anna Regina Health Center	Belladrum Health Center
Queenstown Health Center	Bushlot Health Center
Charity District Hospital	Cotton Tree Health Center
	Mahaicony Cottage Hospital

Certification Process

A general definition of "certification" is: "an official determination and recognition by an external approval body that an eligible program complies with approved performance standards that demonstrate high quality services."

To be certified as a Safer Injection Site in Guyana, a facility must fully comply with 30 performance standards that cover the full range of injection safety concerns, namely: Procurement, Logistics, Staff Education, Injection Administration, Worker Safety, Waste Management, Rational Drug Use and Monitoring for Improvement.

The seven sites participating in the program this year have been working steadily over the past six months to improve their compliance to the standards. Inspectors from the Ministry of Health's National Health Inspectorate visited them in July and August, 2012, to assess whether each facility was meeting the standards. These independent inspectors reviewed each of the 30 standards at each of the seven sites carefully, and determined that they were eligible to receive

certificates, which are co-signed by Minister of Health Dr. Bheri Ramsaran and MOH STSU Director Dr. Julian Amsterdam.

Certificates Awarded

The facilities in Region 5 received their framed certificates on Tuesday, September 11, 2012, during a program held at the Bushlot Health Center. Senior Health Visitor Nurse Deslyn Fraser emceed the event, at which participants were addressed by Mr. Govind Singh, Deputy Regional Executive Officer, Mr. Floyd France, Mahaicony Hospital's Chief Executive Officer and Dr. Portia Dodson and Ms. Anya Guyer from GSIP. Dr. Raellyn LaFleur from the Ministry of Health's Standards and Technical Services Unit presented the certificates to staff of the four facilities. Medex Claudette Johnson, one of the Injection Safety Trainers trained by GSIP from the region, closed the event.

All the speakers congratulated the facilities on upgrading their practices to meet international-level injection safety standards. As Mr. France remarked, the challenge now is to sustain the improved practices. He said "It is like a boat that has been built and is now seaworthy. Now we have to take it out and keep on moving."

On receiving the certificates, representatives from each of the facilities committed themselves to sustaining injection safety at their sites and to help other local facilities that also aspire to upgrade their injection safety practices. They also thanked the communities around the health facilities for contributing resources towards improvements and for embracing the call to reduce demand for unnecessary injections.

The following day, Wednesday, September 12, 2012, a similar celebration was held to award certificates to three facilities in Region 2. This event took place at Oscar Joseph Memorial Charity Hospital. The program was chaired by Suddie Hospital's Matron, Merona Pearson, who expressed pride that now both hospitals in the region have achieved Safe Injection Certification status. Remarks were made by Sister Muriel Murray, Nurse-In-Charge at Charity Hospital, Dr. Julian Amsterdam, Director of the Ministry of Health's Standards and Technical Services Unit, and Ms. Audrey Anderson, GSIP Project Director. Dr. Amsterdam handed over the certificates to staff representatives from the three newly certified facilities. The closing remarks were given by Nurse Lavita Persaud, one of the region's Injection Safety Trainers.

Several speakers expressed their gratitude to all the staff at the facilities, who worked hard and as strong teams to make the necessary changes. Particularly drastic improvements were seen in waste management and environmental hygiene at the facilities. Nurse Murray noted, "Since all the folks have fully cooperated to achieve certification, we definitely have the capacity to maintain the standards in the future."

Background

The USAID/Guyana Safe Injection Project (GSIP) is a project funded by USAID and implemented by Initiatives Inc. It is preparing to close out later this month, after a successful run promoting comprehensive, sustainable, country-owned managed infection prevention and injection safety (IS) programs in order to safeguard health care workers, patients and communities. GSIP's activities were focused on four key programme areas: Safe and Appropriate Injection Use, Worker Protection, Waste Management and Quality Assurance and Improvement. Following the project's end, these functions will be sustained by the relevant units

at the Ministry of Health, notably Regional Health Services, Health Sciences Education, Standards and Technical Services and Environmental Health. These units have been supporting and participating in GSIP throughout its implementation period.

Attachments:

Region 5.jpg	Staff from the four Region 5 facilities certified as “Safer Injection Sites” show the certificates they will hang in the facility.	
Region 2 - 1.jpg	Staff from the Queenstown and Anna Regina health centers stand together with their new certificates.	
Region 2 - 2.jpg	Dr. Julian Amsterdam handing over the certificate to staff from Oscar Joseph Memorial Charity Hospital.	

Annex 1b: Guyana Nurses Association Continuing Education Session Report

GSIP and Guyana Nurses' Association
REPORT ON SUPERVISION AND MONITORING
CONTINUING NURSING EDUCATION
June 27 and July 25, 2012

The objectives of the CNE are to enable supervisors to:

- Improve knowledge and skill in supervision and monitoring
- Develop performance standards and checklists
- Monitor performance with checklist and provide feedback
- Use data for problem solving
- Develop a plan for supervision and monitoring

Strategy:
The need to improve performance of nurse supervisors will be approached by engaging participants in identifying and addressing their own supervision needs in a two-part CNE session.

Session 1 – 27th June 2012

- Define the role of supervisors in improving performance
- Identify the importance of the use of performance standards checklist in enhancing quality of care
- Select topics and approaches to supervision to test

Session 2 – 25th July 2012

- Understanding monitoring
- Data collection and using data to solve problems
- Planning for supervision and monitoring
- Report out and discussion on experiences using supervision tools

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Session 1

The first session was held at the Guyana Nurses Association on Wednesday June 27, 2012. Seventeen persons attended from seven health institutions:

Facility	Number of persons
Georgetown Public Hospital Corporation	5
Davis Memorial Hospital	1
St Joseph's Mercy Hospital	2
Diamond Regional Hospital	2
West Demerara Regional Hospital	3
National Insurance Scheme	2
Georgetown Health Centers	2
Total	17

The first two sessions of GSIP's module on "Improving Performance through Supervision and Monitoring" were used for the training. Lively discussions were generated on supervision and what affects performance. Supervision was seen as supervising individual performances without any thought given to services or systems. Monitoring performance of staff in a structured manner is lacking although some institutions have "Standards of Care."

Participants worked in groups to make performance standards for "Wound Care," "Documentation" and "Handing over Process." These were identified as areas which need to be addressed.

Session 2

Eight persons attended. Excuses were received from some supervisors.

Facility	Number of persons
Georgetown Public Hospital Corporation	2
St Joseph's Mercy Hospital	1
Diamond Regional Hospital	2
West Demerara Regional Hospital	2
Georgetown Health Centers	1
Total	**8**

The remaining four modules of GSIP's Supervision and Monitoring Training module were covered at this CNE session. These were: Understanding Monitoring, Data Collection, Using Data to Solve Problems and Planning for Supervision and Monitoring. Views were freely expressed regarding the collection and presentation of data. Some expressed challenges they face as supervisors. The importance of data in research studies was also noted.

Annex 1c: Slides from Pharmacy Council Continuing Education Session

USAID | GUYANA
FROM THE AMERICAN PEOPLE

GUYANA SAFE INJECTION PROJECT

GIVING THE RIGHT DOSE OF A MEDICINE

Rationale for Training

- One aspect of injection safety is ensuring rational drug use. That is, ensuring that each patient receives the **right drug** at the **right time** in the **right dosage** with the **least possible harm.**
- The Ministry of Health promotes safe and effective health care for all people in Guyana.
- GSIP supports training for all involved in administering medications to patients and, in particular, promotes the use of orals over injections whenever possible and other risk reduction strategies.

Learning Objectives

By the end of the session participants will be able to:

- Understand the key terms applicable to pharmacy calculations.
- Identify appropriate units of measure.
- Define key components of finding the ordered dose
- Apply formulas to find the ordered dose .

Key Pharmacy Terms

Pharmacology- is the science of drugs/medicines, their properties and actions on activating or inhibiting normal body processes.

Drug- is any substance or chemical that can affect living processes, which when administered can achieve a beneficial therapeutic effect on some process within a patient or toxic effects on regulatory processes in parasites infecting the patient.

Toxicology- is a branch of pharmacology that deals with the undesirable effects of chemicals on living systems, from individual cells to complex ecosystems.

Toxicity- is an adverse drug reaction caused by excessive dosing.

Key Pharmacy Terms

Pharmaceutics- is the science of preparing and dispensing prescribed medicines.

Drug interaction- occurs between two or more medicines. These interaction can result in the augmentation (beneficial) or reduction of the drug response.

Food-drug interaction- occurs between a drug and food. The interaction forms complexes which may result in toxicity or therapeutic failure.

Allergic Reaction- is an immune response.

Key Pharmacy Terms

Side-effect- is an unavoidable secondary drug effect produced at therapeutic doses e.g. drowsiness

Pharmacokinetics- is the process of the absorption distribution and elimination (metabolism and excretion) of drugs.

WHAT THE BODY DOES TO THE DRUG

Pharmacodynamics- is the study of drugs and their action on living organisms. The process encompasses the pharmacological effects that are responsible for therapeutic, adverse effects, and effects that may be of no practical clinical relevance.

WHAT THE DRUG DOES TO THE BODY

Half-life- the time required to change the amount of drug in the body by one-half during elimination.

Routes of Administration

The route of administration – how a drug is introduced into the body – may be :

- Subcutaneous
- Intramuscular (IM)
- Intravenous (IV)
- Endotracheal
- Sublingual
- Intraosseous
- Transdermal
- Oral
- Rectal

Units of Measure

Units for **weight** commonly used in Pharmacy are:
microgram, milligram, gram & kilogram
N.B However, there are others which may be used

Name	Abbreviation	Equivalent
1 kilogram	kg	1000 g
1 gram	g	1000 mg
1 milligram	mg	1000(mcg) µg
1 micro gram	µg (OR mcg)	1000ŋg
1 nanogram	ŋg	1000pg
1 picogram	pg	1/1000ng

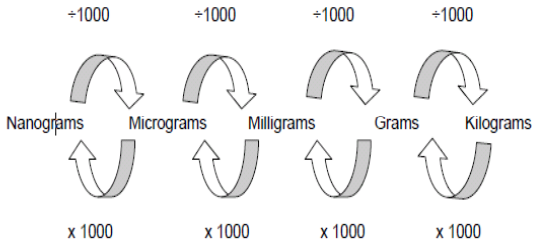
Units of Measure

Good Practice Guidelines:

- **Micrograms** should always be written in full (may see mcg or µg)
- **Nanograms** should always be written in full (may see ng or ŋg)
- Decimal places should be avoided i.e. 0.5g should be written as 500mg.

To convert from smaller units to larger ones, we need to divide by 1000, or to convert from a larger unit to a smaller unit, we need to multiply by 1000

Units of Measure



Units of Measure

Units for **volume** commonly used in Pharmacy are: millilitre and litre
1 litre (L) = 1000 millilitre
1 millilitre (mL) = 1000 micro litre (xxx)
Drops
There are approximately 20 drops per mL of water.
N.B. This will be different for more viscous liquids

Measure	Abbreviation	Metric measure	Apothecary measure
1 tablespoon	T (tbs)	1 T = 15 cc or 15 mL	
1 teaspoon	t (tsp)	1 t = 5 cc	
drop	gtt	depends on size of drop	
1 litre	L	1000ml	
1 cubic centimetre	cc	1 ml (can be used interchangeably)	

Expressions of Concentration

Unit	Expression	Example
% weight in weight	% w/w	1% w/w = 1g in 100g
% volume in volume	% v/v	1% v/v = 1mL in 100mL
% weight in volume	% w/v	1% w/v = 1g in 100mL
% volume in weight	% v/w	1% v/w = 1mL per 100g
Molar	M	1molar = 1 mole in 1 litre
1 part per 100 (solid in liquid)	1 in 100	1 in 100 = 1g in 100mL
1 part per 100 (solid in solid)	1 in 100	1 in 100 = 1g in 100g
1 part per 100 (liquid in liquid)	1 in 100	1 in 100 = 1mL in 100mL
1 part to 4 parts	1:4	5 parts in total
1 part in 4 parts	1 in 4	4 parts in total

Calculations Review

Fractions

Fractions can be converted into a whole number (with or without decimals) by dividing the numerator (top # by the denominator (bottom #).

Example 1

½ = 0.5

Example 2

$\frac{6}{2} = 3$

Calculations Review

Fractions

- To multiply fractions, first multiply all the numerators, then multiply all the denominators.
- The final step is to reduce the final fraction down the lowest number which is done by dividing the numerator by the denominator.

(**Keep in mind you are staying on the top of the line all of the way across and on the bottom of the line all of the way across)**

Example 3

$\frac{3}{4} \times \frac{2}{6} = \frac{6}{24} = \frac{1}{4}$

Calculations Review

Percentages

- Percentages refer to parts per 100.
- For example, 3% is equal to 3 parts out of 100. It can be written as a fraction which in turn can be converted into a decimal or whole number by dividing by 100.

For example:

3% = 3 parts out of 100 = $\frac{3}{100} = 0.03$

Calculating Percentages

To calculate a percentage, put the figure above 100. e.g. 20% becomes $\frac{20}{100}$

e.g. 20% of 400 is:

$\frac{20 \times 400}{100}$

$\frac{20 \times 4ØØ}{1ØØ}$

20 x 4 = $\frac{80}{}$

To calculate a percentage proportion (e.g. what percentage is 30g out of 300g) use the following formula:

e.g. $\frac{30 \times 100}{300}$

$\frac{3Ø \times 100}{3Ø}$

$\frac{3 \times 100}{30}$

$\frac{1 \times 100}{10}$

0.1 x 100 = $\frac{10\%}{}$

Calculations Review

Ratios

- They are proportions or fractions just written in a different format.
- In a ratio, the first number is the **numerator**, and the second number is the **denominator**. Instead of using a line with the numerator on the top and the denominator on the bottom, the numerator and the denominator are separated by a colon (:) The colon (:) represents the division sign.

For example:

1 : 2 = 1 part per 2 parts = $\frac{1}{2}$

Calculations Review

Ratios can then be turned into a fraction by dividing 1 by 2 = 0.5

i.e ½ = 0.5

and then into a percentage by moving the decimal point two places to the right = 50%.

- A decimal can be converted to a fraction by dividing by 1.
- A decimal can be converted to a percentage by multiplying by 100.

Calculations Review

A ratio expresses the numerical relationship between two quantities.

Example: If a given drug contained 50 mg (solute) of the drug for every 2 mL of liquid (solvent), the ratio of drug to liquid could be expressed as 50:2.

- A ratio is the result of the division of two numbers that can be expressed as a fraction. After writing the ratio as a fraction, the fraction can then be reduced to its lowest terms.
- Example: 50:2 = $\frac{50}{2} = \frac{25}{1}$ mg of drug per every 1 mL of liquid

Calculations Review

- Once a ratio is converted to a fraction, the fraction can be converted to a decimal, and the decimal can be converted to a percent.
- Example: 50:2 = $\frac{50}{2} = \frac{25}{1}$ = 25.00 = 2500%

Calculations Review

Proportions - It is an equation that contains two ratios of equal value.

The proportion (equation) uses an equal sign or double colon to demonstrate that the ratios on both sides of the equal sign (double colon) are equal.

In a proportion, the outer most numbers are called the **extremes**, and middle two numbers are called the **means.**

Example: 4 : 12 = 8 : 24

Calculations Review

In order for a proportion to be a true proportion, the product of the means is always equal to the product of the extremes.

- Example: 4 X 24 (extremes) = 96
  &
  12 X 8 (means) = 96

A true proportion!

Calculations Review

- We can use apply desire, have, vehicle, and give to proportions as follows:
- Example: H : V =(::) D : G or $\frac{H}{V} = \frac{D}{G}$
- Example: 4 : 12 =(::) 8 : 24, or $\frac{4}{12} =(::) \frac{8}{24}$
- When these fractions are reduced to their lowest terms, they are equal:
- $\frac{4}{12} = \frac{\mathbf{1}}{\mathbf{3}} = \frac{8}{24} = \frac{\mathbf{1}}{\mathbf{3}}$

Calculations – Example

Example : A nurse must administer 50 mg of a medication intramuscularly. The drug is available as 100 mg/2 mL. How much will the nurse administer?

100 mg : 2 mL = 50 mg : X
= (100)(X) = (50)(2)
= 100 X = 100
Therefore: X = $\frac{100}{100}$
X = **1 mL**

Calculations – Example

Example: A nurse must administer 25 mg of a medication. The dose on hand is 50 mg per tablet. How many tablets would the nurse administer?

- 50 mg : 1 tablet = 25 mg : X
  = (50)(X) = (1)(25) = 50X = 25

Therefore: X = $\frac{25}{50}$

=X = 0.5 tablet or ½ tablet

DRUG DOSE CALCULATIONS

Finding the ordered dose

- The ordered dose is the most simple dosage calculation for the nurse.
- In this type of problem, the nurse is given an order to administer to a patient. There are **five (5) components** to locate in this type of problem:

1. the desired dose
2. the concentration of the drug
3. volume on hand
4. a weight conversion needed
5. what unit to administer

DRUG DOSE CALCULATIONS

1. **The Desired Dose**
The desired dose is an order from the doctor and includes the amount of the medication and should also include the route of administration. The desired dose in the example that follows is known as a **basic doctor's order.** → (2.5 mg of medication)
2. **Concentration**
The second item to identify is the concentration. The nurse is given the concentration of a vial, an ampoule, a prefilled syringe, or a tablet. Concentration can be listed as common fractions, percentages solutions or by mass (e.g.grams and milligrams).
Example: 10 mg/ml

DRUG DOSE CALCULATIONS

3. **Volume on hand**
The volume on hand refers to the amount of liquid that the drug is in. In the example: 10 mg/ml, there is a 10 mg concentration of drug in 1 ml of liquid.

4**. Weight conversion (LB TO KG)**
Look at the Doctor's basic order. Is it directly tied to the patient's weight?
Example: Give 5 mg/kg of drug X, Patient weighs 220 lb.
Remember, not all medicine orders are based on weight.

Weight conversion (LB TO KG)

Example of a **Weight Based Problem**

- "Gentamycin 50mg/kg is ordered" (Note: The / slash actually means per; **this is not a division problem, it is a multiplication problem**; this means that we are to give 50 mg of a drug for every 1 kg of body weight)
- If our patient weighs 10 kg, then we can determine the amount of the ordered dose by doing the following calculation:
  50 mg X 10 kg = 500 mg

(our order is for 500 mg of Gentamycin)

Weight conversion (LB TO KG) cont'd

When **converting weight given in lbs and oz** one must **first** convert oz to lbs, and then the total lbs to kg.
Example: If an infant weighs **8 lbs, 6 oz**, how many kg does this infant weigh?

- Convert oz to lb:
  $\frac{6 \text{ oz}}{16 \text{ oz}} \times \frac{1 \text{ lb}}{} = 0.375$ or 0.4 lb

(Note: oz cancel one another out and we are left with lb-the units we want)

Therefore, we now know the infant weighs **8.4 lbs**
(not 8.6 lbs - a common error made in these types of problems)

Weight conversion (LB TO KG) cont'd

- Now convert lbs to kg:
  8.4 lb X 1 kg = 3.8 kg
  2.2 lb

(Note: lb cancel one another out and we are left with kg - the units we want)

Therefore, the infant weighs **8.4 lbs or 3.8 kg**

DRUG DOSE CALCULATIONS

- Do the following examples mean the same thing?
  50 mg = 100 mL
  100 mL 50 mg

a. 50 mg means that there are 50 mg in 100 mL
   100 mL

b. 100 mL means that 100 mL contains 50 mg
   50 mg

- Answer: Yes, these examples mean the same thing. We have not changed the amount of solute or solvent in these examples, we have simply inverted them. One can invert fractions such as these in order to manipulate units so that unwanted units may be cancelled or eliminated. This is an important concept to understand in dosage calculations.

DRUG DOSE CALCULATIONS

Unit To Administer

It is essential to look at the doctor's order and identify the unit of measurement that will be administered to the patient. Some texts refer to the unit to administer as "what you are looking for." Example: How many ml will you administer?

