PUERTO RICO STATE PLAN TO PREVENT HEALTHCARE ASSOCIATED INFECTIONS
2013-2016

BACKGROUND:

Healthcare-associated infections (HAI) are infections that patients acquire while undergoing medical treatment or surgical procedures. Although these infections are largely preventable, Healthcare associated infections (HAIs) are a major public health concern, contributing to increased morbidity, mortality and impact on human life and financial costs to the healthcare system. In an effort to raise awareness, promote transparency for healthcare consumers and motivate hospitals to prioritize infection prevention, The Puerto Rico Department of Health (PRDOH) requires the reporting of selected HAIs. In Puerto Rico, a commitment to recognize and specifically address HAIs began in June 2007 with the passage of the groundbreaking healthcare reform Act # 52 of Nosocomial Infection Control. This law directed the PRDOH to develop a Statewide HAI Infection Identification, Prevention and Control Program.

Acute care hospital licensure regulations were revised to incorporate the requirements for HAI reporting using The Puerto Rico Surveillance System Hospital Acquired Infections and Antibiotic Resistance (PRHAISS). Acute care hospitals reported Central Line Associated Blood Stream Infections (CLABSI), Catheter Urinary Tract Infections, Ventilator Associated Pulmonary Infections and Surgical Site Infections (SSI) resulting after selected procedures.

Since August 2006, the Puerto Rico Department of Health has offered collaborative programming to support hospitals in their work to prevent HAIs. The HAI coordinator participates in monthly meetings of the Puerto Rico Epidemiologists Association, which is mainly composed of health-care facility infection control program coordinators. Visits were also made to hospital with the purpose of assess the status of the infection control programs. We found that the 68% of all hospitals had only one infection control practitioners; 79% of the hospitals were accredited by the Joint Commission (JCAHO); 90% of infection control practitioners have been certified by a university; and 100% of acute care hospitals use the CDC definitions to classify the hospital acquired infections. With this information the PRDOH hopes to accelerate progress in infection prevention by sharing local and national best practices, tools and resources, and implementation strategies, as well as engaging senior leadership commitment.

On August 1, 2007 the Epidemiology Office started the PRHAISS pilot test. We chose 10 hospital islandwide to report all device-associated hospital acquired infections (VAP, CAUTI and CLABSI) that occurred at intensive care units (adult, pediatric and neonatal). They were also asked to report multi-drug resistant organisms. In 2008, the PRDOH enlisted 24 additional hospitals to report (34 in total) and currently (as of 2015) 42 hospitals (70% of all hospitals in PR) report to PRHAISS.

The data collected through PRHAISS is used to estimate the magnitude of HAI infections in Puerto Rico, observe tendencies, study risk factors associated with the infections and multi-drug resistant patterns. The PRDOH uses the methodology of the National Healthcare Safety Network Manual Patient Safety Protocol as a model.

Between 2010 - 2012, PRDOH received notice of grant award in the amount of $196,000 to support the development of a state plan and to initiate learning collaborative to address two HAI prevention targets, as established by the Department of Health.

At the moment we have one epidemiologist working as a surveillance system coordinator. Some of her responsibilities include: providing training, analysis and reporting of data, and outbreak investigations. The surveillance system also has a data entry.

