



# INFORMATION REPORT

<b>TO:</b> Mayor and Members Board of Health	<b>WARD(S) AFFECTED:</b> CITY WIDE
<b>COMMITTEE DATE:</b> September 26, 2011	
<b>SUBJECT/REPORT NO:</b> Health Information Technology Plan BOH11024 (City Wide)	
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**Council Direction:**

N/A

**Information:**

A department-wide e-inventory scan was conducted from May to December 2010 to compile an inventory of electronic information management methods used by PHS, to better understand who uses them, and for what purpose. This was prompted in part due to multiple requests by programs for new databases or information management software to better serve clients and manage programs, difficulties within programs in effectively transferring data to serve clients accessing services at multiple sites, and the planned discontinuation of the use of Microsoft Access by Corporate IS, which had been used for many databases by PHS programs. The scan involved an in-depth assessment of business processes from a risk management perspective, and served as a more in-depth follow-up to the PHIPA Audit from 2008.

This environmental scan uncovered several issues pertaining to the efficiency, effectiveness and security of health information management practices. Specific concerns are listed throughout this report. To summarize, Public Health Services (PHS) currently uses inconsistent methods and various “home-grown” applications for managing data, creating privacy concerns and sub-optimal use of staff time.

To address these concerns, PHS is implementing a multi-year information technology improvement project in collaboration with Corporate Information Services in order to:

1. Standardize the way electronic information is collected, stored and analyzed across the department;
2. Leverage current technology to improve business processes and align with PHS best practices;
3. Ensure personal health information is stored in a secure manor that is compliant with privacy and security legislation;
4. Reduce the need for duplication of data; and
5. Compile data from multiple sources into a single data warehouse to enhance reporting capabilities and health surveillance.

The 2011 PHS Priority Plan objective is to: develop a business case and 2012 capital budget request for implementation of the plan.

The purpose of this report is to provide a summary of the progress to date, our current actions and next steps.

**Progress to date:**

Interviews were conducted with PHS managers and staff from 24 programs and services regarding information management practices and the use of provincial applications, “home-grown” databases and purchased software for this. With privacy and security of data being a significant concern for PHS, the scan focused on applications containing personal information and personal health information.

Information obtained in the interviews was analyzed and business processes were mapped out for each program and service, in order to identify issues and areas for improvement. An analysis was done to identify department-wide trends, and develop recommendations to guide future continuous improvement efforts.

Urgent issues were identified immediately for resolution, including:

- **Lack of physical security of hard copy records** on the Community Health Bus. Filing cabinets were not locked or secured properly, resulting in displacement of client records while the bus is in transit. In most cases, this client file is the only existing copy. The short term solution involved the purchase of a new filing cabinet with a working lock. The new Health Bus will have appropriate storage built in.
- **Function and storage capacity of the Sexual Health Clinic Database.** This MS Access database has reached capacity, runs slowly, is cumbersome to navigate and does not provide clinicians with the ability to share records across clinic locations. Corporate Information Services expanded the storage capacity

of the current database as a short term solution. The long term solution will be part of the PHS Health Information Technology Plan.

- **Reliability of current electronic scheduling software** for home visiting causing public health professionals to revert back to documenting this information on paper. Microsoft Outlook is not user friendly or integrated with other applications that must be used simultaneously. Appointments often get deleted by mistake and home visits to new moms are missed (occurs approximately two times per month). Outlook is not meant for use by multiple concurrent users and does not satisfy user needs. The long term solution will be part of the PHS Health Information Technology Plan.
- **Use of USB sticks to transfer data.** This is a privacy concern because health data can easily be lost, stolen or exposed when saved on a portable device that is not encrypted and is transported to multiple locations. Use of USB sticks for client data would violate PHS P&P 03-04, Security Practices with Mobile Computing Devices (Phase 1), and has been the subject of an order by the Privacy Commissioner related to a complaint about another health unit. Further investigation found all information stored on USB sticks is unidentifiable. Future efforts will involve eliminating the use of these devices by re-engineering PHS processes, to further reduce the risk that personal or personal health information could be lost.
- **Storage of electronic client information in shared network locations** accessible by all PHS employees and external partners. An example is a spreadsheet containing Hepatitis C immunization information that includes client names, reason for immunization, gender, and contact information. This information has since been relocated to a more secure location and/or password protected.

See **Appendix A** for specific examples pertaining to these urgent issues.

Other concerns with the current electronic systems and processes for managing client information were uncovered. In summary, these include:

- **Duplicate documentation** efforts by staff (electronically and hard copy). A significant amount of staff time is also spent inefficiently analyzing and managing health data.
- **Data Replication:** Client information is duplicated in multiple databases, making it difficult to contain and control its use, thereby increasing the risk of a privacy breach. It is common practice for staff to create their own Microsoft Access databases and export data to an Excel spreadsheet for reporting and manipulating. Many databases are copied and left on an unknown network drive, never to be used again. This client information is left to linger without proper security.