- **Desired Dose:**
- **Concentration:**
- **Volume on Hand:**
- **Lb to Kg:**
- **Looking for** (what we give to the patient)

Parenteral Therapy

- IV pumps and controllers figure drip rates.
- When a doctor orders an infusion for a patient he specifies the amount of solution and the amount of time for it to be administered.
- You need to calculate the **rate of flow** and the **number of drops per minute** after you select the **size of the IV tubing or drop factor.**
- The drop factor for the tubing for:
  - ❖ **An adult is either 15 or 16 drops per ml**
  - ❖ **A child 60 micro drops per ml**

Calculating IV Push Medications

Example

Doctor orders 2.5 mg of morphine to be administered IV to a patient with substernal chest pain. You have 1 ml vial that contains 10mg of morphine (10 mg/ml). How many milliliters are you going to have to draw up into a syringe and push IV into your patient's IV line port?

Calculating IV Push Medications

Before starting any calculations, organize all of the key components to the problem.

Desired Dose: 2.5 mg of morphine IV
Concentration: 10 mg
Volume on Hand: 1 ml
Lb to Kg: None
Looking for: ml to be given

Desired Dose X Volume on Hand = __ml to be given
Concentration

2.5 mg X 1 ml = 2.5 ml or (2.5 ÷ 10) = 0.25 ml to be given
10 mg 10

Calculating IV Drip Infusion

- The Doctor orders 2 mg/min of Lidocaine to be infused to a patient who is experiencing an arrhythmia. Your ambulance carries only 1000 ml bags of D5W. You have a 60 gtt/mL microdrip setup. How many drops per minute will you adjust your administration set to drip?

Calculating IV Drip Infusion

Desired Dose: 2 mg Lidocaine IV
Concentration: 1 g Lidocaine
IV Bag in ml: 1000 ml D5W
Lbs to Kg: None
Admin. Setup: 60 gtt/ml
Looking for: gtt/min

$$\frac{\text{IV bag volume (ml)}}{\text{Concentration of Drug}} \times \frac{\text{Desired Dose}}{1\text{ min}} \times \frac{\text{Admin. Setup (gtt)}}{1\text{ mL}} = \text{gtt/min}$$

$$\frac{500\text{ ml}}{1\text{ g}} \times \frac{2\text{ mg}}{1\text{ min}} \times \frac{60\text{ gtt}}{1\text{ ml}}$$

Calculating IV Drip Infusion

- Note: Convert the grams you mixed in the bag to match the milligrams in the Doctor's order:

$$\frac{500\text{ ml}}{1000\text{ mg}} \times \frac{2\text{ mg}}{1\text{ min}} \times \frac{60\text{ gtt}}{1\text{ ml}} = \frac{120\text{ gtt}}{2\text{ min}} = 60\text{ gtt/min}$$

Calculating an IV Flow Rate

- Example: A nurse must infuse 1000 mL of IV fluids over 8 hours. The tubing drip factor is 10 gtts/mL. How many gtts per minute will there be?
- Determine what it is that is being asked - How many gtts/min? (**desired dose**)
- Determine what units your answer must be represented in (desired units) - gtts/min is what we are solving for **(what we give to the patient)**
- Determine what the unwanted units are - We want to eliminate hours and mL
- Determine what the link is - 60 min = 1 hour

Calculating an IV Flow Rate

$$\frac{\text{volume to be infused}}{\text{infusion time (in minutes)}} \times \frac{\text{drip rate}}{1\text{ml}} = \text{gtt/min}$$

- Set up your problem so that you can eliminate unwanted units to end up with desired units
- Convert hours to minutes before setting up the final problem.
- mL cancelled each other out and we are left with gtt/min (the units we want)

$$\frac{1000\text{ mL}}{480\text{ min}} \times \frac{10\text{ gtt}}{\text{mL}} = \frac{10{,}000\text{ gtt mL}}{480\text{ min mL}} = 20.8\text{ gtt or }21\text{ gtt}$$

Expressions of Concentration

Expressions of Concentration

e.g. Ceftriaxone infusion is prepared as 1000mg (1g) in 20mL w/v.

A dose of 600mg would be calculated as:
1000mg in 20mL
100mg in 2mL
Therefore: 600mg in 12mL

Displacement Volume

'What is a displacement volume?'

- A 'Displacement volume' is the volume occupied by the powder when a suitable diluent is added during reconstitution.

This is particularly important to take into account

- e.g.: for children when the dose needed is only a proportion of the vial content.
- If we look at amoxicillin injection as an example:
- The displacement volume for amoxicillin 250mg is 0.2mL.
- Therefore if 4.8mL of diluent is added to a 250mg vial, the resulting solution is amoxicillin 250mg in 5mL

Volume Displacment

- NB: the displacement volume is different for
- each drug,
- for each strength of drug
- and for different brands/manufacturers formulae.

Dosage calculations with conversions

Drugs in solutions
Some drugs are mixed in to solutions eg. A bottle of elixir

- Bottle of elixir contains 5 grains of medication per teaspoon
- The doctor order 15 grains of medication
- To find the amount to administer

$$\frac{want}{have} = \frac{15\ grain}{5 grain\ per\ tsp} = 3\ tsp$$

This formula also works for units of injections
eg. A vial states that it contains 100,000 units of penicillin per cubic cm.
you are to inject 300,000 units.
To find amount to be injected:

$$\frac{want}{have} = \frac{300000\ units}{100000\ units/cc} = 3\ cc$$

Dosage calculations with conversions

To convert a dose in gram to milligrams
Formula :

Dose in ordered unit (known) × Conversion fraction (relation of unknown to known units) = Dose in desired unit (unknown)

OR

Known × conversion fraction = unknown

Applying the formula

The doctor orders 0.5g of ampicillin to be given four times a day. You want to how many milligrams one dose would be.

Your problem is:

0.5g=? mg (unknown unit is 0.5g; unknown unit is ?mg)

Set up a calculation that allows you to cancel the gram unit and give you the answer in milligrams.

0.5g × ?mg = answer in milligrams
?mg

Conversion fraction is

$$\frac{?\ mg}{?\ g}$$

You must fill in the missing quantities.

First, set the quantity of either unit to 1.

then find out how many of the other units are contained in the quantity.

In the case, let us set the quantity of grams at 1.

One gram contains 1000mg , so you can fill in the fraction as follows:

$$\frac{1000\ mg}{1g}$$

Note that this fraction is equal to 1 because the numerator and the denominator both represent the same quantity, only in different units. Remember, the denominator must be in the same unit of measurement as the known dose.

Now you can solve the problem by first cancelling the gram unit and multiplying:

$$0.5\ g \times \frac{1000\ mg}{1\ g} = 0.5 \times 1000\ mg = 500 mg$$

- To covert teaspoon to table spoon

Problem

A patient is to be given 6 tsp of milk of magnesia as necessary for constipation. How many Tsp would that be?

Solution:

Know unit = 6 tsp unknown unit = ? Tsp

$$6 tsp \times \frac{?\ Tsp}{?\ tsp} = Tsp$$

3tsp = 1 Tsp conversion fraction is : $1\ Tsp/3\ tsp$

$$\cancel{6\ tsp} \times \frac{1\ Tsp}{\cancel{3\ tsp}} = 2\ Tsp$$

Converting grain to milligram.

Problem:

The order is gr ss . The tablets are labelled in milligrams.

How many mg equal ½ gr?

$$\frac{1}{2}\ gr \times \frac{?\ mg}{?\ gr} = ?\ mg$$

1grain = 60mg therefore

$$\frac{1}{\cancel{2}}\ gr \times \frac{\cancel{60}\ mg}{1\ gr} = 30 mg$$

Children Doses

- Children needs smaller doses of medicine than adults.
- There are two ways to adjust dosages for children by
  - age
  - weight

	Age	Weight
Infant	0-24 months (up to 2 years	Less than 40 lbs
Child	25-150 months(2 to 12 ½ years)	Less than 150lbs
Adult	More than 150 months (more than 12 ½ years)	150lbs or more

Adjusting Doses by Age

- A six month old infant is given tetracycline. The adult dose is 250 mg. What is the infant dose?

$$patient's\ age\ (in\ months) \times \frac{usual\ adult\ dose}{adult\ age\ (in\ months)} = child's\ dose$$

- NB: The adult age is always 150 months (12 ½ years) for this method

$$\cancel{6\ months} \times \frac{250\ mg}{150\ \cancel{months}} = \frac{1500\ mg}{150} = 10\ mg$$

- The infant dose will be 10 mg of tetracycline

- Suppose the dose were for an 8yr old child.

- 8yrs is the same as 96 months(8x 12= 96)
- Your problem should look like this:

$$96\,\text{months} \times \frac{250\,\text{mg}}{150\,\text{months}} = \frac{24{,}000\,\text{mg}}{150} = 160\,\text{mg}$$

- NB: The child's dose will be 160 mg

Adjusting Doses by Weight

- This formula assumes an *adult weight is 150 lbs*

$$\text{patient's weight} \times \frac{\text{usual adult dose}}{\text{adult weight (150 lbs always)}} = \text{child's dose}$$

- *Problem:* A doctor orders dilantin for a 30 lb child. The usual adult dose is 100 mgs. What is the child's dose?

$$30\,\text{lb} \times \frac{100\,\text{mg}}{150\,\text{lb}} = \frac{100\,\text{mg}}{5} = 20\,\text{mg}$$

Annex 2: EHO/EHA Checklist

MINISTRY OF HEALTH - ENVIRONMENTAL HEALTH UNIT
Checklist for Use by EHOs/EHAs during Visits to Hospitals and Health Centers

Region: _____ Date of Visit: _____

Health Facility: _____

Name of EHU officer conducting visit: _____

Date of Previous EHU Visit (if any): _____

When this form is completely filled out, make (at least) two photocopies.
- ❑ Send Copy #1 to the facility's administration.
- ❑ Send Copy #2 to the Environmental Health Unit.
- ❑ File the original in your records.

Was the visit recorded in the facility's register? YES NO Was feedback provided at the end of the visit to one or more staff members from the facility? YES NO

If yes, note who received feedback: _____

Areas Visited:	**YES**	**NO**	**If NO, why not?**
Grounds/Lot			
Wards/Clinics			
Pharmacy/ies			
Waste Storage and Disposal Areas			
Kitchen/Canteen			
Other(s) (Please Specify)			

Instructions:
- Review all standards during every visit. For each standard, ask to see the relevant area or item and conduct your inspection. Note whether the standard is **met**, **partially met** or **not met**. Jot down a few words about why you selected that score. If a standard is "partially met" or "not met," note what needs to change in order for the standard to be fully met. (If a standard is not relevant at the site, tick "**not applicable**" instead.)
- At the end of your visit at the site, share any concerns and recommendations with the facility manager or other key staff. Let them know that you will provide a copy of this checklist and when to expect the next inspection.
- On your return to the office, make 2 copies for the facility and EHU. Keep the original in your own files. Notify the EHO immediately if there are urgent issues.

MINISTRY OF HEALTH - ENVIRONMENTAL HEALTH UNIT
Checklist for Use by EHOs/EHAs during Visits to Hospitals and Health Centers

CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
GROUNDS							
(Source 1)	The health facility is smoke free.		X				
(Source 1)	There are clearly posted signs that the facility is smoke free.		X				
(Source 1)	The premises and grounds of the facility appear clean and sanitary and free from nuisance.						
(*Source 2)*	The grounds are free from accumulations of bush, weeds, long grass, and litter.						
(*Source 2)*	The inter lot drains are clean, clear and graded).		X				
(*Source 2)*	There are NO stagnant pools, depressions or collections of water anywhere on the premises.		X				
(*Source 2)*	The facilities (including corridors, stairways, fire escapes etc.) are well lighted.						
(*Source 2)*	Main drainage is free from blockage.		X				
(*Source 2)*	The perimeter fence is in a good state of repair.		X				
FACILITIES							
(*Source 2)*	There is sufficient potable water at the facility for washing hands and laundry for all workers' uniforms.						
(*Source 2)*	There are signs about the importance of proper hand washing posted at all faucets.		X				
(*Source 2)*	There are adequate sanitary facilities for excreta disposal on site.		X				
(*Source 2)*	There is adequate locker room for employees to store belongings.						

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CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
(Sources 2 and 6)	There is an appropriate facility or location for employees to take meals.						
(Source 4)	There is a safe, clean and protected area for storage of supplies and equipment.						
(Source 5)	There is fire safety equipment (extinguishers, buckets of sand) available for fire response.						
(Source 5)	The facility has a fire safety protocol for fire response that is clearly posted throughout the facility.						
(Source 2)	The facility floors are washed with cleaning agents recommended by the manufacturer of the flooring.						
(Source 2)	Dry sweeping is done only in out-patient areas.		X				
PHYSICAL PLANT							
(Sources 2 and 5)	Building is structurally sound.		X				
(Sources 2 and 5)	Gutters/pipes are not clogged, are in good condition, and drain into appropriate receptacles.						
(Sources 2 and 5)	Windows are in good condition.						
(Sources 2 and 5)	Ceilings are in good condition.						
(Sources 2 and 5)	Electrical wiring is in good condition.						
KITCHEN/CANTEEN							
(Sources 2 and 6)	All food services workers at the health facility are holders of valid certificates issued by the municipality or public health department where they are employed.						

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CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
(Sources 2 and 6)	The food preparation area is constructed in a way that all external openings to the area are fly-proof.						
(Sources 2 and 6)	The food service area is restricted to food service workers only.						
(Sources 2 and 6)	Food for patients is covered from the time it leaves the food preparation area to the times it reaches the patients.						
WASTE MANAGEMENT							
(Source 5)	All staff have been trained in medical waste management within the last two years.						
(Source 5)	Staff handling infectious and sharps wastes have protective gear (aprons, boots, gloves, masks, etc.)						
(Source 5)	When asked, facility waste handlers understand how to use protective gear.						
Point of Generation *(Sources 3 and 5)*	Medical waste is separated (segregated) into hazardous and non-hazardous components and safely contained at point of generation.						
(Sources 3 and 5)	Approved containers for sharps are being properly used (labeled, secured, closed and sealed when 3/4 full).						
(Sources 3 and 5)	Approved containers are being properly used for bio-hazardous waste (labeled, lined with red bags).						
(Sources 3 and 5)	All red bags are properly sealed to prevent spills.						

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CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
(Sources 3 and 5)	Non-hazardous waste is properly disposed of in appropriate containers lined with black bags.						
(Sources 3 and 6)	All expired or unwanted medicines are quarantined from the general stock and safely disposed of in accordance with the National Disposal Policy.		X				
Disinfection of containers *(Source 3)*	Facility staff are trained in proper disinfection techniques.						
(Source 3)	Waste containers are routinely cleaned and disinfected.						
(Source 3)	a. **If disinfection is done by steam heat,** proper temperature is attained.						
(Source 3)	b. **If chemical disinfection is used,** concentration/contact time is correct.						
Transport/Storage	All medical wastes are safely transported to a utility/storage area before final disposal.		X				
(Source 3)	Carts used to transport waste are: impervious and easily cleaned; in good repair; and allow for segregation of waste during transport.						
(Source 3)	Staff who load, transport and unload the carts are trained and use appropriate protective equipment.		X				
(Source 3)	The waste storage area is properly secured at all times and locked if necessary.		X				

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Checklist for Use by EHOs/EHAs during Visits to Hospitals and Health Centers

CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
(Source 3)	Secondary containers in the storage area are: impervious, easily cleaned, clearly labeled with appropriate symbols on all sides, and lined with the appropriate bags.						
(Source 3)	Storage times for medical waste are appropriate.						
(Source 3)	Bins in the secondary storage area are fitted with close fitting covers		X				
Final disposal	**Is a waste compactor used? Y N** If yes, review the following standards:						
(Source 3)	a. The compactor is properly located.						
(Source 3)	b. The compactor is clean and labeled with a bio-hazard sign.						
(Source 3)	c. The waste compactor is in working order.						
(Source 3)	d. The HEPA filter was tested within the last 6 months.						
	Is there an incinerator onsite? Y N If yes, review the following standards:						
(Source 3)	a. The incinerator is properly located away from the main facility and in a secure, clear, fenced-in area.						
(Source 3)	b. The incinerator is operated on a regular schedule.						
(Source 3)	c. The incinerator is properly maintained.						
(Source 3)	d. The incinerator operators are trained to use it properly.						
(Source 3)	e. The incinerator operators have and use the necessary gear.						

MINISTRY OF HEALTH - ENVIRONMENTAL HEALTH UNIT
Checklist for Use by EHOs/EHAs during Visits to Hospitals and Health Centers

CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
	Is waste transported off site for final disposal? Y N If yes, review the following standards.						
	Is a burn box in use at the site? If yes, review the following standards:						
(Source 3)	a. Burning is conducted in a protected location, away from regular traffic and smoke does not go into the facility or nearby populated areas.						
(Source 3)	b. Protective gear is available and used by the person supervising the burn.						
(Source 3)	c. Ashes are properly removed and buried.						
	Is open burning in use at the site? If yes, review the following standards:						
(Source 3)	a. Burning is conducted in a protected location, away from regular traffic and smoke does not go into the facility or nearby populated areas.						
(Source 3)	b. Burning is supervised until complete.						
(Source 3)	c. Protective gear is available and used by the person supervising the burn.						
(Source 3)	d. Ashes are buried properly.						
	Is burial in use at the site? If yes, review the following standards:						
(Source 3)	a. The burial site is properly located.						
(Source 3)	b. Access to the disposal site is restricted to approved personnel.						

MINISTRY OF HEALTH - ENVIRONMENTAL HEALTH UNIT
Checklist for Use by EHOs/EHAs during Visits to Hospitals and Health Centers

CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
(Source 3)	c. The burial site is lined with appropriate materials to prevent leakage and contamination.						
(Source 3)	d. Records are kept of all former on-site burial locations to prevent reopening them.						
OTHER							
(Source 4)	The facility has educational posters and job aids related to worker safety and waste management properly placed in key and appropriate locations.						
(Source 3)	There are no odors, emissions, leachate emanating from the facility to cause nuisances and/or pollution.						
SYSTEMS, PLANS AND PROCESSES FOR CONTINUOUS IMPROVEMENT							
(Source 3)	The facility has a comprehensive health care waste management plan, aligned to regional plans, in place and in use.		X				
(*Source 2)*	There is a plan and protocol in place to inspect for, and to eradicate, rodents, flies, roaches and other pests at the facility. (See invoice from company as proof)		X				
(Source 3)	There a schedule for inspection and maintenance for the structure of the facility--physical soundness, electrical, air condition, trolleys, stairways, fire escapes, fire hydrants.		X				

MINISTRY OF HEALTH - ENVIRONMENTAL HEALTH UNIT
Checklist for Use by EHOs/EHAs during Visits to Hospitals and Health Centers

CHECKLIST		FINDING (tick one)				COMMENTS	
AREA *(Source Regulation)*	**STANDARD**	**MET**	**PARTIALLY MET**	**NOT MET**	**Not applicable**	**Reason for Finding**	**Recommendation (if any)**
(Source 3)	There is a plan in place for periodically sanitizing the building and premises, including manicuring the lawns.		X				
(Source 3)	There is a program to regularly inspect the facility to identify and correct environmental health issues.		X				

Any other comments / notes:

SOURCES:
1: Sanitation and Safety Section 19 (1) to (7) Regulations no. 7 of 2008 and Act No. 32 of 1997
2: Public Health Ordinance Chapter 145, MW Reg. 2009.
3: Drafted National Health Care Waste Management Regulations
4: Injection Safety Standards
5: Regulations No. 7 of 2008, section 61 and Occupational Safety and Health Act 1977
6. Food and Drug Act of 1971
7. Municipal and District and Council Act 2801 – Regional 2802

Annex 3: Report on GSIP's Prescribing Practices Study

Sticking to Guidelines?

INJECTION PRESCRIBING PRACTICES IN GUYANA

AUGUST 2012

Sticking to Guidelines?

INJECTION PRESCRIBING PRACTICES IN GUYANA

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Finally, thanks to Donna Bjerregaard and Joyce Lyons at Initiatives Inc. for helping us to think through all aspects of the study and reviewing countless drafts.

