Foundational Informatics: COMPUTER LITERACY OVERVIEW & TOOL KIT

CLINICAL + SYSTEMS TRANSFORMATION

Our path to smarter, seamless care

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Document Control

Revision History

Version	Date	Summary of Changes	Author	Revision marks
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Distribution

This document has been distributed to:

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Contribution

This document has contributions from:

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Executive Summary

The implementation of an electronic health record (EHR) promises to usher in a variety of benefits to healthcare providers and patients. However, the transition from a paper based or hybrid system to a complete EHR is hindered by many barriers. As a first step in addressing the barriers, this document articulates the need for basic computer skills and focuses on addressing this need.

This document is intended to be used by site educators at Provincial Health Service Authority (PHSA), Providence HealthCare (PHC) and Vancouver Coastal Health (VCH)and provides an overview of the importance of developing a workforce proficient at using technology, and recommended learning tools with recommendations on how to deploy them.

While understanding computer basics is important, it should be noted that skill and comfort with using technology and computers does not directly translate into skills using an EHR. While computer skills do not directly translate into proficiency with using an EHR, computer literacy is the foundation for which the Clinical and Systems Transformation (CST) project will be a success.

In addition to the recommended tools, this document also contains additional learning resources that site educators can use and modify to fully address their sites' learning needs.
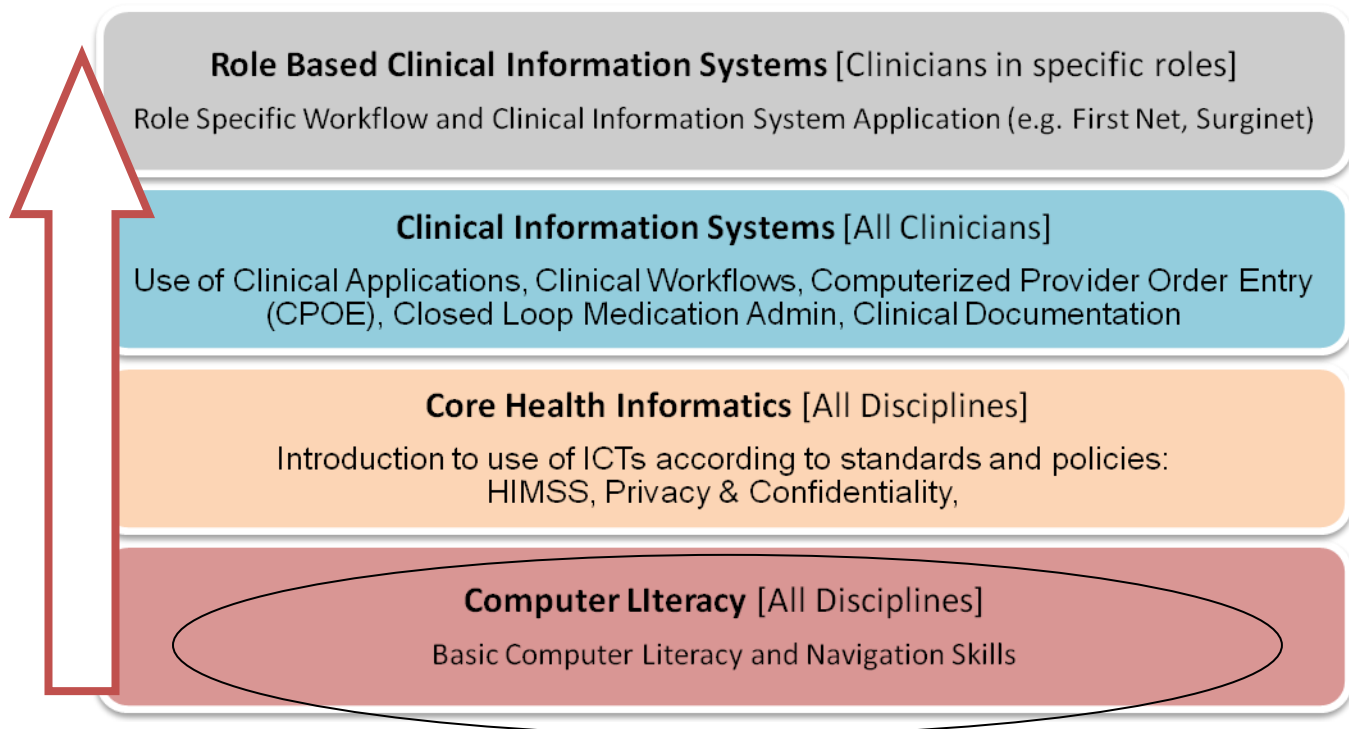
Health Informatics Competencies