- **Difficulty navigating and extracting reliable information** from current applications to guide management decision-making and meet documentation requirements. PHS collects a significant amount of information about clients and service delivery. However, in many cases this information is not analyzed and used to inform evidence-based management decision making. This is due to the volume of hard copy records that must be manually analyzed and the state of current databases.
- **Direct impact on client services** when timely, accurate information is not available. (Example: clinicians do not have access to complete health history for clients who visit multiple clinic sites).
- Inconsistent use of stand alone databases and **reliance on “home-grown” applications:** Staff create their own databases and/or spreadsheets to manage information. These “home-grown” applications are not supported by the City of Hamilton’s Information Services Department. Many spreadsheets and databases are managed by one staff member who is the sole keeper of the password and the process.
- **Inability to meet client preferred methods** of service with current technology (Example: clients indicated preference for online registration for classes, clinics and other PHS events).

An analysis was done to identify department-wide trends, and develop recommendations to guide future continuous improvement efforts.

The information technology needs common across several programs and services that were identified include:

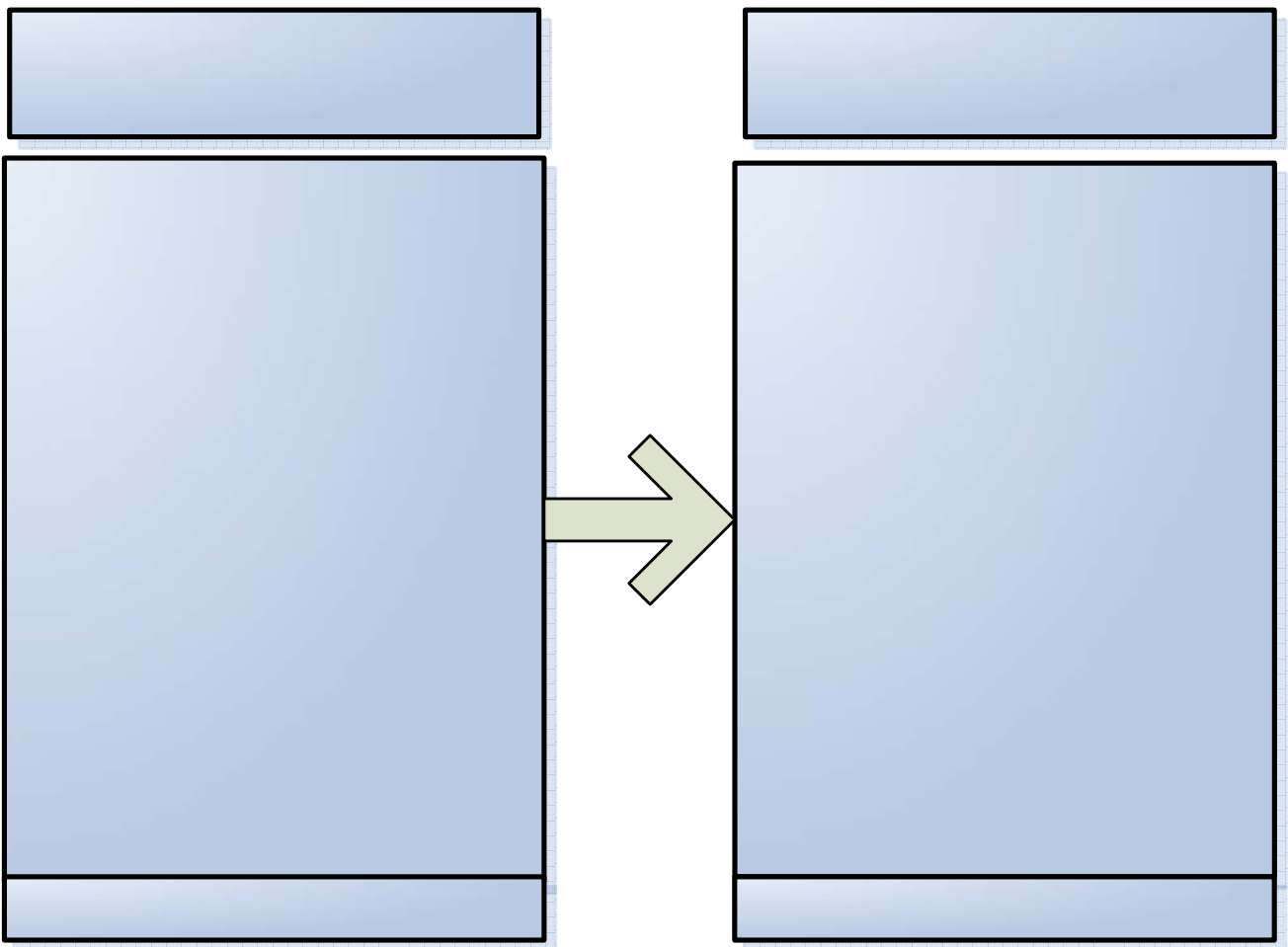
- Appointment scheduling
- Nursing documentation
- Event Registration
- Client Intake
- Clinic Management

**Appendix A** contains further description of these information needs.

**Next Steps:**

- Focus information technology efforts on creating effective and efficient business processes for scheduling, event registration, documentation, client intake and clinic management.
- Secure electronic client information by replacing “home-grown” applications with standardized systems that can be used for similar purposes across several programs.