CONTENTS

Acronyms and Abbreviations

EDL	Essential Drug List
GSIP	Guyana Safe Injection Project
IM	Intra-muscular
IS	Injection Safety
MOH	Ministry of Health
PO	*Per os* (orally)
PRR	Prescription Record Review
RDU	Rational Drug Use
STG	Standard Treatment Guideline
STI	Sexually transmitted infection
NSAID	Non-Steroidal Anti-Inflammatory Drug
SCMS	Supply Chain Management Systems
IRB	Institutional Review Board
MMU	Materials Management Unit

Executive Summary

Rational drug use (RDU) of injections is a critical component of injection safety. *Irrational* injections include injections in which the medicine given is not indicated by the patient's diagnosis; and injections given despite the option of an oral alternative.

In Guyana, the Ministry of Health (MOH) has two key documents that offer guidelines for the rational use of injections. One is the MOH's *Standard Treatment Guidelines* (STGs) for common diagnoses and illnesses; in most instances, the STGs reserve injectable drugs for second-line interventions. The other guidance is Guyana's 2009-2010 *Essential Drug List* (EDL), in which many injections have oral alternatives. The EDL also provides guidance on which level of health facility each drug is approved for use.

Guyanese health workers and administrators, however, anecdotally report that injections continue to be prescribed at high rates, often "irrationally." Many health workers and patients are said to prefer injections, often because of opinions about the efficacy of shots or concerns over patient adherence to oral regimens. In this study, the Guyana Safe Injection Project (GSIP) sought to characterize the use of injections in primary care in Guyana, to determine whether the health workers are sticking to guidelines when deciding to stick their patients.

The research questions this study was designed to explore were:

- What injections are given most frequently in health centers and hospitals?
- In circumstances where a relevant STG exists, are injections being given in line with STGs?
- What knowledge and attitudes about injection prescribing practices do prescribers and dispensers currently hold?

Four specific objectives were outlined to address these questions through the study:

- To document *which injections* are administered, and *how frequently*, at a sample of health facilities;
- To determine *adherence to the EDL* for three focus drugs, in particular whether injectable drugs listed in the EDL for use at hospitals only are being used at health centers as well;
- To determine *provider adherence and rational drug use* for the three focus drugs; and,
- To explore *injection prescribing practices and attitudes* among health care providers.

The three focus drugs included two antibiotics, Rocephin (ceftriaxone) and Seclopen (procaine penicillin), and Dextran iron, an iron supplement for severely anemic pregnant women. All three have alternate oral options.

Data were collected at seven health centers and hospitals in three regions. Site selection was mostly based on convenience.

Key Findings

Only five of the seven sites were actually providing curative injections. Between February 1 and February 29, 2012, a total of 2,841 injections were administered during 2,249 patient encounters at the five sites. This represents an average of 1.3 injections per patient who received at least one injection.

The most frequently prescribed injectable medications were Novalgin, Voltaren (diclofenac) and Buscopan; together, these three drugs accounted for over half of the injections prescribed. Thanks primarily to Novalgin and Voltaren, over 40 percent of the injections documented fall in the EDL's "Analgesics, Antipyretics, Non-Steroidal Anti-Inflammatory Drug (NSAID)" category. Another quarter of the injections were comprised of Buscopan and other drugs in the "Gastrointestinal Drugs" EDL category. Just under 10 percent of the injections in the sample were "Anti-Infective Drugs," the EDL category that includes antimicrobials, antihelminthics and others.

The study did document the use of a small number of injections that are not currently included in the EDL. These included saline, Phenergan (promethazine HCl), Depo-Provera (progestin): eight recorded uses and Vitamin B6 (pyridoxine). The study also documented the use of injections at levels not sanctioned in the EDL. The EDL recommends Novalgin only for use at *regional* hospitals; however, in the study sample, Novalgin was in use at both the health centers and district hospitals.

A limited number of instances of use of the three focus drugs were found, so conclusions about prescribing adherence to STGs are hard to draw. Only one instance of use of Dextran Iron was documented, apparently in line with the relevant STG. Fourteen instances of the use of Seclopen were identified, to treat a variety of conditions. Of these, only one-third of the prescriptions were clearly in line with STGs.

The study sample included 57 instances of administration of Rocephin to patients, for over 20 primary diagnoses. It is named in the STGs as a second or third-line treatment for acute epiglottitis, severe acute pneumonia, acute otitis media or pelvic inflammatory disease.
In line with STGs, pneumonia and pelvic inflammatory disease represented 14 percent of the primary diagnoses. However, over half of the conditions for which Rocephin was prescribed are not included in the STGs for treatment with Rocephin. Dengue, lower respiratory tract infections, typhoid and hypertension accounted for 16 percent of the primary diagnoses; their management, as outlined in the STGs, does not include the use of Rocephin. No STGs existed for management of the remaining conditions.

Twenty-two health workers—thirteen physicians, seven pharmacy assistants and two medexes—participated in semi-structured interviews designed to lend context to the record reviews. The responses of the study's interviewees suggest that the risks and benefits of using injections are generally understood by health workers, but that more training and technical support may be required on the specifics of individual medications in order to promote better practices.

Recommendations:

Based on the study findings, GSIP has developed recommendations for the MOH and its implementing partners for their ongoing efforts to promote RDU, injection safety and quality health care for patients. These include:

Promoting and sustaining good practices by:

- Continuing to promote oral alternatives to injections
- Continuing to provide periodic refresher trainings to health care workers

Addressing problems by:

- Developing additional STGs
- Re-training prescribers in prescription writing standards
- Improving guidance and supervision on record-keeping
- Training staff on procurement in line with the EDL

Deepen understanding of these areas by:

- Conducting similar studies on Buscopan, Novalgin and Voltaren to determine whether providers are using them in line with STGs
- Comparing prescribing practices at different facilities to see whether—and why—significant disparities exist
- Expanding stock management studies to determine the existence and causes of any discrepancies between ordered and administered drug supplies

Introduction

One important way to promote injection safety is to ensure rational use of injectable drugs. Rational drug use (RDU) entails prescribing and administering appropriate medications to a patient with the least possible harm. Limiting the use of injections in particular reduces the likelihood of complications for patients; it also reduces the risk of accidental needle stick injuries among health workers. And, finally, it cuts down on hazardous sharps waste.

There are two categories of inappropriate injections: first, injections that are given to administer medicines not indicated by the patient's diagnosis; and second, injectable formulations that are given to a patient despite the existence of an alternative oral formulation with the same effect.

In Guyana, the MOH's Standard Treatment Guidelines (STGs) for primary care provide recommended and approved treatments for common diagnoses and illnesses and, in most instances, the STGs reserve injectable drugs for second-line interventions. Guyanese health workers and administrators, however, anecdotally report that injections continue to be prescribed at high rates, often "irrationally." Many health workers and patients are said to prefer injections, often because of opinions about the efficacy of shots or concerns over patient adherence to oral regimens. Guyana's 2009-2010 Essential Drug List (EDL) includes many injections but almost all have oral alternatives as well. The EDL also provides guidance on which level of health facility each drug is approved for use.

In this study, the Guyana Safe Injection Project (GSIP) sought to characterize the use of injections in primary care in Guyana, to determine whether the anecdotal assessments proved correct and to inform strategies to decrease unnecessary injections.

Background

The Guyana Safe Injection Project (GSIP) works to promote comprehensive, sustainable, country-owned and managed infection prevention and injection safety (IS) programs that safeguard health care workers, patients and communities in Guyana. GSIP's central message, in alignment with the World Health Organization's global approach to injection safety, is: "A safe injection does no harm to patients, providers or the community." All the stakeholders—patients, providers and the community—need to be engaged in ensuring that injections are used appropriately and needles and other sharps are disposed of safely.

GSIP is a 12-month project funded by USAID and implemented by Initiatives Inc. GSIP is focused on ensuring that its gains are secured and can be sustained by the Ministry of Health (MOH) of Guyana and partner agencies. GSIP is therefore working closely with various MOH units and other partners to ensure that injection safety-related activities are integrated into ongoing MOH and health care delivery activities.

Between 2006 and 2008, GSIP's predecessor project, the Guyana Safer Injection Project, conducted baseline and end-line Prescription Record Reviews (PRR) to assess the impact of prescriber training on reducing the prevalence of unnecessary injections for common diagnoses. These studies demonstrated that educational interventions with prescribers created small but statistically significant reductions in the number of cases receiving injections, the proportion of total prescriptions issued in injectable formulations and the prevalence of unnecessary injections.

When GSIP restarted in 2011, one of the objectives of the project was to identify and track prescribing practices for a sentinel set of medications. After significant dialogue with representatives from various units at the MOH, as well as with the Supply Chain Management Systems (SCMS) project, GSIP developed a study protocol that addressed this objective while also reflecting the questions and concerns presented by the stakeholders.

One key issue that was integrated into the study's design was the relatively recent introduction of the STGs by MOH and SCMS.[4] The STGs were rolled out in 2010-2011, with intensive training provided for physicians and clinical officers on adhering to STGs for conditions commonly seen in primary care. Another key concern that was frequently mentioned in our formative discussions was the reported overuse of injectable antibiotics in situations where oral alternatives existed (and which is part of a more general concern about overuse of antibiotics).

The study protocol was subsequently reviewed and approved by the MOH's Institutional Review Board (IRB) and was fielded by GSIP in May 2012.

Study Overview

The research questions this study was designed to explore were:

- What injections are given most frequently in health centers and hospitals?
- In circumstances where a relevant STG exists, are injections being given in line with STGs?
- What knowledge and attitudes about injection prescribing practices do prescribers and dispensers currently hold?

Four specific objectives were outlined to address these questions through the study:

- To document *which injections* are administered, and *how frequently*, at a sample of health facilities;
- To determine *adherence to the EDL*, in particular whether injectable drugs listed in the EDL for use at hospitals only are being used at health centers as well;
- To determine *provider adherence and rational drug use* in the case of STGs that include both injectable and oral options; and,
- To explore *injection prescribing practices and attitudes* among health care providers.

Because of limited time and resources, GSIP elected to focus on three injectable substances when considering the second and third objectives related to compliance with the EDL and STGs:

- Ceftriaxone (brand name: Rocephin) is a cephalosporin antibiotic that is included in the EDL and is named in the STGs as a second- or third-line treatment for acute epiglottitis, severe acute pneumonia, acute otitis media and pelvic inflammatory disease.
- Procaine penicillin (brand name: Seclopen) is another second-line injectable antibiotic that is included in the EDL and is named in the STGs for treatment of acute pneumonia. Amoxicillin or erythromycin are given as oral alternatives and should replace the injectable when severe illness is under control.
- Dextran iron is an iron supplement that is included in the EDL and is named in the STGs as an intramuscular (IM) injection or intravenous treatment for severe anemia (Hb < 7.0g/dL) among

[4] Ministry of Health. 2010. *Standard Treatment Guidelines for Primary Health Care [First Edition].* Ministry of Health: Guyana.

pregnant women at more than 28 weeks gestation. For women between 28 and 34 weeks, however, there is an oral alternative listed (ferrous sulphate tablets).

Ethical Considerations

The study protocol was approved by the Ministry of Health's Institutional Review Board in March 2012. Permission to conduct the study at the selected sites was obtained from the Director of Regional Health Services, whose office sent notification letters to the relevant Regional Health Officers and facilities. Permission to enter each facility and to consult with the different employees was requested from senior staff at the beginning of each site visit, and consent was secured from each staff member interviewed. Data were blinded during entry into the Access database and all forms that included patients' names were shredded following data entry.

Implementation

The study was conducted at two types of facilities providing primary care: health centers and the out-patient primary care departments at hospitals. Seven study sites in three regions were included. Site selection was mostly based on convenience, focusing on regions where GSIP had other activities and working relationships with regional authorities and health facilities.

GSIP developed tools and procedures to collect data from three sources: facility injection ledgers, patient/prescription records, and interviews with prescribers (doctors or medexes) and dispensers (pharmacists or pharmacy assistants).

The draft data collection tools were field tested by GSIP staff in April 2012, at Kitty Health Centre and West Demerara Regional Hospital. The field test revealed some problems with the planned study; adjustments and refinements were subsequently made, including the addition of a form to document any recent stockouts of injections. The final versions of all data collection forms are attached in Appendices 2 through 7.

Six data collectors were recruited from pharmacies at facilities where the study was going to be conducted. A one-day session for data collectors was held to introduce them to the study objectives and train them on the use of the forms.

GSIP staff and consultants supervised the data collection, which was conducted between May 14 and 30, 2012. The study was carried out at seven health facilities in three regions, shown in Table 1.

Table 2

REGION	FACILITY NAME	TYPE
2	Charity	District Hospital
	Fort Wellington	District Hospital
	Anna Regina	Health Center
4	Diamond	Regional Hospital
5	Mahaicony	District Hospital
	Cotton Tree	Health Center
	Woodley Park	Health Center

Data Collection

Three data collection tasks were completed at each site. As noted above, the MOH requires injection ledgers to be used to document all injections given at MOH facilities. Ledgers at each study site were reviewed first, for two purposes:

- All injections recorded in the ledger in the month of February 2012, were recorded and reviewed to provide an overall picture of the frequency and types of injections used. (See Form 1 in Appendix 2.)
- Instances of injections of the three focus drugs (Rocephin, Seclopen and Dextran Iron) between January 1 and March 31 were reviewed to identify a target number of 10 patients at each health center and twenty at hospitals. (See Form 2 in Appendix 3.)

Based on the data from the injection ledger, the case and prescription records for the focus drugs were then retrieved and used to capture as much of the following data as possible:

- Date of patient's visit
- Patient's gender and age
- Primary complaint
- Primary diagnosis
- Secondary diagnoses
- Names and dosages of all medications used for treatment/prescription
- Whether each medication was prescribed in an injectable or non-injectable preparation
- Whether each medication prescribed was dispensed
- Qualification of prescriber

Finally, the GSIP staff or consultant supervising data collection conducted semi-structured qualitative interviews with three prescribers at each hospital, one prescriber at each health center, and one dispenser at each site. (The interview formats are attached in Appendix 5).

Although medication stockout was raised as an issue at the pilot sites, leading to the introduction of a relevant data collection tool (Form 6), there were ultimately no reported stockouts at the facilities included in the study.

Table 2 shows the data collected for the focus drugs.

Table 3

Medication➔	**Dextran Iron**		**Seclopen**		**Rocephin**	
Hospital ↓	*Recorded instances*	*Records retrieved*	*Recorded instances*	*Records retrieved*	*Recorded instances*	*Records retrieved*
Charity	0	n/a	2	1	30	20 (random sample selected)
Diamond	2	0	42	12	50	27 (random sample selected)
Fort Wellington	3	0	5	?	21	10
Mahaicony	0	n/a	1	0	5	5

Data Entry and Analysis

Data entry was carried out by GSIP staff, consultants and two temporary staff. All data were entered into Access databases and then exported to Excel for analysis. Initial analyses were prepared by GSIP and Initiatives staff and were reviewed as a group. The report was developed based on those discussions.

Challenges

The study encountered various challenges. A primary challenge was the availability of the necessary data. Although injection ledgers are supposed to be in use at all facilities, they were not always in place, up-to-date or complete. For example, some did not require the provider to record patient age or the prescribed dosage being administered. In others, some providers did not write patients' entire names but just used the initial of the first name along with the surname. This made retrieving case files extremely difficult, especially when files were not consistently organized and ordered.

Further, patient and prescription records at some facilities were essentially non-existent; in other instances many of the records lacked key data. Few facilities use a consistent patient ID number for record-keeping; this made data retrieval difficult, particularly when names were hard to read. This not only undermines research but must also have implications for the continuity of care provided to patients when previous files cannot be traced.

Finally, because the data collectors for the study were familiar with the facilities' pharmacies, they pointed out that the pharmacy issuing ledgers frequently indicated larger quantities of Rocephin and Seclopen were issued during the period than were evident in the patient records. This issue requires careful follow up—it may be indicative of poor record keeping or of something more insidious, such as leakage of medications from the public into the private sector.

Findings and Discussion

This section presents results and GSIP's interpretation of the data analysis, along with some discussion on the implications of the findings. The study sites will be identified by name in some instances; it is important to note that the purpose of this is *not* to highlight either best practices or poor performance at any particular facility. Instead, this study seeks to identify *common issues* that the MOH either needs to delve further into or address now. Thus the findings are discussed, and in some cases the facilities are named, with the assumption that these issues are present at facilities across Guyana.

However, because of the small number of study sites, GSIP recommends that MOH replicate the study at additional facilities to further explore these issues. All the data collection tools are attached to this report as appendices so that facilities can conduct their own reviews of injection prescribing practices if they wish. GSIP will also provide soft copies of the Access databases and Excel spreadsheets to the Chief Pharmacist, Chief Medical Officer and Director of Regional Health Services to simplify any follow up or future analyses.

Injection Use in Health Facilities–Findings

Only five of the seven sites selected to be included in the study were actually providing curative injections. Between February 1 and February 29, 2012, a total of 2,841 injections were administered during 2,249 patient encounters at the five sites. This represents an average of 1.3 injections per patient who received at least one injection.

Record-keeping on patient characteristics was incomplete. About 50 percent of the patients who received injections were females and 40 percent were male; 10 percent of the records had no sex recorded. Figure 1 shows the ages of the patients recorded in the study. Notably, over a third of the records lacked information on the patient's age. Just 10 percent of the injections recorded were provided to children under the age of 15 years; however, the study did not include vaccinations.

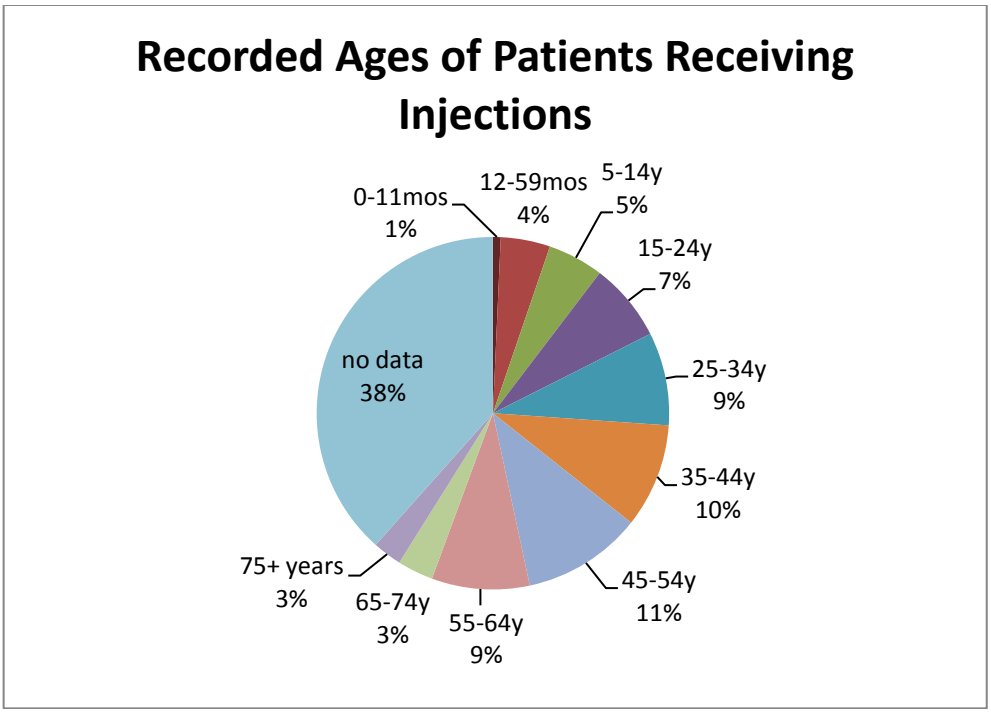


Figure 1

Figure 2 shows each of the ten most frequently used injections as a proportion of all the injections recorded. (Table 15 in Appendix 1 includes the complete data set.) Novalgin, Voltaren (diclofenac) and Buscopan made up just over half of the injections prescribed.