In October 2014, PRDOH initiated discussions with key partners and formed a HAI Advisory Committee.
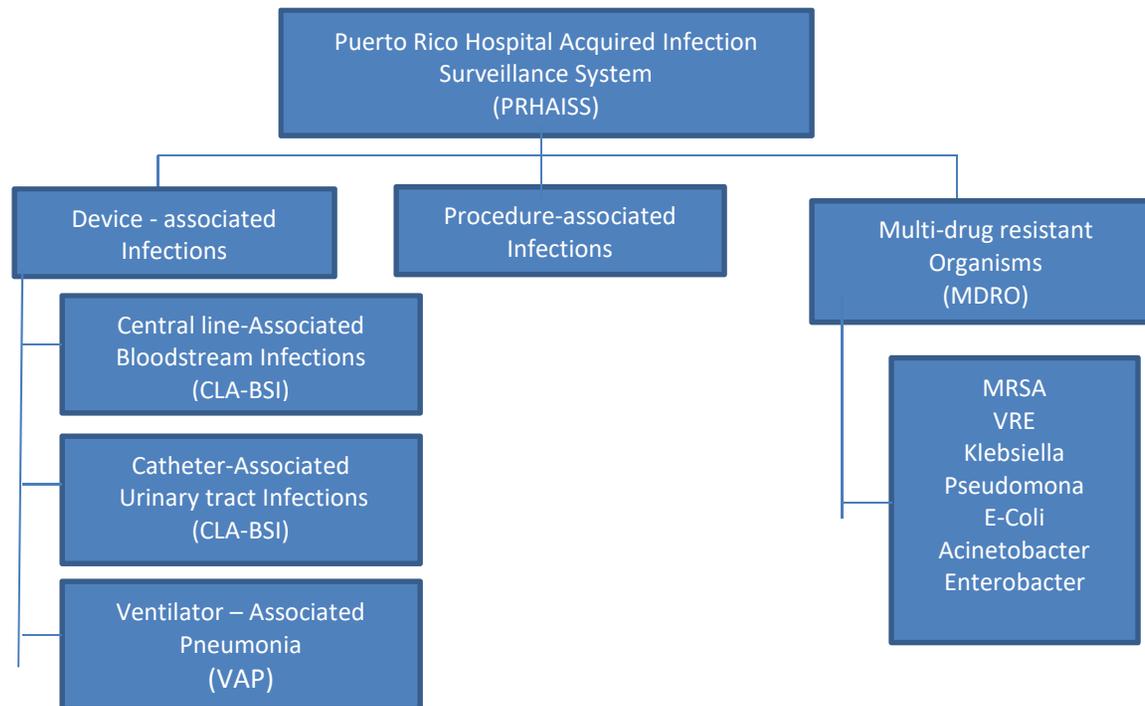
Figure 1: Diagram of PRHAISS

Table 1: State infrastructure planning for HAI surveillance, prevention, and control.

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
X	☐	1. Establish statewide HAI prevention leadership through the formation of multidisciplinary group or state HAI advisory council i. Collaborate with local and regional partners (e.g., state hospital associations, professional societies for infection control and healthcare epidemiology, academic organizations, laboratories, and networks of acute care hospitals and long term care facilities).	August 2015
X	☐	ii. NEW: Include hospital preparedness partners (e.g., hospital/healthcare coalitions funded through the ASPR Hospital Preparedness Program). Additional representation from accrediting and/or licensing agency with surveyor authority is ideal.	October 2015
X		iii. NEW: Engage HAI advisory committee in potential roles and activities to improve antibiotic use in the state (antibiotic stewardship)	
X		iv. NEW: Engage HAI advisory committee in activities to increase health department's access to data and subsequently use those data in prevention efforts	March 2016
X	☐	iv. Identify specific HAI prevention targets consistent with HHS priorities	March 2016
		Other activities or descriptions:	
X	☐	2. Establish an HAI surveillance prevention and control program i. Designate a State HAI Prevention Coordinator	August 2013
X	☐	ii. Develop dedicated, trained HAI staff with at least one FTE (or contracted equivalent) to oversee HAI activities areas (Integration, Collaboration, and Capacity Building; Reporting, Detection, Response, and Surveillance; Prevention;	August 2013- July 2016