"Health informatics is the systematic application of information, computer science, and technology to public health practice, research, and learning."[1] Health Informatics represents a unique blend of knowledge, skills and abilities obtained from a variety of disciplines including information health and management sciences[2].

There are a number of informatics competencies required for the successful adoption of clinical information systems. While all of these competencies are important, this document focuses on Foundational Informatics including basic computer literacy and navigation skills.

As outlined in Exhibit 1, the Foundational Informatics is the baseline for staff learning new clinical information systems and associated workflows.

Exhibit 1 – Draft CST Health Informatics Competencies

Role Based Clinical Information Systems [Clinicians in specific roles]
Role Specific Workflow and Clinical Information System Application (e.g. First Net, Surginet)

Clinical Information Systems [All Clinicians]
Use of Clinical Applications, Clinical Workflows, Computerized Provider Order Entry (CPOE), Closed Loop Medication Admin, Clinical Documentation

Core Health Informatics [All Disciplines]
Introduction to use of ICTs according to standards and policies:
HIMSS, Privacy & Confidentiality,

Computer LIteracy [All Disciplines]
Basic Computer Literacy and Navigation Skills

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[1]*Karras,, Bryant. "Competencies for Public Health Informaticians."Center for Disease Control. January 29, 2009. Accessed March 3, 2015. http://www.cdc.gov/InformaticsCompetencies/downloads/PHI_Competencies.pdf.*

[2]*HIP "Core Competencies v3.0" Coach: Canada's Health Informatics Association. Accessed March 3, 2015 https://www.coachorg.com/en/resourcecentre/resources/Health-Informatics-Core-Competencies.pdf*

These competencies can be further divided into four sub-categories[3]:

- **Beginner –** has fundamental information management and computer technology skills, uses existing information systems and available information to manage practice.
- **Experienced –** Skilled in using information management and computer technology skills to support their major area of practice, sees relationships among data elements and makes judgments based on trends and patterns with this data.
- **Specialist –** Uses the tools of critical thinking, process skills, data management skills (including identifying, acquiring, preserving, retrieving, aggregating, analyzing, and transmitting data), systems development life cycle, and computer skills. Advanced preparation possessing additional knowledge and skills specific to information management and computer technology.
- **Innovator –** Educationally prepared to conduct informatics research and generate informatics theory. Has a vision of what is possible and a keen sense of timing to make things happen. Leads the advancement of informatics practice and research. Functions with an ongoing, healthy skepticism of existing data management practices and is creative in developing solutions. Possesses sophisticated level of understanding and skills in information management and computer technology.

The four categories of competencies are equally important, and an organization must possess individuals that are equipped with all of the competencies. However, it is critical that all staff members possess at minimum, the Beginning competencies.

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[3]*Staggers, Nancy."Informatics Competencies for Nurses at Four Levels of Practice." October 2, 2001. Accessed March 4, 2015.Informatics Competencies for Nurses at Four Levels of Practice.*

Computer Literacy

Computer literacy is defined as the knowledge and ability to utilize computers and related technology efficiently, with a range of skills covering levels from elementary use to programming and advanced problem solving. The computer skills required for EHR are primarily elementary, such as the ability to: navigate with a mouse, starting and turning off a computer, basic 10-key typing, saving a file, printing a file, manipulating program windows, knowledge and difference between internet and intranet, Word and Excel basics, desktop, Start toolbar, Windows clipboard – copy and paste, and basic troubleshooting.

Computer Literacy includes the use of basic hardware and software and the understanding of key information technology concepts and components. This core competency is the foundation of all knowledge skills and abilities for CST health informatics. This competency should be developed by all end users.

Gaps in Computer Literacy

The implementation of an EHR is hindered by several factors[4]; however, the scope of this document is to address the barrier of the absence of computer literacy for end users.