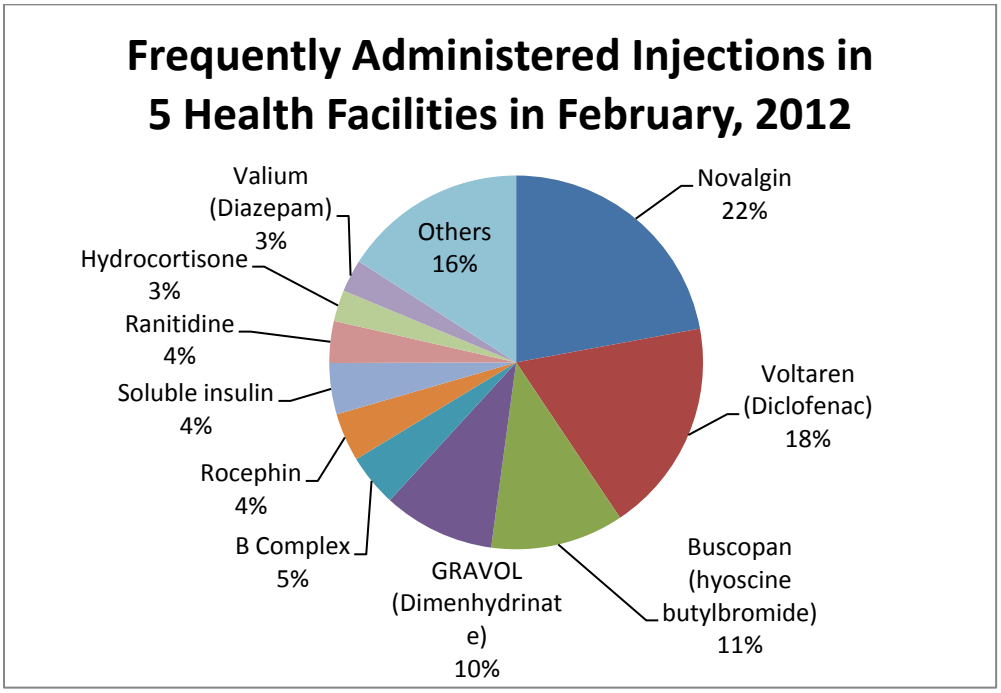


Figure 2

The list of injections whose use was documented was the cross-referenced with Guyana's Essential Drugs List (EDL).[5] Figure 3 shows the number of injections from each of the EDL's categories. The "Analgesics, Antipyretics, Non-Steroidal Anti-Inflammatory Drug (NSAID)" category comprised over 40 percent of the injections provided; the two most frequently used injections, Novalgin and Voltaren, fall in this category. Another quarter of the injections were comprised of Buscopan and other drugs in the "Gastrointestinal Drugs" EDL category. Just under 10 percent of the injections in the sample were "Anti-Infective Drugs," an EDL category that includes antimicrobials, antihelminthics and others. This suggests that concerns about over-use of antibiotics in the country should be addressed separately from concerns over overuse of injections.

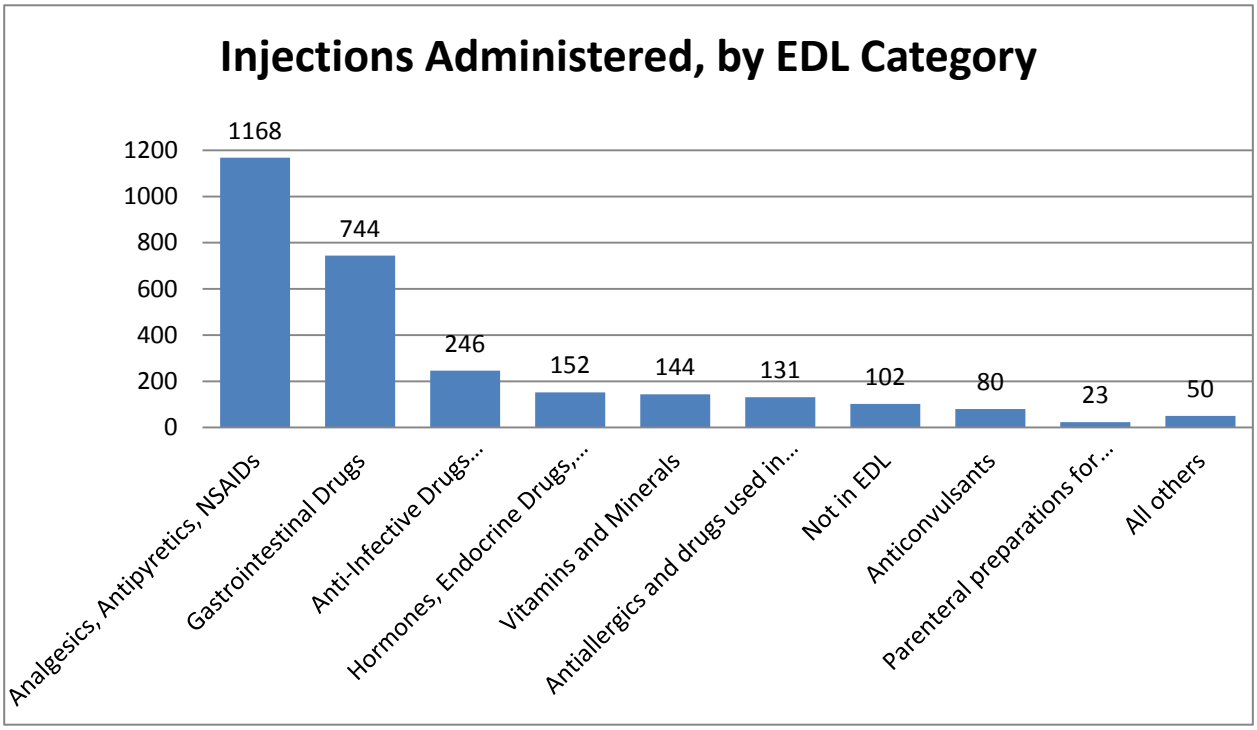


Figure 3

The study did document the use of injections that are not included in the EDL. These include:

- Saline: 48 recorded uses (Saline (sodium chloride) is approved in the EDL for use at all levels as an IV infusion either alone or combined with glucose.)
- Phenergan (promethazine HCl): 46 recorded uses
- Depo-Provera (progestin): 8 recorded uses
- Vitamin B6 (pyridoxine): 4 recorded uses (The 10 mg tablet formulation is on the EDL for use in hospitals.)

The study also documented the use of injections at levels not sanctioned in the EDL. The EDL recommends Novalgin only for use at *regional* hospitals; however, in the study sample, Novalgin was in use at both the health centers and district hospitals. At Anna Regina Health Center, Novalgin represented 25 percent of all injections administered. At the Charity and Fort Wellington district

[5] Ministry of Health. "Guyana EDL 2009-2010." Accessed online, 15 August 2012: http://www.who.int/entity/selection_medicines/country_lists/GUYANA_EDL_2009_10.pdf

hospitals, Novalgin again accounted for 17 percent and 25 percent of injections respectively. However, at Mahaicony district hospital Novalgin only accounted for 3 percent of the total injections.

Injection Use in Health Facilities—Discussion

The findings on the prevalence of different injections in use at different facilities raise several questions. First, why are prescribing practices different at Site 3 versus the other district hospitals? GSIP has speculated that the presence of a Diagnostic Center at Site 3 may contribute to this; however, our data were not detailed enough to show which providers were prescribing which drugs, so this is not definite.

MOH may wish to review and compare prescribing practices at different sites more rigorously to determine whether foreign- and domestically-trained providers are providing significantly different care and, if so, whether this is resulting in differing health outcomes for patients. The injection prescribing practices data tools could be adapted relatively easily for this purpose.

It may be that MOH could also use this to assess the effects of different practices and identify which are most effective. This information could be used to revise the STGs as needed.

Secondly, the MOH should also consider updating and improving existing job aids in order to more actively promote rational drug use:

- The EDL should be updated to include substances that are being prescribed appropriately so that the supply can be properly procured and controlled.
- Enforcement of the EDL should be enhanced to prevent ineffective or inappropriate use of medications found in the study.
- STGs should be developed to guide administration of commonly used medications to prevent misuse.

Health workers must, of course, be periodically retrained in the use of the EDL and STGs following revisions in order to ensure that they remain up-to-date in their practices. (Documentation and record keeping will be addressed in a separate section below.)

STG Adherence in the Three Focus Drugs—Findings

The study then focused in on Dextran Iron, Seclopen and Rocephin, three injectable drugs that all have oral alternatives in the STGs. Data collectors used the injection ledgers to identify all instances of use of each of these three drugs between January and March 2012, and then attempted to trace the patient's record or prescription file. (If there were more than 20 instances, they used random sampling to select which records to trace.) Patients' files were reviewed and diagnostic and demographic information on the patient and his or her complaint were recorded.

This effort shed some light on the use of the focus drugs, as described below; however, it again highlighted the poor quality of record-keeping at many facilities.

Dextran Iron

According to the relevant STG, Dextran should be used to treat severe anemia (Hb <7g/dL) in pregnant women at more than 28 weeks gestation. It is not, however, listed in the EDL.

Dextran Iron was prescribed 11 times in February 2012, at the study sites. However, there was only one instance of use of Dextran Iron where the patient's file was traceable. The recorded primary diagnosis for the 39 year-old female patient was anemia, and the additional prescription for folic acid suggests that she was indeed pregnant. Thus, it is entirely possible that the injection was prescribed rationally in this case. Similarly, the low number of instances of use suggests it is not commonly prescribed at the study sites. However, without larger sample sizes we cannot make any general comments on the rationality of use of Dextran Iron.

Seclopen

Seclopen (procaine penicillin) is included in the EDL for use in hospitals and health centers as a powder for injection in either 1 MU or 3 MU units. It is a second-line antibiotic. Its close correlates, benzylpenicillin (Crystapen) and benzathine benzylpenicillin (Penadur) are also both included in the EDL. Both Crystapen and Penadur are included the STGs.

In the study sample, only 14 instances of the use of Seclopen were identified. As shown in Figure 4, it was used to treat a variety of conditions. Tonsillitis (one instance) was the only diagnosis seen in the sample for which Seclopen is designated in the STGs.

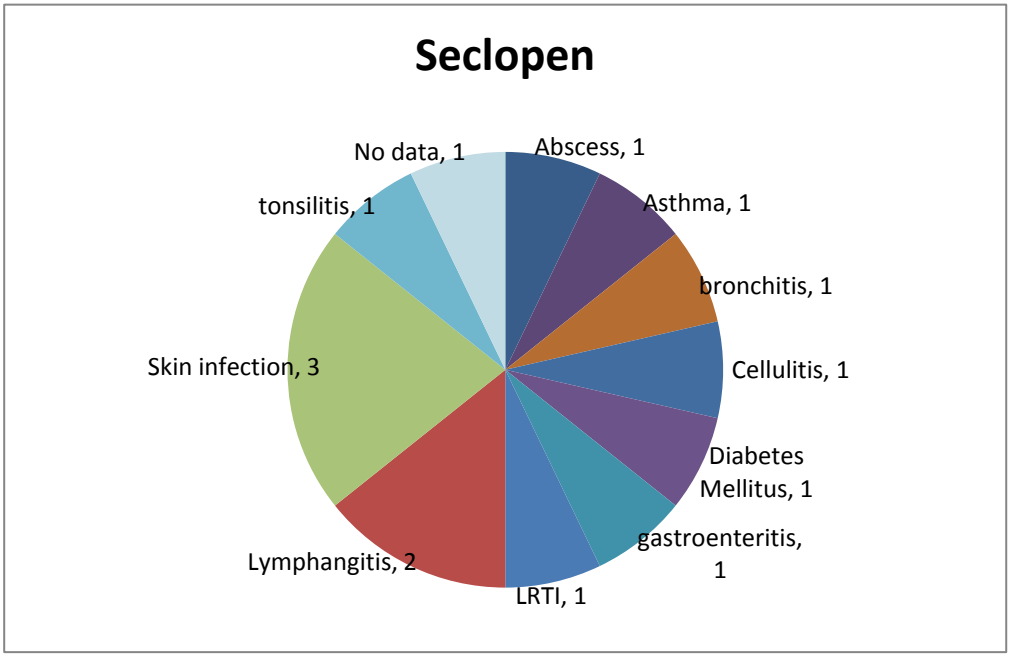


Figure 4

Asthma, bronchitis, diabetes mellitus and lower respiratory tract infections represented 35 percent of the conditions that were treated with Seclopen. However, the guidance provided by the STG does not include the use of Seclopen for the treatment of these conditions.

For abscess, cellulitis, gastroenteritis and lymphangitis, which comprised one-third of the primary diagnoses of patients prescribed Seclopen, there is no guidance in the STGs for treatments. "Skin

infection" was not specific enough to allow for determination of compliance with the STGs. One prescription did not include any diagnostic information.

Here again we have too few data points to make any definitive statements about the rationality of use of Seclopen. However, it seems that Seclopen is being used indiscriminately as an antibiotic and so improving the clarity of the STGs in relation to it would be beneficial.

Rocephin

Rocephin is a brand name for ceftriaxone, a cephalosporin antibiotic that is included in the EDL for use at hospitals in 500mg and 1G strengths. It is named in the STGs as a second or third-line treatment for acute epiglottitis, severe acute pneumonia, acute otitis media or pelvic inflammatory disease.

The study sample included 57 instances of administration of Rocephin to patients, for over 20 primary diagnoses. Figure 5 shows the conditions that were being treated with Rocephin. Pneumonia and pelvic inflammatory disease represented 14 percent of the primary diagnoses; Rocephin is recommended for the management of these conditions in STGs.

Over half of the conditions for which Rocephin was prescribed are not included in the STGs for treatment with Rocephin. Dengue, lower respiratory tract infections, typhoid and hypertension accounted for 16 percent of the primary diagnoses; their management, as outlined in the STGs, does not include the use of Rocephin. No STGs existed for management of the remaining conditions.

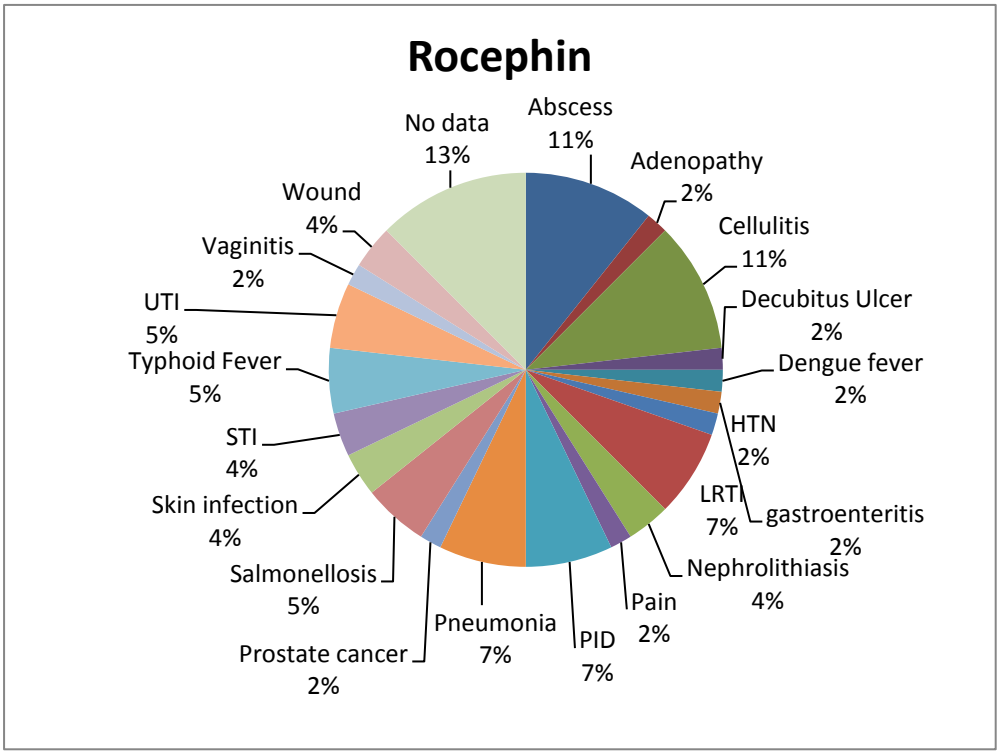


Figure 5

STG Adherence in the Three Focus Drugs—Discussion

Two obstacles prevented this study from determining whether the medications examined were improperly prescribed. Because all data were documented retrospectively and only from records, it was difficult to parse out whether inconsistencies between the diagnoses and the prescriptions are truly indicators of irrational drug use. It is possible that the use of the focus drugs was in fact appropriate, but that the documentation of the diagnosis was incomplete. Alternatively (or additionally, depending on the case) it is also possible that the STGs fail to provide adequate guidance to practicing health workers, given the conditions they see among their patients. In particular, Rocephin seems to be in use as a general antibiotic, despite only being named in the STGs as a second or third-line treatment for acute epiglottitis, severe acute pneumonia, acute otitis media or pelvic inflammatory disease.

In general, it seems that the STGs need to be expanded to cover more of the conditions which providers are seeing in the clinic if Guyana wants to standardize treatment modalities across all its public health facilities.

Aside: Record-keeping

Another area that MOH should address is the problem of record-keeping. Health workers may fail to complete patient records in order to save time, because they do not think it is important or because they do not know how to do it properly. However, failing to document patients' complaints, conditions and treatment plans impedes long-term follow up, quality assurance and supervision.

At various sites in the study we found the following problems:

- Incomplete information filled out in ledgers and patient files, especially in documenting the patient's original complaint.
- Prescriptions which were not filled out completely, particularly lacking information on the diagnosis that would allow the pharmacist to verify the appropriateness of the prescriptions.
- Patient records filed in chronological order, rather than by patient name, making it difficult to retrieve and refer back to them.
- Out-patient departments which do not keep any records of patient visits, preventing follow up and back-tracking to understand if patients have a pattern of ailments.

GSIP suggests that MOH reviews the guidance on prescription writing that is included in the preface to the STGs (pages viii and ix) and also engages with providers to determine why they are not adhering to the guidance. With that information, MOH could adapt the guidance, and perhaps provide more direction to health facilities in the public system on formatting of prescriptions provided.

MOH should also consider setting national standards for record-keeping. It is likely that in the future, Guyana will adopt an electronic medical record system – adopting national standards on record-keeping now would improve continuity of care in the present and smooth that transition in the future.

Finally, improving patient and prescription files will allow for improved supervision of health care in Guyana, enabling easier data collection and better analysis to track emerging and major health problems nationally, as well as local quality improvement.

Injection prescribing practices and attitudes among health care providers–Findings

Clinical and pharmacy staff members who either prescribe or dispense medications at each of the study sites were asked open-ended questions about their knowledge, attitudes and perceptions related to injection prescribing and dispensing, as well as injection safety practices. Their comments were analyzed for key themes and both common and outlier opinions.

Due to the small sample size, the results in this section should be considered anecdotal only: fifteen prescribers and seven dispensers were interviewed during the study. The 15 prescribers interviewed during the study included 13 physicians and two medexes. Three of them had been working at the facility where they were interviewed for more than three years—the rest had joined the facility within the last three years, including six who had been at the site for a year or less. Among the seven dispensers, three were pharmacists and four were pharmacy assistants. They tended to have worked for longer at the facilities—all but one had been at the site for over a year.

Rational Prescribing of Injections

The prescribers were asked to provide a rough estimate of the percentage of patients they examine to whom they prescribe any type of medication. Twelve of the 15 respondents estimated that they prescribe medication to 70 percent or more of their patients, while the remaining three said they do not prescribe medication. Among those who prescribe medication, all felt that they prescribe injections to half or fewer of their patients. Most of them reported prescribing injections to 10 percent or fewer of their patients. The dispensers all reported that 30 percent or fewer of the patients they see received injections.

The most frequently reported reason for prescribing an injection when an oral alternative exists was the severity of the patient's condition. Other reasons mentioned by multiple prescribers included: the specific diagnosis, the level of pain the patient was experiencing, when the patient was unable to take an oral and in emergency situations.