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Evaluation, Oversight, Communication, and Infection Control)	
X		*Other activities or descriptions:* iii. Establish and maintain collaboration between healthcare facilities and PRDOH to provide necessary counseling. iv. Provide supporting activities, such as individual and group level orientations about HAI, educational material and training if necessary. v. Discussion centered on the healthcare needs to continue improvements on HAI prevention efforts. vi. Enhance and strengthen HAI surveillance actions vii. Promote systematic HAI reporting. viii. Establish task and job responsibilities to the staff. ix. Maintain properly trained staff for conducting their tasks and job responsibilities. x. Promote prompt HAI cases report to HAI Surveillance System/ Investigation and Epidemiology Office. xi. Reinforce the necessary documentation properly xii. Monitor performance of the surveillance through the official database established by the Investigation and Epidemiology Office, such as the EPI-Info database. xiii. Request surveillance report to identify specific areas or sites with high prevalence of HAI and high incidence by each healthcare facilities. xiv. Maintain a communication with de Control Infectious staff by each healthcare facility. xv. Conduct a site visits to identify site contacts and discuss the establishes protocols. xvi. Provide support with educational sessions and prevention/control guidance. xvii. Measure and compare level of facility's compliance with HAI prevention and control plan for each participating facility. xviii. Make systematic reports (at least) annually and discuss them with the pertinent staff.	August 2013 – July 2016 February 2016 August 2013 – July 2016 May 2016 July2016

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	X	3. Integrate laboratory activities with HAI surveillance, prevention, and control efforts. i. Improve laboratory capacity to confirm emerging resistance in HAI pathogens and perform typing where appropriate (e.g., outbreak investigation support, HL7 messaging of laboratory results)	July 2016
		Other activities or descriptions	
☐	X	4. Improve coordination among government agencies or organizations that share responsibility for assuring or overseeing HAI surveillance, prevention, and control (e.g., State Survey agencies, Communicable Disease Control, state licensing boards)	July 2017
		Other activities or descriptions:	
☐	X	5. Facilitate use of standards-based formats (e.g., Clinical Document Architecture, electronic messages) by healthcare facilities for purposes of electronic reporting of HAI data. Providing technical assistance or other incentives for implementations of standards-based reporting can help develop capacity for HAI surveillance and other types of public health surveillance, such as for conditions deemed reportable to state and local health agencies using electronic laboratory reporting (ELR). Facilitating use of standards-based solutions for external reporting also can strengthen relationships between healthcare facilities and regional nodes of healthcare information, such as Regional Health Information Organizations. (RHIOs) and Health Information Exchanges (HIEs). These relationships, in turn, can yield broader benefits for public health by consolidating electronic reporting through regional nodes.	July 2017
		Other activities or descriptions	

2. Surveillance, Detection, Reporting, and Response

Timely and accurate monitoring remains necessary to gauge progress towards HAI elimination. Public health surveillance has been defined as the ongoing, systematic collection, analysis, and interpretation of data essential to the planning, implementation, and evaluation of public health practice, and timely dissemination to those responsible for prevention and control.[1] Increased participation in systems such as the National Healthcare Safety Network (NHSN) has been demonstrated to promote HAI reduction. This, combined with improvements to simplify and enhance data collection, and improve dissemination of results to healthcare providers and the public are essential steps toward increasing HAI prevention capacity.

The HHS Action Plan identifies targets and metrics for five categories of HAIs and identified Ventilator-associated Pneumonia as an HAI under development for metrics and targets (Appendix 1):

- Central Line-associated Blood Stream Infections (CLABSI)
- *Clostridium difficile* Infections (CDI)
- Catheter-associated Urinary Tract Infections (CAUTI)
- Methicillin-resistant *Staphylococcus aureus* (MRSA) Infections
- Surgical Site Infections (SSI)
- Ventilator-associated Pneumonia (VAP)

State capacity for investigating and responding to outbreaks and emerging infections among patients and healthcare providers is central to HAI prevention. Investigation of outbreaks helps identify preventable causes of infections including issues with the improper use or handling of medical devices; contamination of medical products; and unsafe clinical practices.

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[1] Thacker SB, Berkelman RL. Public health surveillance in the United States. Epidemiol Rev 1988;10:164-90.