- Leverage client information to better inform management decision-making and improve client services.
- Develop and execute a plan to strategically address the information management needs outlined above.
- Develop a business case outlining information technology alternatives, the costs associated with training, development, software and other required resources, as well as benefits and recommendations to PHS.
- Review business processes after a software alternative is chosen to enhance process alignment with public health best practices.



**Project Alignment:**

The creation and execution of the Health Information Technology Plan aligns with:

1. City of Hamilton Corporate Strategic Plan Sustainable Services priority.
2. PHS 2011 Internal Priority 6: Information Technology Strategic Plan.
3. PHS Organization Structure Review Recommendation 11: To develop a common and consistent approach for technology hardware and software.
4. Others: Legislative compliance, AODA, PHIPA, PHS best practices.

## Health Information Technology Plan

Current Practice	Areas of Concern	Purpose of Electronic Application	Benefits of Electronic Application	Examples
<b>1. Appointment Scheduling</b>				
Microsoft Outlook, "home-grown" Access databases, and hard copy calendars.	Client visits are easily deleted from Outlook, missed and are not reported on to inform management decision making.	Schedule, manage and report on client appointments with PHS staff.	<ul style="list-style-type: none"> <li>• Eliminate missed client visits</li> <li>• Manage multiple concurrent users.</li> <li>• Secure client information so that it is only available to appropriate staff and that hard copy schedules are no longer necessary.</li> <li>• Manage staff location and workload.</li> </ul>	One on one nurse home visits; lactation consults.
<b>2. Nursing Documentation</b>				
Multiple "home-grown" Access databases, Excel spreadsheets, and hard copy.	Databases are cumbersome to navigate, do not collect necessary information, and have poor searching and data extraction capabilities. In some programs nurses are documenting both electronically and on paper to comply with nursing documentation standards.	<ul style="list-style-type: none"> <li>• Document consultations between clients and public health nurses.</li> <li>• Meet legislated requirements (MFIPPA &amp; College of Nurses of Ontario).</li> </ul>	<ul style="list-style-type: none"> <li>• Provide better care by having timely and accurate client health information available to healthcare professionals.</li> <li>• Provide a secure way to document client interactions.</li> <li>• Enhance reporting capabilities to inform management decision-making.</li> <li>• Eliminate the need for duplicate documentation (hard copy and electronic) to ensure compliance with CNO standards.</li> </ul>	Nursing consultations and Residential Care Facility inspections.
<b>3. Registration for Events</b>				
Manually by program secretaries and public health professionals.	<ul style="list-style-type: none"> <li>• The manual registration process is cumbersome, time-consuming and a sub-optimal use of provider time.</li> <li>• Client health information is transported or sent via email to staff leading the event, creating security concerns.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide the general public with online access to register for PHS events.</li> <li>• Reduce staff workload.</li> <li>• Report attendance and class statistics.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce duplication of efforts by PHS staff, making the registration business process more efficient.</li> <li>• Provide Hamiltonians with greater access to PHS services.</li> <li>• Provide a secure way for staff to access client information remotely via the Web (ie to cancel a course or report class attendance).</li> </ul>	Prenatal classes; Food Safety Handling Courses.
<b>4. Client Intake</b>				
Multiple "home-grown" Access databases and hard copy.	<ul style="list-style-type: none"> <li>• It is difficult to extract information from the "home-grown" databases to benefit client services.</li> </ul>	Document calls received by PHS and interactions with the	<ul style="list-style-type: none"> <li>• Provides the ability to report on inquiries from the public to inform management decision-making.</li> <li>• Can be integrated with other applications in order to share client</li> </ul>	Document complaints received by the general public on the

Current Practice	Areas of Concern	Purpose of Electronic Application	Benefits of Electronic Application	Examples
	<ul style="list-style-type: none"> <li>Nursing documentation that may be collected in these databases (ie if clinical advice is provided to the client over the telephone) does not meet College of Nurses of Ontario documentation standards.</li> </ul>	general public. This includes requests for resources and services, complaints, general inquiries, and interaction between a client and staff.	information, avoiding duplicate data entry by staff.	health protection duty line.
<b>5. Clinic Management</b>				
An Access database that was purchased in 2005.	<ul style="list-style-type: none"> <li>The current clinic database has reached capacity, runs slowly, does not collect necessary information, and client records cannot be shared between clinics.</li> <li>The company who created the database no longer exists, making technical support a significant challenge.</li> </ul>	Efficiently manage client medical records, schedule clinic appointments and handle medication inventory.	<ul style="list-style-type: none"> <li>Enable staff to view client information across clinic locations.</li> <li>Eliminate the need for records to be transported to the Downtown clinic location to be input into the database.</li> <li>Automatically manage inventory.</li> <li>Integrate client's medical history, lab results, medications, appointment scheduling etc.</li> <li>Provide decision support for health care providers.</li> </ul>	Sexual Health and other PHS Clinics