Various conditions/diagnoses were mentioned as requiring an injection. Severe pain was most frequently noted; others mentioned by multiple interviewees were renal colic, severe STIs, vomiting, severe wounds, *status asthmaticus* and uncontrolled diabetes.

The prescribers reported using various sources for information on drugs, including the EDL and STGs, as well as the British National Formulary, internet sites and information provided during Continuing Medical Education sessions provided by various projects and sources. Over half of the respondents said they had been trained in injection safety and rational drug use; the same number said they had received training in the STGs, although more said they sometimes refer back to the STGs.

Some dispensers also reported using the STGs, British National Formulary or the MOH Pharmacy Assistants' Handbook. However, most of the dispensers did not report using references; similarly, most reported that they had not received any information or training in the past six months on adherence counseling.

Risks of Using Injections

Prescribers recognized several risks of using injections; infection or pain at the injection site were the most commonly mentioned. There was no single risk mentioned by a majority of the interviewees; three commented on the subsequent risk of needlestick injury for health workers.

The majority of the dispensers, on the flip side, said they do not have concerns about using unnecessary injections. This suggests that additional education for dispensers about risks of injections may be warranted if they are supposed to be advising patients and assisting dispensers on preventing unnecessary injections.

Communication among Prescribers and Dispensers

According to the Health Facilities Licensing Act checklist, all prescriptions should include: the patient's name and diagnosis in addition to the dose, dosage form and strength of medication. However, not all of the dispensers agreed that all prescriptions include a diagnosis.

Three-quarters of the respondents said that they discuss the prescriptions they write with pharmacists or pharmacy assistants in cases of stockout of a particular medication or when the dispensers have questions about dosage, duration of treatment, or when a substitution needs to be made. Four of the seven of the dispensers reported that they do ask prescribers to change prescriptions from injections to oral formulations in cases of stockouts, or if they are concerned about the patient's ability to tolerate the strength of the drug or an injection.

Informing Patients about Drugs being Prescribed or Administered

Most of the prescribers reported that they tell their patients about the purpose and side effects of the drug they are prescribing; another relatively common piece of information provided by prescribers is how the drug should be taken. Few of the prescribers interviewed reported telling their patients the name, type or dosage of drug; fewer still reported that they discuss contraindications, patients' allergies or when to return for another examination.

Similarly, while most of the dispensers interviewed stated that they discuss how to take a drug when dispensing it to a patient, not all of them reported sharing the name or side effects of the drug. And very few reported reiterating anything about the purpose, dosage or any contraindications with patients.

Patient Attitudes

Prescribers were asked whether patients ever request an injection if one is not initially prescribed (a practice which is frequently anecdotally recounted). Two interviewees said that *all* patients request injections, while the others' answers ranged from 10–80 percent. The prescribers described a variety of justifications for the choice of an oral, including reiterating that orals work just as well, explaining the risks of injections, providing additional information about the medications prescribed or just insisting on the oral with no justification.

The dispensers were asked how they would respond to a patient who requested an injection in place of the prescribed oral. Two of the seven said they would send the patient back to the doctor, while three would provide counseling to the patient themselves. (Two did not respond.)

Focus Drugs

Rocephin

Twelve of the interviewees reported that they prescribe Rocephin on occasion. These providers mentioned several uses for Rocephin. As shown in Table 3, only three of the conditions had a relevant STG to refer to; of those, two do in fact list Rocephin (in its generic form, ceftriaxone).

Table 4

Condition	Is the condition in the STGs?	Is Rocephin included in the STGs?
Appendicitis	NO: immediately refer to secondary care	
Chronic illness	NOT SPECIFIC	
Inpatients only	NOT SPECIFIC	
Salmonellosis	YES (6.1)	NO – Ciprofloxacin is the recommended medication
Sepsis/severe general infection	NOT SPECIFIC	
Septic abortion	NO	
Severe diabetic (foot) ulcer	NO	
Severe pneumonia / lower RTIs	YES (1.4)	YES – as a 3rd line drug. The recommended 1st and 2nd line medications for pneumonia include benzylpenicillin procaine (IM), amoxicillin (PO), erythromycin, ampicillin (IV/IM) and chloramphenicol.
Snake bite	NO	
Sexually Transmitted Infections	NOT SPECIFIC	YES – a single dose of Rocephin is listed as a stat treatment for pelvic inflammatory disease (PID = 10.1)
Trauma with open fracture	NO	
Urinary Tract Infection	NO	
When not responding to other treatments	NO	

Appropriate uses of Rocephin in the STGs which were *not* mentioned by interviewees include second-line treatment for acute epiglottitis and acute otitis media in infants under six months and penicillin-allergic older children.

Seclopen

Although we found few instances of prescriptions for Seclopen, two-thirds of the respondents reported that they prescribe Seclopen. Various reasons were given for doing so, which are shown in Table 4. The STGs do not include “procaine penicillin” but do include “Benzyl penicillin procaine,” “Benzylpenicillin

procaine" and "Benzathine benzylpenicillin." For the purposes of this study, those are assumed to be interchangeable with Seclopen.

Table 5

Condition	Is the condition in the STGs?	Is Seclopen included in the STGs?
Newborn prophylaxis	NO	
Follow up to crystapen (benzylpenicillin)	NO	
Inpatients	NO	
STIs	NOT SPECIFIC	
Abscess	NOT SPECIFIC	
Severe pneumonia and Respiratory/pulmonary infections	YES	YES – For mild acute pneumonia, the STGs call for benzyl penicillin procaine (IM) or amoxicillin (PO); for severe acute pneumonia treatment, the STGs call for benzylpenicillin procaine + benzylpenicillin (IM) or amoxicillin (PO)
Complicated tonsillitis	YES	YES – For acute pharyngitis (1.3) caused by streptococcal pharyngitis, the STGs call for Benzathine benzylpenicillin (IM) or phenoxymethylpenicillin (PO) or Erythromycin (PO) For bacterial tonsillitis (1.11) the STGs include benzathine benzylpenicillin (IM) or phenoxymethylpenicillin (PO) or erythromycin (PO)
Severe infection	NOT SPECIFIC	
When other drugs have failed	NOT SPECIFIC	

Dextran Iron

Four prescribers said they never prescribe Dextran Iron; one of these, along with nine others, correctly noted that the drug is used for patients with anemia or low hemoglobin. Two of the respondents commented that the drug should only be used for in-patients. The STG on Iron Deficiency Anemia in Pregnancy (3.2) states that Dextran intramuscular or intravenous iron should be given at the level of a district hospital or higher.

Injection prescribing practices and attitudes among health care providers– Discussion

The responses of the study's interviewees suggest that the risks and benefits of using injections are generally understood by health workers, but that more training and technical support may be required on the specifics of individual medications in order to promote better practices. Additional training on the STGs is warranted; job aids and approved reference materials should also be developed or identified and rolled out to all health workers throughout the country. Improving compliance with guidelines on the use of pain killers and antibiotics would be good starting points.

Conclusions and Recommendations

Based on the findings of this exploratory study of injection prescribing practices in primary care, GSIP has generated several recommendations. GSIP is concluding in September 2012, however, and cannot therefore follow up directly. These recommendations, therefore, are respectfully offered to the MOH and its implementing partners for their ongoing efforts to promote RDU, injection safety and quality health care for patients.

To promote and sustain good practices:

- Continue to promote oral alternatives to injections whenever possible, both with providers and with patients
- Continue to provide periodic refresher trainings to providers in injection safety and rational drug use, particularly for pharmacy staff

To ameliorate existing problems:

- Develop additional STGs to address diagnoses that providers are regularly encountering in order to regulate and ensure appropriate treatment
- Re-train prescribers in prescription writing standards to promote clear communication among prescribers, dispensers and patients about medication use
- Review and improve guidance for, and supervision of, record-keeping practices to promote continuity of care for patients and allow for review of records for adherence to STGs
- Train staff members who are responsible for procurement to better understand and use the EDL so that uncontrolled medicines are not available for use. This includes pharmacy assistants, facility managers and regional health officers, as well as staff at MMU.

To deepen understanding of these areas:

- Conduct similar reviews focused on prescribing practices related to Buscopan, Novalgin and Voltaren to determine whether providers are using them in line with STGs
- Compare prescribing practices at different facilities to see whether—and why—significant disparities exist
- Expand stock management studies to determine the existence and causes of any discrepancies between ordered and administered drug supplies

Appendices

Appendix 1: All Injections Administered, By Medication, At Five Health Facilities in February 2012

Table 6

DRUG	#
Aminophyline	4
Ampicillin	5
Atropine	4
B 12 (Hydroxycobalamine)	11
B Complex	129
B1 (Thiamine)	4
B6 (pyridoxine)	4
Benzylpenicillin (Crystapen)	2
Buscopan (hyoscine butylbromide)	328
Chlorpheniramine maleate	1
Cloxacillin	2
Depo-Provera	8
Dextran IRON	4
Digoxin	1
DT Vaccine (adult or pediatric)	2
Ergometrine	1
Flagyl (Metronidazole)	39
Furosemide	17
Gentamycin	10
Glucose (dextrose)	26
GRAVOL (Dimenhydrinate)	275
Haloperidol	2
Hydralazine	1
Hydrocortisone	77
Inferon	7
Maxalon (metoclopramide)	38
Metronidazole	5
Morphine	5
Novalgin	629
Other	1
Pethidine	7
Phenergan (promethazine)	46
Phytomenadione (VITAMIN K)	8
Piriton	53
Quinine	1
Ranitidine	103
Ringers Lactate	23
Rocephin	119
Saline	48
Seclopen (procaine penicillin)	63
Soluble insulin	126
Valium (Diazepam)	80
Voltaren (Diclofenac)	527
TOTAL	**2846**

Appendix 2: Injection Ledger General Data Collection Tool (Form 1)

GSIP **FORM 1** **INJECTION LEDGER**

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

DATE OF INJECTION	PATIENT INFO		MEDICINE	DOSAGE
	AGE	SEX		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		
		M F		

FORM 1, NUMBER _____

Appendix 3: Injection Ledger Focus Drug Data Collection Tool (Sample derived from Forms 2A, 2B, 2C)

GSIP **FORM 2A** **Injection ledger: CEFTRIAXONE/ROCEPHIN**

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

#	Date of Injection	Patient's Last Name, First Name	Case file retrieved?	Prescription retrieved?	Notes/ Comments
1			Y N	Y N	
2			Y N	Y N	
3			Y N	Y N	
4			Y N	Y N	
5			Y N	Y N	
6			Y N	Y N	
7			Y N	Y N	
8			Y N	Y N	
9			Y N	Y N	
10			Y N	Y N	
11			Y N	Y N	
12			Y N	Y N	
13			Y N	Y N	

FORM 2A

GSIP **FORM 2B Inj. ledger: PROCAINE PENICILLIN/SECLOPEN**

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

#	Date of Injection	Patient's Last Name, First Initial	Case file retrieved?	Prescription retrieved?	Notes/ Comments
1			Y N	Y N	
2			Y N	Y N	
3			Y N	Y N	
4			Y N	Y N	
5			Y N	Y N	
6			Y N	Y N	
7			Y N	Y N	
8			Y N	Y N	
9			Y N	Y N	
10			Y N	Y N	
11			Y N	Y N	
12			Y N	Y N	
13			Y N	Y N	
14			Y N	Y N	

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

#	Date of Injection	Patient's Last Name, First Initial	Case file retrieved?	Prescription retrieved?	Notes/ Comments
1			Y N	Y N	
2			Y N	Y N	
3			Y N	Y N	
4			Y N	Y N	
5			Y N	Y N	
6			Y N	Y N	
7			Y N	Y N	
8			Y N	Y N	
9			Y N	Y N	
10			Y N	Y N	
11			Y N	Y N	
12			Y N	Y N	
13			Y N	Y N	
14			Y N	Y N	
15			Y N	Y N	

Appendix 4: Record Review Data Collection Tool (Sample derived from Forms 3A, 3B, 3C)

GSIP **FORM 3A** Prescription/Case Files: **CEFTRIAXONE/ROCEPHIN**

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

RECORD 1			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:			
Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

RECORD 2			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:			
Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

*I = injection, S = suspension, T = tablets/capsules, O = other

FORM 3A, NUMBER _____

RECORD 3			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:			
Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

RECORD4			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:			
Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

*I = injection, S = suspension, T = tablets/capsules, O = other

FORM 3A, NUMBER _____

GSIP **FORM 3B** Prescription/Case Files: **PROCAINE PENICILLIN/SECLOPEN**

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

RECORD 1				
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F	
Primary complaint?				
Primary diagnosis:		Secondary diagnoses:		
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____			
Document Each Prescription:				
Medication:		Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N
RECORD 2				
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F	
Primary complaint?				
Primary diagnosis:		Secondary diagnoses:		
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____			
Document Each Prescription:				
Medication:		Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

*I = injection, S = suspension, T = tablets/capsules, O = other

FORM 3B, NUMBER

RECORD 3			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:			
Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

RECORD 4			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:			
Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

*I = injection, S = suspension, T = tablets/capsules, O = other

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

RECORD 1			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:

Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

RECORD 2			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:

Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

*I = injection, S = suspension, T = tablets/capsules, O = other

FORM 3C, NUMBER _____

RECORD 3			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:

Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

RECORD 4			
Record Date:	____/____/ 20_____ Day / Month / Year	Patient Age: _____ years	Patient Sex: ❑ M ❑ F
Primary complaint?			
Primary diagnosis:		Secondary diagnoses:	
Prescriber's cadre:	❑ Doctor ❑ Medex ❑ Dentist ❑ Other: _____		

Document Each Prescription:

Medication:	Formulation: I, S, T, O*	Dosage:	Dispensed: Y or N

*I = injection, S = suspension, T = tablets/capsules, O = other

FORM 3C, NUMBER _____

Appendix 5: Prescriber Interview Data Collection Tool (Form 4)

GSIP **FORM 4** ***PRESCRIBER INTERVIEW GUIDE***

Instructions: Conduct the interview in a private location where your conversation cannot be overheard. Start by requesting consent from the interviewee by reading the following:

My name is _____ and I am working with the USAID Guyana Safe Injection Project. We are conducting a survey on injection prescribing practices at this and other sites around Guyana. As part of the study, I would like to interview you for about 20 minutes about prescribing. Your participation is voluntary and anonymous – I will not record your name, only your qualification. Your willingness to participate will have no impact on your job and this is not a performance evaluation. Please feel free to ask me any questions before you agree to take part, as well as during or after the interview. You can also stop the interview at any time. Are you willing to participate?

If the participant agrees, circle "YES" below. If the participant does not agree, thank him or her, end the interview and seek out another participant.

Read each question and write down the interviewee's response as accurately as possible. If you are unclear about a response, ask a probing question and record the new response with the earlier response. (A probing question seeks to clarify or go deeper into a comment, such as: "Tell me more about what you mean" or "Why do you say ____ is important?")

If you need more room to write a response, use the blank back of the page **and clearly indicate which question the response belongs with**.

Date _____ Interviewer Name _____

Health Facility Code _____ Cadre of Prescriber_____

Consent to interview given? *(circle one)* **YES** **NO**

1. When you prescribe a drug to a patient, what information do you tell the patient about the medicine you are prescribing?

2. Out of every 10 outpatients you see, for about how many, on average, do you prescribe any medication?

3. Of the __*(repeat the # from Q2 above)*__, about how many, on average, will get a prescription that includes at least one injection?

4. How do you decide whether a patient should get an injection or a prescription for an oral medicine?

5. For which (if any) specific conditions or symptoms, do you believe injectable medicine is necessary?

6. What factors encourage doctors or other health workers to prescribe injections when oral alternatives exist?

7. What are the risks, if any, in using injections when they are not necessary?

8. Out of every 10 patients to whom you do NOT prescribe an injection, about how many of them then request to have an injection?

9. Imagine that I am a patient with a fever. You prescribed an oral to me but I asked for an injection. What would you say or do in response?

10. On a scale of 1 to 5, where 1 means "not at all likely" and 5 means "very likely," how likely would you be to give a client an injection if they ask for it, when you originally were going to prescribe an oral or no medication at all? *(circle)*

    1 2 3 4 5

11. Now I am going to read you the names of three injections. For each one, please describe a typical situation in which you would prescribe an injection of it. If you do not prescribe it, just say that.

    a. What is a typical situation in which you prescribe an injection of **Rocephin**?

    b. What is a typical situation in which you prescribe an injection of **Seclopen**?

c. What is a typical situation in which you prescribe an injection of **Dextran Iron**?

12. Do you ever discuss prescriptions with the pharmacist or pharmacy assistant? *(circle one)* **YES NO**

    a. If yes, please describe a typical situation in which you would discuss the prescription:

13. From <u>what sources</u> have you received information or guidance about rational drug use, injection use or the benefits of oral medicine in the last 6 months?

14. What was the <u>topic</u> of the most recent training you have received that addressed prescribing? (*If the interviewee needs examples, you can say "such as a training on new medicines, deciding between injections and other routes of administration or new treatment guidelines"*)

15. When did it take place?

16. Have you been trained in injection safety/Rational Drug Use? *(circle one)* **YES NO**

    a. *If yes,* when was the most recent training?

17. Have you been trained in the MOH national Standard Treatment Guidelines? *(circle one)* **YES NO**

    a. *If yes,* when was the most recent training?

18. Do you refer back to the Standard Treatment Guidelines? *(circle one)* **YES NO**

    a. If yes, how often?

19. When did you start working at this facility? *(offer the suggested answers and tick the response)*

- ❑ In the last 6 months
- ❑ In the last 12 months
- ❑ More than 1 year but less than 3 years ago
- ❑ More than 3 years but less than 5 years ago
- ❑ More than 5 years ago
- ❑ Don't know/don't remember

20. What suggestions do you have for making it easier to prescribe medication in oral instead of injectable forms?

21. Do you have any other comments, concerns or anything else you would like me to note about injection prescribing practices?

Instructions: When you have completed the interview guide, read the following:

Thank you for your time. Your input is very valuable! If you would like to receive a copy of the study report, I will record your name and contact information separately so that GSIP can provide it to you when it is finalized.

If he or she is interested in receiving a copy of the final report, record his or her name and contact info on a separate sheet of paper.

Appendix 6: Dispenser Interview Data Collection Tool (Form 5)

GSIP FORM 5 ***DISPENSER INTERVIEW GUIDE***

Instructions: Conduct the interview in a private location where your conversation cannot be overheard. Start by requesting consent from the interviewee by reading the following:

My name is _____ and I am working with the USAID Guyana Safe Injection Project. We are conducting a survey on injection prescribing practices at this and other sites around Guyana. As part of the study, I would like to interview you for about 15 minutes about prescribing and dispensing. Your participation is voluntary and anonymous – I will not record your name, only your qualification. Your willingness to participate will have no impact on your job and this is not a performance evaluation. Please feel free to ask me any questions before you agree to take part, as well as during or after the interview. You can also stop the interview at any time. Are you willing to participate?

If the participant agrees, circle "YES" below. If the participant does not agree, thank him or her, end the interview and seek out another participant.

Read each question and write down the interviewee's response as accurately as possible. If you are unclear about a response, ask a probing question and record the new response with the earlier response. (A probing question seeks to clarify or go deeper into a comment, such as: "Tell me more about what you mean" or "Why do you say ____ is important?")

If you need more room to write a response, use the blank back of the page **and clearly indicate which question the response belongs with**.

Date _____ Interviewer Name _____

Health Facility Code _____ Cadre of Dispenser_____

Consent to interview given? *(circle one)* **YES** **NO**

1. When you dispense a drug to a patient, what information do you tell the patient about the medicine you are dispensing?

2. Out of every 10 prescriptions you fill, about how many, on average, include at least one injection?

3. Out of every 10 prescriptions you fill, how many, on average, have the <u>diagnosis</u> written on them?

4. For which, if any, specific conditions or symptoms, do you believe injectable medicine is <u>necessary</u>?

5. What concerns, if any, would you have about using injections when they are not necessary?

6. What factors, if any, do you think encourage doctors or other health workers to prescribe injections when oral alternatives exist?