Table 2: State planning for surveillance, detection, reporting, and response for HAIs

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation

X
 	
X
 	
X
 	
X
		1. Improve HAI outbreak detection and investigation
		
		   i. Work with partners including CSTE, CDC, state legislatures, and providers across the healthcare continuum to improve outbreak reporting to state health departments
		   ii. Establish protocols and provide training for health department staff to investigate outbreaks, clusters, or unusual cases of HAIs.
		   iii. Develop mechanisms to protect facility/provider/patient identity when investigating incidents and potential outbreaks during the initial evaluation phase, where possible, to promote reporting of outbreaks
		   iv. Improve overall use of surveillance data to identify and prevent HAI outbreaks or transmission in HC settings (e.g., hepatitis B, hepatitis C, multi-drug resistant organisms (MDRO), and other reportable HAIs)
			January 2016 – July 2016

		Other activities or descriptions	
X	☐	2. Enhance laboratory capacity for state and local detection and response to new and emerging HAI issues.	July 2016
		Other activities or descriptions:	

X
 	
X
		3. Improve communication of HAI outbreaks and infection control breaches
		   i. Develop standard reporting criteria including, number, size, and type of HAI outbreak for health departments and CDC
		   ii. Establish mechanisms or protocols for exchanging information about outbreaks or
			February 2016 – July 2016

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		breaches among state and local governmental partners (e.g., State Survey agencies, Communicable Disease Control, state licensing boards)	
		Other activities or descriptions:	
		4. Identify at least 2 priority prevention targets for surveillance in support of the HHS HAI Action Plan	July 2017
☐	☐	i. Central Line-associated Bloodstream Infections (CLABSI)	
☐	☐	ii. *Clostridium difficile* Infections (CDI)	
☐	☐	iii. Catheter-associated Urinary Tract Infections (CAUTI)	
☐	X	iv. Methicillin-resistant Staphylococcus aureus (MRSA) Infections	
☐	☐	v. Surgical Site Infections (SSI)	
☐	X	vi. Ventilator-associated Pneumonia (VAP)	
		Other activities or descriptions:	
		5. Adopt national standards for data and technology to track HAIs (e.g., NHSN).	July 2017
☐	X	i. Develop metrics to measure progress towards national goals (align with targeted state goals). (See Appendix 1).	
☐	X	ii. Establish baseline measurements for prevention targets	
		Other activities or descriptions:	
		6. Develop state surveillance training competencies	January 2016
X	☐	i. Conduct local training for appropriate use of surveillance systems (e.g., NHSN) including facility and group enrollment, data collection, management, and analysis	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Other activities or descriptions:	
X	☐	7. Develop tailored reports of data analyses for state or region prepared by state personnel	February 2016
		Other activities or descriptions:	
X	☐	8. Validate data entered into HAI surveillance (e.g., through healthcare records review, parallel database comparison) to measure accuracy and reliability of HAI data collection	May 2016 – July 2016
X	☐	i. Develop a validation plan	
X	☐	ii. Pilot test validation methods in a sample of healthcare facilities	
X	☐	iii. Modify validation plan and methods in accordance with findings from pilot project	
X	☐	iv. Implement validation plan and methods in all healthcare facilities participating in HAI surveillance	
X	☐	v. Analyze and report validation findings	
X	☐	vi. Use validation findings to provide operational guidance for healthcare facilities that targets any data shortcomings detected	
		Other activities or descriptions:	
		9. Develop preparedness plans for improved response to HAI	
X	☐	i. Define processes and tiered response criteria to handle increased reports of serious infection control breaches (e.g., syringe reuse), suspect cases/clusters, and outbreaks	February 2016 -July 2016
		Other activities or descriptions:	
X	☐	10. Collaborate with professional licensing organizations to identify and investigate complaints related to provider infection control practice in non-hospital settings and set standards for continuing education and training	April 2014

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Other activities or descriptions:	
☐	X	11. Adopt integration and interoperability standards for HAI information systems and data sources i. Improve overall use of surveillance data to identify and prevent HAI outbreaks or transmission in HC settings (e.g., hepatitis B, hepatitis C, multi-drug resistant organisms (MDRO), and other reportable HAIs) across the spectrum of inpatient and outpatient healthcare settings	July 2017
☐	X	ii. Promote definitional alignment and data element standardization needed to link HAI data across the nation.	
		Other activities or descriptions:	
☐	X	12. Enhance electronic reporting and information technology for healthcare facilities to reduce reporting burden and increase timeliness, efficiency, comprehensiveness, and reliability of the data i. Report HAI data to the public	July 2017
		Other activities or descriptions:	
☐	X	13. Make available risk-adjusted HAI data that enable state agencies to make comparisons between hospitals.	July 2017
		Other activities or descriptions:	
☐	X	14. Enhance surveillance and detection of HAIs in nonhospital settings	August 2016 – December 2016
		Other activities or descriptions:	

3. Prevention

State implementation of HHS Healthcare Infection Control Practices Advisory Committee (HICPAC) recommendations is a critical step toward the elimination of HAIs. CDC and HICPAC have developed evidence-based HAI prevention guidelines cited in the HHS Action Plan for implementation. These guidelines are translated into practice and implemented by multiple groups in hospital settings for the prevention of HAIs. CDC guidelines have also served as the basis for the Centers for Medicare and Medicaid Services (CMS) Surgical Care Improvement Project. These evidence-based recommendations have also been incorporated into Joint Commission standards for accreditation of U.S. hospitals and have been endorsed by the National Quality Forum. Please select areas for development or enhancement of state HAI prevention efforts.

Table 3: State planning for HAI prevention activities

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	X	1. Implement HICPAC recommendations i. Develop strategies for implementation of HICPAC recommendations for at least 2 prevention targets specified by the state multidisciplinary group.	July 2017
		Other activities or descriptions:	
X	☐	2. Establish prevention working group under the state HAI advisory council to coordinate state HAI collaborative i. Assemble expertise to consult, advise, and coach inpatient healthcare facilities involved in HAI prevention collaborative	August 2016 – July 2017
		Other activities or descriptions:	
		3. Establish HAI collaborative with at least 10 hospitals (this may require a multi-state or regional collaborative in low population density regions)	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐	X	i. Identify staff trained in project coordination, infection control, and collaborative coordination	July 2017
☐	X	ii. Develop a communication strategy to facilitate peer-to-peer learning and sharing of best practices	
☐	X	iii. Establish and adhere to feedback from standardized outcome data to track progress	
		Other activities or descriptions:	
		4. Develop state HAI prevention training competencies	
X	☐	i. Consider establishing requirements for education and training of healthcare professionals in HAI prevention (e.g., certification requirements, public education campaigns, and targeted provider education) or work with healthcare partners to establish best practices for training and certification	August 2016
		Other activities or descriptions:	
		5. Implement strategies for compliance to promote adherence to HICPAC recommendations	
☐	X	i. Consider developing statutory or regulatory standards for healthcare infection control and	July 2017
☐	X	ii. prevention or work with healthcare partners to establish best practices to ensure adherence	
☐	X	iii. Coordinate/liaise with regulation and oversight activities such as inpatient or outpatient facility licensing/accrediting bodies and professional licensing organizations to prevent HAIs	
☐	X	iv. Improve regulatory oversight of hospitals, enhance surveyor training and tools, and add sources and uses of infection control data	
☐	X	v. Consider expanding regulation and oversight activities to currently unregulated settings where healthcare is delivered and work with healthcare partners to establish best practices to ensure adherence	

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Other activities or descriptions:	
☐	X	6. Enhance prevention infrastructure by increasing joint collaborative with at least 20 hospitals (i.e. this may require a multi-state or regional collaborative in low population density regions)	July 2017
		Other activities or descriptions:	
X	☐	7. Establish collaborative(s) to prevent HAIs in nonhospital settings (e.g., long term care, dialysis)	December 2016
		Other activities or descriptions:	

4. Evaluation and Communication

Program evaluation is an essential organizational practice in public health. Continuous evaluation and communication of findings integrates science as a basis for decision-making and action for the prevention of HAIs. Evaluation and communication allows for learning and ongoing improvement. Routine, practical evaluations can inform strategies for the prevention and control of HAIs. Please select areas for development or enhancement of state HAI prevention efforts.