7. Do you ever ask a prescriber to consider changing a prescription from an injection to an oral formulation? *(circle one)* **YES NO**

    a. ***If yes,*** please describe a typical situation in which you discuss the oral alternative with the prescriber:

8. Imagine that I am a patient with a fever. The doctor prescribed an oral to me, but I ask you for an injection instead. What would you say or do in response?

9. Now I am going to read you the names of three injectable drugs. For each one, please describe a situation when it would be appropriate (or rational) to use it. If you are not familiar with the drug, just say that:

    a. What is an appropriate use of a **Rocephin** injection?

    b. What is an appropriate use of a **Seclopen** injection?

    c. What is an appropriate use of an injection of **Dextran Iron**?

10. From what sources have you received information or guidance about rational drug use, injection use or the benefits of oral medicine in the last 6 months?

11. Have you been trained in counseling for adherence? *(circle one)* **YES** **NO**

    a. ***If yes,*** when was the most recent training?

12. On average, approximately how many times a week do you refer back to:
    (a) Standard Treatment Guidelines ……..
    (b) Pharmacy Assistant Handbook ……
    (c) British National Formulary (BNF) ……

13. When did you start working at this facility? *(offer the suggested answers and tick the response)*

    ❑ In the last 6 months
    ❑ In the last 12 months
    ❑ More than 1 year but less than 3 years ago
    ❑ More than 3 years but less than 5 years ago
    ❑ More than 5 years ago
    ❑ Don't know/don't remember

14. Do you have any other comments, concerns or anything else you would like me to note about injection prescribing practices?

Instructions: When you have completed the interview guide, read the following:

Thank you for your time. Your input is very valuable! If you would like to receive a copy of the study report, I will record your name and contact information separately so that GSIP can provide it to you when it is finalized.

If he or she is interested in receiving a copy of the final report, record his or her name and contact info on a separate sheet of paper.

Appendix 7: Stockout Data Collection Tool (Form 6)

GSIP **FORM 6** **STOCK OUT REPORTS**

Name of Data Collector: _____

Site Code: _____ Date of Data Collection: _____

MONTH	DRUG	WAS THERE ANY STOCKOUT DURING THE MONTH?	DATE(S) OF STOCKOUT
JANUARY 2012	Rocephin/ Ceftriaxone	YES NO	
	Seclopen/ Procaine Penicillin	YES NO	
	Dextran Iron	YES NO	
	Comments, if any:		
FEBRUARY 2012	Rocephin/ Ceftriaxone	YES NO	
	Seclopen/ Procaine Penicillin	YES NO	
	Dextran Iron	YES NO	
	Comments, if any:		
MARCH 2012	Rocephin/ Ceftriaxone	YES NO	
	Seclopen/ Procaine Penicillin	YES NO	
	Dextran Iron	YES NO	
	Comments, if any:		

Annex 4: Compilation of Media Coverage

DATE	Description	TITLE	FILE
June 16, 2012	Press release in Kaieteur News newspaper, 16 June 2012	Injection safety to feature at special Confab	
June 20, 2012	Evening news segment on television, 20 September 2012, NCN	Safe Injection Conference	MOV02904.avi (attached separately)
September 5, 2012	Press release in Guyana Times newspaper, 5 September 2012, p. 13	Guyana to take ownership of USAID safe injection project	
September 5, 2012	Press release in Stabroek News newspaper, 5 September 2012, p. 10	USAID handing over safe injection programme	
September 6, 2012	Article in Guyana Times newspaper, 6 September 2012, p.13	Curtains come down on safe injection project – U.S. urges sustainability as Guyana takes over	

her grandfather. The source added that 11:55hrs yesterday.

Injection Safety to feature at special Confab

The Guyana Safe Injection Project will on Wednesday open a trainers conference at the National Library.

The conference is slated to benefit from presentations by Noel Holder, Director of Health Services Education; William Gelman, Officer -in-Charge, USAID; Audrey Anderson, GSIP Project Director; Mr. Baldeo James, Director of Regional Health Services (ag); as well as Minister of Health, Dr. Bheri Ramsaran.

The conference will be hosted at the National Library and will deal with issues such as Best Practices, Strategies for Addressing Challenges and Resources Needed and will feature several working groups on the issue of Injection Safety.

According to the organizers of the conference, "The general purpose of this conference is to recognize and encourage the efforts of the cohort of Injection Safety Trainers." One of the Guyana Safe Injection Project's (GSIP) key activities has been to support the Ministry of Health to develop national and regional capacity on injection safety (IS) and waste management (WM).

In the latter part of 2011, "Training of Trainers" sessions were conducted to create a cadre of Injection Safety Trainers.

By building local capacity in IS and WM, GSIP has provided for the human resources who will sustain injection safety after the GSIP project has concluded. A total of 71 health workers, from seven regions, were nominated to participate in the conference.

Following the Training of Trainers sessions, GSIP supported the newly-trained trainers to conduct injection safety trainings in their local areas.

Since January, the trainers have reached over 700 health workers with vital information and skills to protect themselves, their patients, and the wider community from needle-stick and other sharps injuries, as well as from HIV and other diseases that can be transmitted through dirty needles.

During the conference, trainers will have the opportunity to review their mandated tasks and discuss any challenges they have faced as they have piloted the trainings with their co-workers.

We will also hear from the exemplary trainers about their methods and strategies, as well as from some trainers who have been actively involved in other GSIP activities, such as the development of WM plans and certification of facilities as injection safe sites.

The women are being represented by Attorney at Law Mursaleine Bacchus. They were charged for the murder of Abdool Shakeel Majid.

Police were able to crack the case after the man's wife returned to the United States after the man was reported missing. The woman returned to Guyana from the United States and reported to the New Amsterdam Police Station to identify her slain husband's body. She was promptly arrested.

On April 28, the body of a man was found with his scalp missing and other injuries at the Number 56 Village, Corentyne foreshore around 07.40 hrs.

Bloodstains and sand were found in the car trunk that the couple had rented. Detectives had also retrieved the woman's driver's permit from the car.

The remains were only identified on May 16 last, when a brother visited Guyana after becoming suspicious about the wife's behaviour.

He subsequently travelled to New Amsterdam, Berbice and positively identified his brother's body at the mortuary.

Meanwhile, detectives were alerted that a car that the victim usually rented while in Guyana had been used to transport the body.

Shopping Network now established in Guyana

Aeropost Internet Shopping Network on Friday officially launched its Guyana location.

For over 25 years, the company has been enabling shoppers from all over the world to purchase originally branded products from anywhere in the world. It has now spread its wings to Guyana.

Brands like Forever 21, American Eagle, Old Navy, Toys 'r' Us, eBay, amazon.com, finish line, 6pm.com, zappos.com, DR jays, pick your shoes.com, Victoria secret, electronic express, and computer geeks.com will now be accessible by the Guyanese people.

The shopping network allows customers to purchase products from anywhere in the world and have them delivered here in Guyana.

AEROPOST NETWORK

The Aeropost Internet Shopping Network logo

Purchases may be made with credit or debit cards. If one does not possess any of the two, they may visit the Aeropost office and use the company's card for an additional 10 per cent of the product cost.

Customers already registered with Aeropost International are advised that transactions originating out of Guyana must go through the local representative.

Their office is located at 168 W1/2 Thomas Street Kitty Georgetown.

As a special introductory offer, new registrants to the network will have the opportunity to join the network for free for the next six months. Aeropost Internet Shopping is affiliated with all major international brands. It ships into Guyana via air freight.

The company is already established in over 3(countries, and is now looking to develop a loyal custome base here.

Evenings News segment on television, September 20, 2012.

(Please find attached separately.)

ILO hosting workshop for work place HIV peer educators

The International Labour Organisation (ILO) is currently training seven peer educators to be effective communicators, as it stages another round of workshops under its HIV/AIDS Workplace Education Programme.

This time around, the three day workshop targets peer educators who are employees of Noble House Sea Food. The initiative was expanded to include other sexually transmitted diseases that are common to Guyanese, male norms and gender-based violence. The workshop is being conducted by Leona Kyte.

During an interview with *Guyana Times* on Tuesday, the Programme Officer Naomi Singh said Noble House Seafood has been partnering with ILO since 2008, but recently requested that its peer educators be trained to be effective communicators and equipped with the requisite skills and knowledge to stage HIV/AIDS workshops at the worksite. Singh said despite a series of training, peer educators lack the skill to effectively converse on sensitive issues relating to HIV/AIDS, other sexually transmitted diseases and domestic violence, but expressed optimism that the workshop will set the tone.

"What we have today, is a peer educator upgrading exercise, so some of the participants... were trained as peer educators so that they in turn can educate their colleagues at work... but one of the challenges peer educators face is their ability to communicate, so this workshop takes it into consideration to build their courage..."

Leona Kyte interacting with peer educators during the HIV/AIDS Workplace Education Programme workshop on Tuesday at the ILO Office

This is nothing new to the HIV/AIDS Workplace Education Programme since systems and workshops are often introduced to meet the needs of peer educators/ workers when necessary. "When we train our peer educators, we would usually do a semi-annual survey of how the programme has been working in the work places, what are some of the challenges that the peer educators are facing and what are their additional needs."

Since 2003, the ILO has been partnering with a number of organisations such as the Guyana Rice Development Board, GuySuCo, Republic Bank, the Guyana Power and Light, the Guyana Revenue Authority, Noble House, Professional Guard Service, Property Protection Service, the National Communication Network and the Demerara Distillers Limited to educate staffers on HIV/AIDS while reducing instances of discrimination in the workplace.

According to Singh, the programme has proven to be effective. "What is heartening to see in these companies, the impact, there are companies that have been partnering with the ILO since 2003 and they have not dropped that interest... they continue to foster this interest in HIV even though they would have integrated other types of information such as alcohol and drug use because all of those things coupled to HIV and increases a person risks."

A call was also made for other entities to come on board, noting that the ongoing workshop is just one component of a major and comprehensive project. "ILO has been working with workplaces to have comprehensive programmes where they can touch each worker as well as specific programme geared to meet the needs of the workplace... So for instance, there are programme components that deal with sick employees, employees who may be HIV positive... other programmes that deal with the distribution of condoms or referrals for when persons are ill."

Guyanese youth ambassadors in U.S. on exchange visit

Twelve students and two mentors representing several regions of Guyana have embarked on a three-week exchange programme to the United States, known as the Youth Ambassadors Programme (YAP). The YAP group arrived in Washington, DC on Tuesday and will travel to various parts of the United States before the programme concludes on September 25.

This is the first time the regional programme has hosted youth ambassadors representing Guyana, the U.S. embassy said in a release. On August 28, U.S. Embassy Chargé d'Affaires Thomas Pierce met with the 12 youth ambassadors and two YAP mentors to congratulate them on their selection and to discuss their visit. The youths spoke about their backgrounds in Guyana and their expectations of the programme. They also described how they hope to continue to develop their leadership skills and civic participation upon their return to Guyana.

Pierce gave the students a preview of what to expect during their visit and emphasised the significance of their participation in this cultural exchange programme.

The YAP will serve to give students and adult leaders an opportunity to develop leadership and problem-solving skills that enable them to act as leaders in their communities. The project aims to hone participants' sense of civic responsibility and foster civic activism. Through experiential activities, discussions, site visits, training modules, and home stays, participants will have the opportunity to develop the knowledge, attitudes, intellectual skills, and practical competencies to effectively lead efforts for positive social change.

While in the United States, participants will increase their understanding of American institutions while engaging in civic life in the United States. Participants will explore facets unique to each country's history and identity, and engage in discussion and educational activities that promote learning on an academic and a personal level. The YAP will show participants how they can become more engaged in their schools and communities, and develop leadership skills that enable them to do so. Participants will be required to implement follow-on activities upon their return home that will help them to stay in touch with each other and reflect on their experiences and integrate that learning into their day-to-day lives. An important goal of the programme is that the student leaders, now empowered, will train other student leaders through student-led community-oriented service projects.

Baby drowns after falling into drain

Relatives are questioning whether a more alert response by doctors at the New Amsterdam Hospital might have been able the save the life of a 17-month-old child.

Okeshia Thomas called "Princess" was pronounced dead when doctors looked at her for about 15 minutes after she arrived at the New Amsterdam Hospital Monday evening. However, nurses, who were on duty say the child was still breathing when she arrived at the institution.

The infant was rushed to the hospital after efforts to revive her failed when she was pulled out of a shallow drain in front of her Timmers Dam home in Mount Sinai, commonly called Angoys Avenue. The child was reported missing and an immediate search started which ended when a neighbour put his hand into the drain in hopes of finding her there. Reports are that he started by placing his hand on her head which was underwater and at the time not visible.

She was pulled out and a Neighborhood Community Police Officer Sherri Ann Knights immediately started to perform mouth-to-mouth resuscitation. She told *Guyana Times* that Okeshia was still alive at the time. Her great grandmother Justina Carrington said when she arrived on the scene; Okeshia was lying on the ground and gave a faint grown. "I put my mouth over she nose and mouth and I blow and then water start to come through she mouth and I do it again and the same thing happen, and by the third time, I do it I start to faint so I had to stop."

TURN TO PAGE 17

De Bell Crier

De "mukracker" owner might need a "exorcism"

De BC, like plenty others, can't help noticing how de "mukracker" and de Big Market paper giving plenty prominence to what de "big" lawyer seh in de last debate pun TV. This is de first debate fuh attract so much front-page attention by de two papers. People seh that is because it had fuh do with de most recent former prezzie who both paper don't like. People seh de two media houses don't like he because he is de architect of de country development that improve de life of everybody including dem self! De transformation mek de papers and dem bosses in de "Hands Up" and "key" party look incompetent! Fuh save "face", dem resort to attacking! Apparently, de thing is much more than de papers and dem bosses looking incompetent, since, as people does seh, some does be exactly how dem look!

People sehin that de Big Market paper, which didn't give any front-page coverage to de previous debates, gat other reasons fuh giving prominence to de last debate because, as some seh, de paper was de founder and is de benefactor of de "key" party, and since de "big" lawyer is a "key" man, he gon always be pun de front page there, even though what he sehin is misleading! People does call that cronyism! But people still at a loss fuh know why de "mukracker" owner so bitter and obsessed with de former prezzie. He so obsessed that he rag paper ain't gat no professionalism when it reporting related issues. People sehin that is nothing new! He gat de paper carrying picture of de former prezzie house and trying fuh mislead people it is a palace.

People seh de paper owner and de others who obsessed about de former prezzie house gat houses bigger than that! He and de others should tell people how dem acquire it! People now demanding that de next debate be about that! De only problem is that all de seat on de opposition gon be empty, just like de space between de "mukracker" owner ears! Plenty sehin that if he and de others want fuh see what is a palace is, then dem should go to London and see where de Queen does live. That should put dem obsession to a rest. People seh if that ain't wuk, then a good old "exorcism" or "jaray" might be necessary! People waiting fuh see if that "exercise" gon mek de front page of de two papers! De "prominence" gon be without pictures though, since old people does seh, "spirits" can't be photographed! Ting-a-ling-a-ling…Friend tell friend…mattie tell mattie!

Guyana to take ownership of USAID safe injection project

The United States Agency for International Development / Guyana Safe Injection Project (USAID/GSIP) is marking its impending closure with a meeting from today at the Cara Lodge Hotel.

The meeting's theme is "Sustaining Successes in Injection Safety".

In support of this theme, the meeting will feature presentations from the Health Ministry and other partners that have been collaborating with GSIP on how they plan to sustain the project's momentum going forward.

The centrepiece of the meeting will be a keynote address by Health Minister Dr Bheri Ramsaran.

United States Charge d'Affaires Thomas Pierce will be making opening remarks.

The USAID/Guyana Safe Injection Project (GSIP) is a 12-month project funded by USAID and implemented by Initiatives Inc.

It began in September 2011, and its objectives were to promote comprehensive, sustainable, country-owned managed infection prevention and injection safety (IS) programmes in order to safeguard health care workers, patients and communities.

The USAID/GSIP activities sought to engage all stakeholders – patients, providers and the community – to ensure that injections are used appropriately and needles and other sharps are disposed of safely.

GSIP's activities were focused on four key programme areas: Safe and appropriate injection use, worker protection, waste management and quality assurance and improvement.

USAID handing over safe injection programme

The USAID/Guyana Safe Injection Project (USAID/GSIP) is marking its imminent closure with a meeting today aimed at "Sustaining Successes in Injection Safety'.

In a press release USAID said in support of this theme the meeting will feature presentations from the Ministry of Health and other partners that have been collaborating with GSIP on how they plan to sustain the project's momentum forward. Health Minister Dr Bheri Ramsaran will be delivering the keynote address while US Charge d'Affaires Thomas Pierce will be making opening remarks.

The USAID/GSIP is a 12-month project funded by USAID and implemented by Initiatives Inc. It started in September 2011 and aimed to promote comprehensive, sustainable, country-owned managed infection prevention and injection safety programmes in order to safeguard health care workers, patients and communities.

USAID/GSIP activities sought to engage all stakeholders - patients, providers and the community – to ensure that injections are used appropriately and needles and other sharps are disposed of safely. GSIP's activities were focused on four key programme areas: Safe and Appropriate Injection Use, Worker Protection, Waste Protection, Waste Management and Quality Assurance and Improvement.

The meeting is being held at the Cara Lodge Hotel from 9am-11am.

Curtains come down on safe injection project

– U.S. urges sustainability as Guyana takes over

By Svetlana Marshall

A section of the audience during the official closing ceremony of the USAID/GUYANA Safe Injection Project

The curtains came down on the USAID/ Guyana Safe Injection Project on Wednesday, with glowing reports on its overwhelming achievements from officials, including Health Minister Dr Bheri Ramsaran and United States Embassy Deputy Chief of Mission Thomas Pierce. The closing ceremony was held at Cara Lodge. Guyana Safe Injection Project (GSIP) is a 12-month initiative, which was designed to foster comprehensive, sustainable, country-owned, and managed injection safety programmes to safeguard health-care workers, patients, and communities under four key areas: safe and appropriate injection use, worker protection, waste management, and quality assurance and improvement. The culmination of the major project, which has taken health-care delivery in Guyana to another level, paves way for the Health Ministry to incorporate the programme into its nationwide operation with the aim of sustaining success in injection safety in Guyana. Pierce offered his commendations to the ministry for effectively facilitating GSIP across the 10 administrative regions as he also recognised the important roles of the Humanitarian Assistance Programme and the Pan American Health Organisation, which have worked with GSIP on waste disposal systems leading to the completion of three incinerators. Nevertheless, he emphasised the importance of sustainability, noting that it must remain key on the agenda as the programme is integrated in the ministry's operation.

"I, therefore, look forward to hearing the transitional plan that demonstrates GSIP's transfers of "ownership" to national leadership. I am aware that injection safety does not belong to any one department within the Ministry of Health, but cuts across various departments and private health-care providers and facilities, in fact, the entire medical infrastructure in Guyana." While it may be difficult to measure the long-term impact of educational and prevention activities, the Health Ministry will garner greater success when knowledge and skills are effectively used. "After all, when the work is successful, the result should be: 1, no needle stick injuries to injection providers, waste handlers, and maids, in facilities; 2, no exposure to contaminated blood and 3, no new HIV, hepatitis or tetanus cases due to sharp injuries. We know that these achievements are crucial for individuals whose health is preserved, and for Guyana and its health system as a whole."

Smooth transition assured

The health minister assured the U.S. charge d' affaire that the transitional phrase will be smooth, noting that budgetary allocations have been proposed to sustain success in injection safety in the country. "Many other programmes are going through shaky moments, anxious moments... but what I observed from this programme is that we will not be having those anxious moments and I want to congratulate you for that (GSIP Work Team)... their good work and certain things the Ministry of Health has been quietly doing will ensure that this will be one of the smoothest transitions."

He further stated that provision has been made in the 2013 national budget for the procurement, and upgrading, of incinerators at health facilities across the country, as well as funds to facilitate training in injection safety. Under GSIP, 71 health workers were trained to serve as injection safety trainers, while more than 800 medical personnel received training on injection safety, surpassing the target of 500 persons.

In addition, they were trained in post-exposure prophylaxis for HIV in case of accidental needle sticks. Another batch of 23 health facility managers and waste handlers were equipped with the requisite skill and knowledge to function as trainers in proper incineration operation for hazardous waste disposal. Anna Regina Health Centre, Belladrum Health Centre, Charity Hospital, Cotton Tree Health Centre, Mahaicony Hospital, and Queenstown Health Centre were also certified as injection safe facilities.

Colin McDonald of the Linden Hospital Complex, who was tagged as one of the most successful of persons trained to facilitate training sessions, said the programme was, indeed, a success and beneficial to health-care providers.

"It can be stated without any form of embellishment that those of us trained as trainers now have plenty of experience, and are more than capable of conducting both introductory and refresher training in the fundamentals of injection safety and waste management practices for health facilities... this level of competence have had its yield, as since January trainers or TOTs, as we are called, have collectively trained over 800 of our fellow health-care workers including doctors, medics, nurses, nurse assistants, pharmacists, waste handlers, porters, maids and others."

McDonald said he, along with colleagues, is more than willing to continue disseminating information on injection safety, but stressed the need for holistic support. "It is rather quite simple though complex it may seem to some. It wouldn't require lots of external resources to continue the training: we have the material and knowledge... all we need is support from the regional and facility leaders."

Publish photos of yuh houses too nah if is not a breach of security!

De BC see that de "mukracker" continue fuh publish photos of former Prezzie BJ house. Security officials come out and lash de paper sehin that de pictures compromising de security of de former chief. Some even suggest that maybe some kind of legal action could be taken and that de person who do de "fly-over" could be in breach of aircraft protocol. Apparently, that attracting some attention. De rag paper reply by putting pictures of Tony Blair and George Bush houses as defence fuh seh that such photos is not in breach of security! People seh de only thing somebody could do better when dem dumb, is fuh be dumber! Dem sehin that dumber and de "mukracker owner is a life-long bond!

With that in mind, again de BC gat fuh mention this; due to de space between de paper owner ears, he can't understand that what photos put up pun de net about George and Tony house was vetted by security! Dem photos ain't show de security parameters of de two houses like what de "mukracker" show about BJ house! As a matter of fact, he should know that people could be held if dem get catch filming or teking out photos of some buildings in de USA and de Great Britain! That is consider a serious breach of security! Some sehin that if de paper owner did had "something" between he ears, maybe it could help "cushion" he thought process. Others sehin that thought process and he don't go together!

That aside, since he seh that publishing BJ house photos is not a breach of security, then de BC challenging he fuh publish photos of he palaces and that of de "big" lawyer and others in de "key" and "Hands Up" party! De photos must also show all de parameters and de roads around. Fuh both de "mukracker" owner and de "big" lawyer, it gon be plenty photos, given de plenty palaces dem gat all over. People seh dem eager fuh see de palaces, especially since it gon be in keeping with freedom of expression and transparency! After all, de two believe in freedom – freedom to misinform! De BC waiting fuh see de photos. Hope de publishing of it is not avoided like how de "big" lawyer avoid paying he taxes and like how some in de opposition avoiding fuh submit dem information to de Integrity Commission! Ting-a-ling-a-ling…Friend tell friend…mattie tell mattie!

Two more Guyanese awarded prestigious Chevening scholarships

The British High Commissioner to Guyana Andrew Ayre on Tuesday hosted a reception at his residence to bid farewell to the two recipients of the Chevening Scholarship to further their studies in the United Kingdom.

Two persons, Chavika Harilal and Joel Simpson, were each awarded a one-year scholarship to study at universities in the United Kingdom. Harrilal will be going to the University of Kent in Canterbury, UK, to further her studies in conservation in rural development whilst Simpson will be furthering his studies in the law on human rights at the Nottingham University in England. Before presenting the scholarships to the two awardees, Ayre congratulated them on their achievement of receiving the scholarship and wished them success as they "undertake on an academic journey that will no doubt enrich their educational and professional development". Ayre also noted that they should take the opportunity to learn about the diverse culture in England. Attorney Gino Persaud, a 2004 recipient of the Chevening Scholarship, told the awardees that this is a very prestigious scholarship but with this prestige, he warned, comes tremendous responsibilities, as such, they are both expected to return to Guyana and "contribute to the development of our country". Persaud said that he would like to see persons returning to Guyana after furthering their studies abroad to take charge of the corrupt situation in the country, and restore the values it once had. He also urged the duo to make full use of the overwhelming resources that would be available to them and at the same time, he charged them not to lose focus of their goals. "Please don't become lost in academic pursuit, England is an amazing place to grow, to learn and to be mature, and I think to be at a first world university is an education all by itself." Harilal, who graduated from the University of Guyana with a degree in biology, will leave on September 14. She was employed with the Guyana Protection Agency. The awardee said that she was already accepted by the University of Kent and applied for a scholarship to further her studies when she was awarded the prestigious Chevening Scholarship. Meanwhile, Simpson, who graduated with a bachelor's degree in law from the University of Guyana, is expected to leave in two weeks time since his course starts this month-end. He is currently an active member of the Society Against Sexual Orientation Discrimination (SASOD). The awardee said that he chose this field because he always had an interest in bisexual and transsexual issues; hence, he wants to develop his interest in human rights issues relating to sexuality and genders.

The two scholars, Chavika Harilal and Joel Simpson, with British High Commissioner to Guyana Andrew Ayre, at the farewell reception

Annex 5: GSIP Success Stories

1. *Profile of OSH officer Judah Bailey (#1)*
2. *Profile of Porter (#2)*
3. *Still Going Strong: The Home-use Insulin Needle Return Program (#3)*
4. Integration of injection safety standards and GSIP's approaches to assessment in MOH's ongoing activities (#4)
5. Profile: Nurse Vidya Ragbeer: An Injection Safety Champion (#5)
6. Porter Ayube Baksh's Innovation to Ensure Incinerator Operators' Safety (#6)

Success Story #1: An innovative trainer

Judah Bailey is an Occupational Safety and Health (OSH) Officer in Region 10. In November 2011 he participated in a two-day Training of Trainers conducted by the USAID Guyana Safe Injection Project (GSIP). The training covered both principles of injection safety (including safe injection use and waste management) as well as adult education and training techniques. The training was designed to produce master trainers who commit to conducting periodic injection safety training sessions for health care providers (nurses, medex, and others) and waste handlers at health facilities in their regions.

Judah Bailey, far right in a green shirt, at the end of the TOT session

Following the training, Mr. Bailey went back to Region 10, where he works at the Linden Hospital Complex. In addition to preparing to conduct training for his colleagues there, he reviewed waste management practices throughout the facility and found several problems. He decided that the best way to approach the problem was through documentation, so he took his personal camera with him as he went about his daily activities and took pictures of examples of poor waste problems when he saw them.

Mr. Bailey had been asked to make a presentation at the January monthly meeting of the hospital's senior administrative and clinical staff. In the presentation, he used the photos he had taken to show examples of poor waste management practices. Although he did not label his photos, the meeting attendees were of course able to identify their units.

Further, when Mr. Bailey was conducting the injection safety training for Linden Hospital staff, he replaced the sample pictures in GSIP's standard presentations with the pictures he had taken throughout Linden Hospital. The training participants, like the senior staff, immediately recognized their work stations and identified the waste management problems.

Before:
waste piling up, infectious waste in red bags exposed.

After:
waste is properly contained and regularly collected.

With Mr. Bailey's guidance and support, staff at Linden Hospital have taken responsibility for making changes in their waste handling practices. A few weeks ago he went back and revisited the places

where he initially found problems and took new pictures; significant improvements are clearly visible.

Mr. Bailey's innovation was to relate everything included in the standard injection safety training to the local setting. By showing problems in places that hospital staff were familiar with, he was able to help his co-workers – from waste handlers to the CEO – immediately understand. And by providing guidance and assistance, he has assisted them all to change their behaviors, as well as their expectations.

Before:
Sharps box insecurely stored

After:
No sharps box lying around

Nowadays, Mr. Bailey reports, when he walks around the hospital, staff scurry in front of him to ensure that they are in compliance with best practices.

Before:
Over-filled and unsealed safety boxes left on the floor.

After:
The area is clear.

Before and after photos courtesy of Judah Bailey

Success Story #2: A dedicated waste handler

Archie has been a porter, waste handler and general handyman at the Fort Wellington and Mahaicony Regional Hospitals in Region 5 for over fifteen years. In 2009, a contractor was hired to construct new incinerators at both facilities. Archie observed the process carefully and paid close attention to the operating instructions provided by the contractor.

Archie and a co-worker demonstrating the incinerator to visitors

Archie and the other porters began using the incinerator to burn safety boxes filled with sharps. He soon realized that although it was recommended to burn one box every 15 minutes, many porters found it easier to stuff five or six boxes in and then leave the incinerator to burn slowly. This creates problems as the temperature does not get hot enough to completely destroy needles. It also results in excessive build-up of soot in the chimney, which impedes functioning, and can eventually create cracks in the incinerator.

Archie discussed the problems he was observing with GSIP staff during trainings and when they made monitoring visits to the facilities. They confirmed his analysis of the problems. Archie then took the problems to the Regional Health Officer…along with a possible solution. Because he is a skilled handyman, he suggested that if the hospitals could purchase the proper cement and other materials, he would do the maintenance work as part of his regular duties, saving the region the cost of re-hiring the contractor. Further, he continually supervises and trains the other porters using the incinerators to ensure that they do not overfill or otherwise misuse them.

Thanks to Archie and his co-workers' commitment to the facilities and attention to details, both incinerators have remained completely functional for the past three years. (This is not the case with other incinerators constructed around the same time.) Further, Fort Wellington Hospital has agreed to host the upcoming GSIP Incinerator Operator Training so that their best practices can be highlighted. Archie will, of course, be one of the stars of that show.

Success Story #3: Still Going Strong: The Home-use Insulin Needle Return Program

In Guyana, people with diabetes who need to inject insulin make up a significant portion of injection users. An estimated one million insulin needles are disposed of annually. When planning activities to address unsafe injection practices, the Guyana Safe Injection Project (GSIP) must always, therefore, consider their needs and habits.

This focus started under GSIP's previous phase. A 2007 study found that, due both to cost and lack of knowledge, many insulin-dependent diabetic patients were reusing their insulin needles. Further, they had little access to appropriate systems for disposal, and typically disposed of them along with regular household trash. Re-use of needles is potentially harmful to the patients themselves as well as members of their household, while unsafe disposal can put the entire community at risk of needle stick injuries.

To address these challenges, GSIP worked with the Ministry of Health (MOH) to initiate a ***Home-use Insulin Needle Return Program*** to prevent reuse of insulin needles and address improper disposal practices among home-users of insulin. Following a six-month pilot study to compare three possible designs for the program, a program design was selected and rolled out, beginning in 2008, to four diabetic clinics in three regions.

The program starts with provision of needles, along with insulin, to patients. Each patient is provided with enough supplies that he or she can *use a new needle for each injection*.

A nurse at GPHC counts out and packages needles to provide to insulin-dependent diabetics.

Nurses and injection safety trainers, who were trained by GSIP, teach patients how to safely discard all their used needles in suitable containers. Some clinics give their clients containers – typically empty plastic pill bottles provided by the pharmacy. Patients at two sites just use plastic containers from their own household trash and at another site patients continue to use needle clippers. When a container is three-quarters full of used needles, patients seal them shut with tape; on their next visit to the clinic or dispensary they bring the containers. They are collected and sent to be properly disposed of along with the facility's other sharps waste. To receive new supplies, patients must bring their used sharps back to the clinic.

When the program was initially introduced, GSIP produced an infomercial that explains the importance and the process of protecting patients, their families and their communities from accidental needle stick injuries. Copies of the infomercial were given to health facilities to be shown in the waiting areas of diabetic clinics. This reinforces the one-on-one education provided by nurses and promotes patient compliance with the program.

At the close-out of the first phase of GSIP in mid-2010, management of the Home-use Insulin Needle Return Program was turned over to MOH and individual facilities. The second phase of GSIP started up a year later. In the latter part of 2011, GSIP conducted an assessment to see whether the program had been sustained, without external inputs, in the interval.

A patient places a sealed, self-sourced container ¾ full of used needles into a collection box at a clinic.

GSIP was gratified to learn that the Home-use Insulin Needle Return Program *remains highly active and is fully integrated* into the routine care provided to people with diabetes at eleven health facilities in seven regions. The MOH continues to provide adequate supplies of needles to the facilities for distribution to insulin users. Health workers who manage diabetic clinics continue to educate, counsel and support their clients to adhere to safe needle disposal practices. Pharmacists continue to collect large empty pill bottles and deliver them to the diabetic clinics for distribution to the patients with their other injection supplies.

During the current phase of the project, GSIP continues to support and reinforce the program. The 71 new injection safety trainers trained in the past year have all been familiarized with the Home-Use Insulin Needle Return program. A key message they share, during every activity they conduct, is that diabetic patients need continuous support and counseling from health workers on appropriate use and disposal of their insulin needles. The trainers are also supplied with the infomercials, and they carry out patient education sessions whenever possible. GSIP is also working with three diabetic people's associations to further promote safe injection use and disposal practices.

GSIP is pleased and proud that the Home-Use Insulin Return program has proven itself to be sustainable over time and with minimal external support. Key elements of its sustainability are: the integration of the supply-chain with routine MOH procurement and distribution practices; the low marginal cost of the needles due to bulk purchasing; the fact that the additional counseling, time and energy required from both staff and patients is limited and can occur simultaneously with other service delivery; and the commitment of MOH, health workers and their clients. Together, they have managed to establish a sustainable and routine injection safety program that benefits people with diabetes, their families and communities throughout Guyana.

Success Story #4: Integration of injection safety standards and GSIP's approaches to assessment in the MOH's ongoing activities

Beginning in 2004, the Guyana Safer Injection Project (GSIP I) worked with the Ministry of Health (MOH) Standards and Technical Services Unit (STSU) to establish and implement policies and standards to ensure injection safety – particularly to improve client and worker safety – at health facilities. As part of this process, the partners collaborated on a set of *standards* and *performance indicators* for injection safety (IS) that defined the desired practices, inputs, outputs and outcomes. These standards and indicators, which were based on existing policies where they existed, have guided and helped to focus GSIP interventions since they were created.

In 2008, GSIP I began to focus intently on how to sustain the improvements and advances that facilities had managed to achieve. Certification, a strategy used throughout the world for safeguarding and promoting continuous performance improvement, was selected as the approach. Certification is a process in which facilities are periodically evaluated by objective observers to determine their adherence to performance standards – this leads to "certification," a public recognition of facilities that have achieved the standards.

Also in 2008, MOH STSU began to roll out a new process for licensing hospitals, based on a Health Facilities Licensing Act (HFLA), which had passed in Parliament the previous year, and the newly developed Guyana Health Facilities Licensing Regulations.

While the two processes – IS certification and HFLA licensing – started around the same time, initially they did not officially overlap. However, after the GSIP certification program was able to demonstrate strong results (13 out of 15 participating facilities were certified), STSU decided to adapt sections of the national HFLA checklist to use the same format that is used for the IS standards. Dr. Julian Amsterdam, the STSU director, has said that the format introduced by GSIP for the Safe Injection Certification surveys

Excerpt from the MOH HFLA checklist, using GSIP format

Ministry of Health
Guyana
Inspectorate Evaluation Instrument 2011

Sanitation and safety- EPA and OS &H Acts

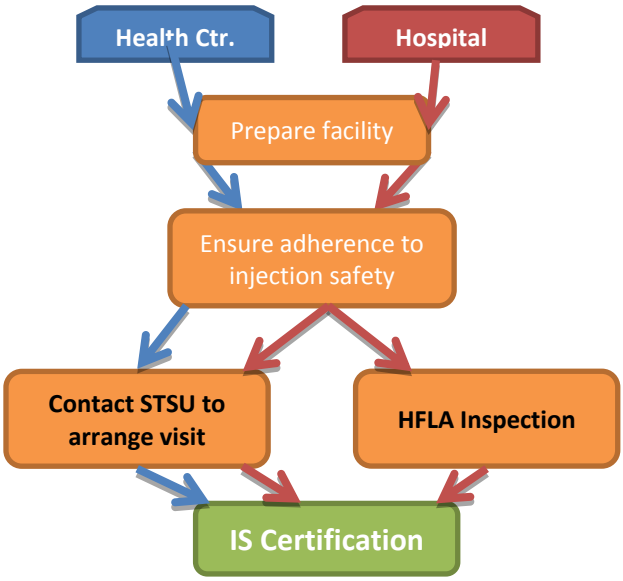
Regulation	Check list Criteria / Indicator	Fully Met	Partially Met	Not Met	N/A	Comments
Part I: Waste Management Summary						
	D. Does the facility have a waste segregation policy?					
	1. Are infectious wastes stored in impervious red plastic bags?					
	2. Are non-infectious waste stored in impervious black plastic bags?					
	3. Are sharps wastes stored in prescribed safety boxes?					
	4. Are there adequate bins for segregation of waste?					
	E. Does the facility have a voluntary sharps return program?					
	1. If yes, does your Plan include the voluntary return program?					
	2. Where are the sharps returned? State location_____					
	F. Does the facility receive any health care waste from other facilities?					
	1. Private physician, dental offices, health centers and health posts					
	G. Does the facility track the amount of waste generated?					
	1. If yes, where are records maintained? _____					

was both easy for surveyors to use and very informative for the facilities to see where they are doing well and where there are gaps.

The collaboration between GSIP and STSU has continued and strengthened under the second phase of the project (2011-2012). Seven more health facilities achieved IS certification this year:

Health Centers:	**Hospitals:**
Anna Regina (Region 2) Belladrum (Region 5) Bushlot (Region 5) Cotton Tree (Region 5) Queenstown (Region 2)	Charity (Region 2) Mahaicony (Region 5)

While having a stand-alone IS certification program is useful in some cases – for example, when a facility is just beginning to focus its attention on injection safety, or when a facility is not eligible for HFLA licensing – STSU and GSIP continue to collaborate to integrate the IS standards into HFLA inspection processes.



This way, when STSU does annual site reviews for recertification of hospitals, it can simultaneously investigate IS practices and issue IS certificates. GSIP and STSU have created a system to identify how to account for the IS standards within the HFL inspection process. The two possible pathways to IS Certification are shown in the figure at left. To facilitate sustainability, all materials developed by GSIP related to standards and certification will be handed over to STSU at the conclusion of the project.

The integration of IS standards into ongoing national monitoring processes is also taking place with other MOH departments. Regional Health Services, for example, has solicited assistance from GSIP to integrate IS standards into Service Level Agreements. These Agreements, which have been rolled out in the past two years, lay out performance targets for regional health administrations and some key health facilities. IS and WM are strongly represented in these SLAs, and GSIP is now helping RHS to develop its monitoring processes.

Similarly, GSIP cooperated with the Environmental Health Unit (EHU) to develop a checklist that Environmental Health Officers and Assistants use when they conduct monitoring visits to health facilities. As with the SLAs and the HFL checklist, injection safety is not the sole focus of the EHU checklist, but it is strongly represented and fully integrated into the areas of attention of the monitors.

The inclusion of injection safety standards in several MOH quality monitoring processes and tools is key to the long-term sustainability of monitoring of injection safety. Integrating injection safety practices into the standard assessments done by the MOH ensures that they remain a priority and focus of attention, even after the project has concluded.

Success Story #5: Nurse Vidia Ragbeer: Injection Safety Champion

Nurse Vidia Ragbeer has grown into an Injection Safety Champion! A Nursing Assistant who joined the profession 24 years ago, Nurse Vidia currently manages two health centers in Region 5: Litchfield and Brittania. The Region 5 Senior Health Visitor, Nurse Vidia's supervisor, describes her as, "a very committed person who is always ready to embrace and challenge services that would enhance the welfare of her staff and patients."

The Guyana Safe Injection Project (GSIP) has seen this firsthand. GSIP first met Nurse Vidia in 2007, when she attended a two-day workshop for providers in Region 5. She took the training to heart immediately, and began working to ensure that all injection safety practices were implemented at both of the health centers she manages.