Table 4: State HAI communication and evaluation planning

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
☐		1. Conduct needs assessment and/or evaluation of the state HAI program to learn how to increase impact	
	X	i. Establish evaluation activity to measure progress toward targets and	July 2017
☐	X	ii. Establish systems for refining approaches based on data gathered	
☐	X	2. Develop and implement a communication plan about the state's HAI program and about progress to meet public and private stakeholders needs i. Disseminate state priorities for HAI prevention to healthcare organizations, professional provider organizations, governmental agencies, non-profit public health organizations, and the public	July 2017

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
		Other activities or descriptions:	
☐	X	3. Provide consumers access to useful healthcare quality measures i. Disseminate HAI data to the public	July 2017
		Other activities or descriptions:	
☐	X	4. Guide patient safety initiatives i. Identify priorities and provide input to partners to help guide patient safety initiatives and research aimed at reducing HAIs	July 2017
		Other activities or descriptions:	

Healthcare Infection Control and Response (Ebola-associated activities)

The techniques and practice on which infection control protocols are based form the backbone of infectious disease containment for pathogens that are otherwise amplified and accelerated in healthcare settings. Investments in a more robust infection control infrastructure will prevent many HAIs transmitted to, and among, patients and health care workers.

Table 5: Infection Control Assessment and Response

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation
X	☐	1. Create an inventory of all healthcare settings in state. List must include at least one infection control point of contact at the facility	May 2016
X	☐	2. Identify current regulatory/licensing oversight authorities for each healthcare facility and explore ways to expand oversight	
		Other activities or descriptions:	April 2016
		3. Assess readiness of Ebola-designated facilities within the state	September 2015
X X X	☐ ☐ ☐	i. Use CDC readiness assessment tool and determine gaps in infection control ii. Address gaps (mitigate gaps) iii. Conduct follow-up assessments	
		Other activities or descriptions:	
		4. Assess outbreak reporting and response in healthcare facilities	August 2016- December 2016
X X X		i. Use standard assessment tool and determine gaps in outbreak reporting and response ii. Address gaps (mitigate gaps) iii. Track HAI outbreak response and outcome	
		Other activities or descriptions:	

Table 6: Targeted Healthcare Infection Prevention Programs

Check Items Underway	Check Items Planned	Items Planned for Implementation (or currently underway)	Target Dates for Implementation

X
 	
X
X
	☐
	
	☐
	☐
		1. Expand infection control assessments
		  i. Expand assessments to other additional facilities and other healthcare settings and determine gaps in infection control
		  ii. Address gaps (mitigate gaps)
		  iii. Conduct follow-up assessments
			August 2016 - December 2016

		Other activities or descriptions:	
Check Items Underway	**Check Items Planned**	**Items Planned for Implementation (or currently underway)**	**Target Dates for Implementation**

X
 	
☐
	☐
	
	X
		2. Increase infection control competency and practice in all healthcare settings through training
		  i. Incorporate general infection control knowledge and practice assessments of competency into state licensing board requirements, credentialing, and continuing education requirements for clinical care providers (e.g., medical license, admitting privileges) and/or licensing/accreditation requirements for healthcare facilities.
		  ii. Develop a sustainable training program based on CDC guidance and technical assistance to perform training, prioritizing on-site train-the-trainer programs in key domains of infection control, including the incorporation of hands on evaluations and competency assessments of best practices and a system to monitor ongoing compliance and competency.
			August 2016

		Other activities or descriptions:	

X	☐	3. Enhance surveillance capacity to improve situational awareness, describe emerging threats, and target onsite assessments to implement prevention programs	February 2016
X	☐	i. Build capacity to analyze data reported by facilities in a defined region to allow for a comprehensive assessment of potential healthcare-associated infection threats, and communicate results with healthcare facilities.	
☐	X	ii. Work with CDC to guide analytic direction and identify facilities for prioritized assessments/response	July 2017
X		iii. Improve outbreak reporting capacity by developing an infrastructure that includes clear definitions of infectious threats of epidemiologic importance that are communicated to facilities	February 2016
X		iv. Implement a response plan to address potential emerging threats identified by using enhanced surveillance	
		Other activities or descriptions:	