In 2009, Nurse Vidia's dedication to meeting injection safety standards was recognized when GSIP and the Ministry of Health rolled out the Injection Safety Certification Pilot Program. Brittania Health Center was one of the sites selected to participate in the pilot. After six months of vigorous interventions and peer inspections, Brittania easily demonstrated to the MOH Inspectors who evaluated the site that it met all 30 Injection Safety Standards. In 2010, therefore, Brittania Health Center was certified. The Certification Plaque is proudly displayed at the site to this day, and more importantly, the health center has continued to maintain the performance expectations of the IS standards.

Nurse Vidia Ragbeer presenting on best practices at the National Injection Safety Trainers conference in June, 2012.

Nurse Vidia's other health center, Litchfield, has not yet had the opportunity to participate in the Injection Safety Certification process. But with the guidance and encouragement of Nurse Vidia, the staff at Litchfield Health Center practice injection safety standards regardless.

Nurse Vidia then volunteered to be trained as a regional inspectors to support other health facilities in the region and ensure that they continually maintain IS standards. Her efforts, together with a remarkably committed regional management team, have contributed to Region 5 emerging as an Injection Safety leader. The Region has the highest proportion of Injection Safety certified facilities in the nation: eight of the thirteen health care facilities, including both hospitals, are certified as Injection Safe facilities.

In November, 2011, Nurse Vidia was a participant in the first Trainer of Trainer (TOT) sessions held by GSIP. To no-one's surprise, Nurse Vidia has proved to be a prolific trainer. By September, 2012, Nurse Vidia had conducted eight training Injection Safety and Waste Management training sessions for 51 health care providers and seven waste handlers in Region 5; she also mentored other trainers and supported various facilities preparing for certification.

Nurse Vidia has said that her commitment to injection safety stems from her recognition that GSIP treated all health care workers – from doctors to waste handlers – are equally important in providing safe health care. GSIP salutes this Injection Safety Champion for supporting health workers so they can provide good care to their community.

Success story #6: Porter Ayube Baksh's Innovation to Ensure Incinerator Operators' Safety

Porter Ayube Baksh, who works at Suddie Regional Hospital, has seen progress in waste management in recent years, thanks to the Guyana Safe Injection Project (GSIP) and its partners, the Ministry of Health, the national Health Care Waste Management Committee, the US Embassy's Humanitarian Assistance Program (HAP) and the Pan American Health Organization (PAHO).

These partners have collaborated to construct nine De Montfort-type incinerators to enable the destruction of medical waste, including sharps waste. These devices can completely destroy a ten-liter safety box (which can contain 175 needles and syringes) in just eight minutes. The benefits of the De Montfort incinerator incited the regional management in two regions to seek their own funding to construct additional incinerators.

Coupled with the incinerators were several other interventions: for example, the introduction of the use of safety boxes to contain sharps waste. Used needles were no longer stored in open containers nor piled into plastic bags for burial. Health workers, including prescribers, nurses, waste handlers, and porters have been trained in best practices for the safe use and disposal of safety boxes. Personal Protective Equipment (PPE) was initially provided by GSIP and subsequently incorporated into the regional and facility budgets.

Ideal improved De Montfort Incinerator at Suddie Hospital

Safe medical waste disposal was truly improving at Suddie Hospital and across the country.

However, Porter Ayube and others noticed a downside. The De Montfort incinerator is a double-chambered device that can destroy both wet and dry infectious waste along with sharps. Ideally all types of sharps waste including broken ampoules are placed into safety boxes. However, nurses often carelessly also placed used injection vials into safety boxes instead of placing them in a bin designated for safe disposal by crushing. When the porter places the safety box into the incinerator, the compression used to seal the liquids and powdered medication in the vials can explode. Because the incinerator operator has to open the incinerator every few minutes to add more safety boxes, they were often encountering glass and other objects exploding out of the incinerator.

In addition to the direct risk of injury and burns to the operator, the explosions have also damaged the inner chambers of incinerators and even cracked the outer walls. These cracks then cause the incinerator to lose heat and undermine its capacity to completely destroy sharps.

Porter Ayube considered the problem and devised a brilliant idea to address it. He approached the Suddie Hospital Matron with his idea, and she agreed. She then informed the wards and health centers that *all safety boxes sent to the incinerator must have the*

Labeled and traceable safety boxes awaiting destruction in the Suddie Hospital incinerator.

date and the name of the facility recorded on the safety box so that they could be traced back to the source.

Porter Ayube and his colleagues were then able to identify which wards and health centers were sending in safety boxes that had injection vials as well. He informed the Suddie Hospital Matron and the regional Injection Safety Trainers; they arranged to conduct refresher trainings on Injection Safety and Waste Management for staff from the facilities that were using the sharps boxes improperly. Following these trainings, the situation has radically improved. Suddie Hospital incinerator operators report that it is now a safer work environment; the intervention has also enhanced the longevity of the incinerator and created more accountability for all health workers.

Annex 6: PEPFAR and PMP Indicators

Indicator #	GSIP II PEPFAR FY 2012 APR Report (1st October, 2011 - 30th September 2012)	FY 12 Achievement	FY 12 Target	% Achievement	Indicator Narrative
HEALTH SYSTEM STRENGTHENING					
HSS Sub Area 2: HRH					
H2.3.D	Number of health care workers who successfully completed an in-service training program within the reporting period	**616**	500	**123**	This is the number of health care workers that received an in-service training on Injection Safety and Waste Management led by one of GSIP's TOTs with support from GSIP staff and/or consultants. GSIP exceeded the target for the indicator (but not by more than 125%) thanks to the TOTs' commitment.
	Type of training: Male Circumcision		0		
	Type of training: Pediatric Treatment		0		
	Type of training: Other	**616**	500	**123**	
Other Program Indicators					
	Number of local organizations provided with technical assistance for improving injection safety and waste disposal	68	61	**111**	This includes: 49 public health facilities; 6 private health facilities; 9 departments of the central MOH and 4 government-run health worker training programs.
	Number of facilities with access to safety boxes for sharps waste disposal	6	6	**100**	GSIP selected six health facilities to serve as sentinel sites for baseline and endline surveys.
	Percent of facilities using safety boxes for sharps waste disposal	100%	100%	**100**	GSIP selected six health facilities to serve as sentinel sites for baseline and endline surveys.
	Number of facilities with access to final waste disposal	6	6	**100**	GSIP selected six health facilities to serve as sentinel sites for baseline and endline surveys.

FUNCTIONAL AREA / Activity Indicator			Baseline	Target	Achieved	% Achievement	Indicator definition	NOTES
1	***Waste Management***							
	a	Number of facility managers/incinerator operator TOTs trained by GSIP	0	40	23	58%	Number of facility managers and/or incinerator operators who complete the GSIP TOT sessions	GSIP expected that 20 participants would attend each of the two TOT sessions; however, fewer were available. The training modules remain with the MOH and other partners for future trainings.
	b	Number of incinerator operators trained by TOTs	0	45	30	67%	Number of staff at facilities attending at least one training session conducted by GSIP-trained incinerator operation trainers	Because fewer people were trained as TOTs (as shown in 1b) there were fewer follow-up trainings.
	c	Number of EHO/EHAs trained in WM	0	50	29	58%	Number of regional EHO/EHAs completing a GSIP training session	GSIP worked with EHU to conduct two regional trainings in WM; scheduling conflicts prevented additional sessions from occurring before the project closed. However, EHU is continuing to roll out the training independently.
	d	Percentage of trained EHO/EHAs using supervision checklist	0	50%	48%	97%	Number of trained EHOs/EHAs submitting the WM checklist in quarterly reports to EHU / Number of trained EHOs/EHAs	GSIP staff observed 14 of the 29 trained EHO/EHAs using the checklist.
	e	Percentage of facilities with no stockouts of safety boxes in the previous six months	100%	100%	100%	100%	Number of health facilities with no documented stockouts in the past 6 months / Total number of health facilities surveyed	This indicator is based on the baseline/endline surveys at six facilities.
	f	Percentage of health facilities with final disposal method for health care waste	6	6	6	100%	Number of health facilities with appropriate disposal method / Total number of health facilities surveyed	This indicator is based on the baseline/endline surveys at six facilities.
	g	Number of facilities with access to safety boxes for sharps waste	6	6	6	100%	Number of health facilities with no documented stockouts *due to lack of supplies at the regional or national level* in the past 6 months	This indicator is based on the baseline/endline surveys at six facilities.

	h	Percentage of facilities using safety boxes for sharps waste disposal	100%	100%	100%	100%	Number of health facilities with safety boxes in all injection sites / Total number of health facilities surveyed	This indicator is based on the baseline/endline surveys at six facilities.
	i	A mechanism exists which EHU uses to follow up on WM problems identified by EHO/EHAs during routine supervision and monitoring.	No	Yes	No		Whether EHU demonstrates responses to problems reported by EHOs or EHAs	GSIP has anecdotal evidence that there is a response from EHU, but there is still no system in place to document it routinely.
2	***Worker Protection***							
	a	Number of facilities with staff vaccination ledgers	5	6	6	100%	Number of surveyed facilities with vaccination ledgers with documentation of use in the past 1 month	This indicator is based on the baseline/endline surveys at six facilities.
	b	Percentage of facilities with staff vaccinations up-to-date	0	85%	100%	118%	Number of surveyed facilities with > 90% of staff documented to have hepatitis and tetanus vaccinations updated / Number of facilities surveyed	This indicator is based on the baseline/endline surveys at six facilities.
	c	Number of facilities documenting NSI or other sharp injuries	6	6	6	100%	Number of surveyed facilities using a ledger to document of NSIs/sharps injuries	This indicator is based on the baseline/endline surveys at six facilities.
	d	Percentage of facilities with posted guidelines for post-exposure prophylaxis	86%	95%	100%	105%	Number of surveyed facilities with poster displaying PEP guidelines / Total number of surveyed health facilities	This indicator is based on the baseline/endline surveys at six facilities.
	e	Percentage of health facilities with HIV post-exposure prophylaxis	100%	100%	100%	100%	Number of surveyed facilities at which PEP is available to staff within 24 hours of exposure (per national policy) / Total number of surveyed facilities	This indicator is based on the baseline/endline surveys at six facilities.
	f	Number of facilities reporting to MOH on staff vaccination status	0	6	6	100%	Number of facilities that report at least annually to MOH's Human Resources on the number of staff lacking hepatitis and tetanus vaccination	MOH does not have a system in place that requires facilities to report on staff vaccinations. However, GSIP observed: MOH Inspectors review injection ledgers at the six facilities; and also knows that Senior Health Visitors report on challenges with staff vaccination at EPI meetings.

3	***Improving Safe and Appropriate Injection Use***							
	a	Number of health workers trained as TOTs in IS/WM	0	75	71	95%	Number of health workers completing the GSIP TOT sessions in injection safe practices	GSIP asked regional and facility administrators to identify training participants, and 71 was the number who were nominated and able to attend the full TOT sessions.
	b	Number of health workers trained in IS/WM	0	500	847	169%	Number of staff trained at least once by GSIP-trained trainers IS/WM at all facilities	This includes in-service training and pre-service training but does not include TOTs or incinerator operators.
	c	Inclusion of key injection use indicator(s) in STG monitoring	0	YES	YES	n/a	Whether relevant indicators (adapted from relevant certification standards or other GSIP activities) are included in STG monitoring guidance	
	d	Number of national professional association CE sessions on IS, RDU and/or WM	0	3	4	133%	Number of CE sessions on relevant topics conducted by GSIP-trained trainers under the auspices of professional associations	Sessions were conducted with the Pharmacy Council, Guyana Nurses Association and the Ministry of Health.
	e	Number of tutors trained in use of IS materials in pre-service education	0	4	8	200%	Number of tutors completing the GSIP training on using IS materials integrated into pre-service education for allied health staff	Tutors from the four programs were involved (see 3f).
	f	Number of curricula for allied health staff that include IS materials	0	4	4	100%	Number of pre-service training curricula with newly integrated IS material	Four programs' curricula were upgraded: Medical Laboratory Technologists, Pharmacy Assistants, Environmental Health Assistants and Medexes.
	g	Percentage of health facilities with no stock outs of new sterile syringes (standard or safety) in the prior 6 months	83	100%	100%	100%	Number of surveyed facilities with no documented stockouts in the past 6 months / Total number of health facilities surveyed	This indicator is based on the baseline/endline surveys at six facilities.

4	***Quality Assurance and Improvement***							
	a	Number of SLAs that include key IS, WM and worker protection indicators	0	12	0	n/a	Number of the 12 SLAs that include relevant IS, WM and worker protection indicators (adapted from certification standards or other GSIP activities as appropriate)	The 2012 Service Level Agreements have not been made public on the MOH's website. However, in response to an invitation from the Chief Medical Officer, in January, 2012, GSIP submitted a memo with recommendations on injection safety indicators for inclusion in the SLAs.
	b	Inclusion of additional IS, WM and worker protection standards in HFLA checklists	NO	YES	YES	n/a	Whether the current year HFLA checklists include key relevant indicators on IS, WM and worker protection (adapted from certification standards or other GSIP activities as appropriate)	
	c	Number of sites meeting injection safety standards	0	6	7	117%	Number of facilities with new or renewed MOH Injection Safety certification	One additional facility requested to participate.
	d	Proportion of prescribers complying with STG guidance on oral formulations	ND	ND	0	n/a	Number of prescribers reporting compliance with STG guidance on oral formulations / Number of prescribers surveyed	Following consultation with stakeholders, the prescribing study was redesigned and did not collect data to answer this particular indicator. The results of the study are detailed in Annex 4.
	e	Number of prescribers trained in RDU	0	ND	22	n/a	Number of prescribers completing GSIP training in RDU	No target was ever set in consultation with the CMO's office.
	f	Number of local organizations provided with technical assistance for improving injection safety and waste disposal	0	63	66	105%	Number of facilities and agencies that GSIP works with on improving injection safety and waste disposal.	See attached list of TA recipients.

List of Stakeholders

Category	Name	TOTAL
MOH Units	Chronic Non-Communicable Diseases Environmental Health Unit Expanded Program on Immunization (MCH) Health Services Education Human Resources National AIDS Programme Office of the Chief Medical Officer Office of the Chief Nursing Officer Office of the Chief Pharmacist Office of the Minister Regional Health Services Standards and Technical Services	12
Training Programmes	HSE Environmental Health Assistants Training Programme HSE Medex Training Programme HSE Pharmacy Assistant Training Programme HSE Medical Laboratory Technician Training Programme Charles Rosa School of Nursing GPHC School of Nursing New Amsterdam School of Nursing	7
Health Facilities	Anna Regina Health Center Bartica Health Centre Bartica Hospital Belladrum Health Centre Bushlot Health Center Buxton Health Centre Campbellville Health Centre Canal No. 2 Health Centre Charity Hospital* Christianburg Health Centre Cotton Tree Health Centre* Davis Memorial Hospital Diamond Hospital Dorothy Bailey Health Centre Dr. Balwant Singh's Hospital Fort Wellington Hospital Fyrish Health Centre Georgetown Medical Centre Georgetown Public Hospital Cooperation Grove Health Centre Guyana Defense Force Medical Corp High Dam Health Centre Kwakwani Hospital	48

	Leonora Community Hospital Lififier Holder Health Centre Linden Hospital Complex Litchfield and Brittania Health Centre MacKenzie Hospital Mahaicony Hospital and Diagnostic Centre Medical Arts Centre Mibicuri Hospital National Psychiatric Hospital New Amsterdam Health Care New Amsterdam Hospital No. 47 Health Centre Palms Brickdam Port Mourant Public Hospital Suddie Queenstown Health Center Skeldon Hospital Soesdyke Health Centre St. Joseph Mercy Hospital Upper Demerara Hospital Vreed-en-Hoop West Demerara Regional Hospital Williamsburgh Health Centre Windsor Castle Health Centre Woodlands Hospital	
	TOTAL	67

Annex 7: Collection of photos

(Photos are attached separately.)

NAME	DATE[††]	DESCRIPTION
1 TOT Regions5,6	11/3/2011	Participants in the first Training of Trainers session
2 TOT Regions	11/22/2011	Participants in the second Training of Trainers session
3 TOT Regions 2,3,7	12/7/2011	Participants in the third Training of Trainers session
4 TOT Region 4	12/12/2011	Participants in the fourth Training of Trainers session
5 TOT Role play	12/12/2011	Participants in the fourth Training of Trainers session doing a role play
6 TOT Facilitated Training	12/12/2011	IS Trainers conducting a training for providers
7 TOT Facilitated Training	2/28/2012	Nurse demonstrating proper use of a syringe during a providers training
8 Stock Ledger	3/6/2012	Health center ledger tracking syringe and bin liner stocks
9 Stock Ledger	3/6/2012	Health center ledger tracking safety box stocks
10 TOT Facilitated Training	6/11/2012	Hospital staff attending an IS Trainer's session
11 TOT Conference – US Ambassador	6/20/2012	US Ambassador to Guyana, Honorable Dr. D. Brent Hardt, speaking at the IS Trainers Conference
12 TOT Conference – group	6/20/2012	Small group work during the IS Trainers Conference
13 TOT Conference – pins	6/20/2012	IS Trainers pinning each other with their "Guyana Injection Safety Trainer" badges during the IS Trainers conference
14 TOT Conference – Colin	6/20/2012	IS Trainer Colin MacDonald leading the closing session of the IS Trainers Conference
15 TOT Conference – full group	6/20/2012	IS Trainers, GSIP staff and consultants and USAID Mission Officer-In-Charge William Gelman at the close of the IS Trainers Conference
16 TOT Facilitated Training at SON	6/21/2012	IS Trainer conducting a comprehensive training for student nurses
17 TOT Facilitated Training at SON	6/21/2012	IS Trainer conducting a comprehensive training for student nurses
18 IO Training – participants	6/26/2012	Incinerator operators listening to a presentation on De Montfort incinerator construction and design during the IO Training of Trainers
19 IO Training – practicum	6/26/2012	IO Training of Trainers participants observing proper use of a De Montfort incinerator
20 IO Training – practicum	6/26/2012	IO Training of Trainers participants observing proper use of a De Montfort incinerator
21 IO in gear	6/26/2012	Incinerator operator at Fort Wellington Hospital demonstrating proper use of incinerator and wearing proper personal protective equipment
22 GDA meeting	6/27/2012	Members of the Georgetown Diabetic Association discuss GSIP's infomercial on home insulin use and proper syringe disposal practices

[††] This is the date of the file, not necessarily the date the photo was taken

NAME	DATE††	DESCRIPTION
23 GNA CE	7/2/2012	Guyana Nurses Association members participating in a Continuing Education session on supervision
24 EOP Meeting	9/5/2012	Some guests of honor at the GSIP End of Project Meeting listening to GSIP Injection Safety Specialist Dr. Portia Dodson. From left: US Embassy Chargé d'Affaires Mr. Thomas Pierce, Honorable Minister of Health of Guyana Dr. Bheri Ramsaran, Director of the MOH's Standards and Technical Services Unit Dr. Julian Amsterdam, Acting Director of the MOH's Environmental Health Unit Mr. Amarnauth Maraj
25 EOP Meeting – media	9/5/2012	Media representatives interview Honorable Minister of Health Dr. Bheri Ramsaran about Injection Safety following GSIP's end of project meeting
26 Drum incinerator	9/11/2012	A drum incinerator constructed at Bush Lot Health Center as part of their preparation for Injection Safety certification
27 Region 2 RRM	9/12/2012	Recognition Meeting in Region 2 honoring three facilities achieving Injection Safety Certification
28 Region 2 – Mercy Hosp	9/12/2012	Staff of Oscar Joseph Mercy Hospital proudly displaying their newly awarded Injection Safety Certification
29 Tutors meeting	9/13/2012	Tutors from the medex, medical laboratory technician, pharmacy assistant and environmental health assistant training programs meeting with GSIP staff to integrate injection safety into their respective curriculums
30 Region 5 Certification	9/15/2012	Staff from two hospitals and two health centers in Region 5 proudly displaying their newly awarded Injection Safety Certificates