Making the distinction between computer literacy and proficiency with EHRs allows for the identification of the gaps relating to end user comfort in using EHRs by evaluating all aspects that can affect performance. This document will address only computer literacy and not proficiency with EHRs. It should be noted though that computer literacy and the skills listed above do not directly translate into skills using EHRs.

Computer literacy eases the strain of implementing an EHR, but fundamentally the acquisition, storage, retrieval, and application of data are the tenants of successful EHR utilization. Being proficient with technology and computers may provide comfort in intuitively knowing where and how to click, but does not guarantee an understanding of how the EHRs can enhance patient care.[5] Proficiency and literacy with technology ease the pain of transitioning to EHRs, but do little to help the clinician understand what happens to the information that is recorded, how to get it out, and why and how the outputs can be misleading.[6]

Computer literacy within healthcare is an issue that is receiving greater attention as more hospitals are transitioning to EHRs. Much research has been done into computer literacy in healthcare. One such example indicated that more than half (58.9%) of the nursing students sampled (n=350) in a study conducted by Hwang and Park indicated that their computer skills were below average.[7] This statistic is worrisome, as the adoption of an EHR requires a computer literate workforce.

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[4] *Most common barriers are: time, cost, absence of computer skills, workflow disruption, concern about security and privacy, communication among users, interfaces with doctor-patient relationship, lack of incentives, complexity, physical space, technical support, interoperability, access to computers and computer literacy, vendor trust, expert support, reliability, inadequate data exchange, speed, wireless connectivity.*

[5]*Essin, Daniel. "With EHR Use, Computer Literacy Misses the Point." Rheumatology Network. October 12, 2012. Accessed March 3, 2015. http://www.rheumatologynetwork.com/blog/ehr-use-computer-literacy-misses-point.*

[6]*Ibid*

[7]*Virgona, Thomas. "Graduate Nursing Student Self-assessment: Fundamental Technology Skills." April 5, 2013. Accessed March 5, 2015. http://www.sciedu.ca/journal/index.php/jnep/article/viewFile/1425/1035*.

To better identify what below average computer skills means, a study completed in August 2010 at the Avicenna Medical College and hospital offers insight into basic computer skills and literacy. The results are listed in Table 1.[8]

Table 1 – Avicenna Medical College and Hospital Computer Skills

	Yes (%)	No (%)	Frequency Yes (n=32)
Basic function of Computer	94	6	30
Find and Launch	62	38	20
Program – Create and access folder	81	19	29
Hard and floppy disc exit and quit application	84	16	27

While the study conducted at Avicenna Medical College and hospital was fairly limited in size, it offers insight into computer literacy that shows there are gaps in knowledge with healthcare professionals. Translating these numbers to CST, it could potentially mean there are thousands of individuals who lack basic computer skills.

Going beyond basic computer operating skills to skills relating to internet and email usage, large gaps are still present. A few examples are that an estimated 13% of clinicians interviewed did not know how to reply to an email message, and 23% did not know how to use a search engine.

As mentioned earlier, computer skills and literacy do not directly translate into skills using EHRs. However, the foundation for which EHR skills are built upon is that of computer literacy. A workforce that is comfortable and knowledgeable in using computers is required for the success of CST.

Computer Literacy across VCH, PHSA, and PHC

Preliminary research at various sites throughout the HO's has confirmed that there is a strong need for computer skills refresher training. Computer skill levels vary across the different sites, which is likely attributed to the varying degrees of digital integration of health records at each site. Initial discussions have placed the number of individuals needing some computer refresher courses between 20%-60% of each site's total workforce. The high end of this estimation is on par with external research indicating that approximately 58% of all nursing students had below average computer skills. [9]

When the results of Avicenna Medical College computer literacy study are applied to the scope of CST, a potentially troubling set of numbers is revealed. The scope of CST includes 42,000 end users from PHC, VCH and PHSA, which potentially translates into thousands of individuals who are unable to complete basic computer functions.

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[8]*WAHEED, GULFREEN. "Computer Literacy among the Medical Staff at Avicenna Medical College and Hospital." May 6, 2010. Accessed March 5, 2015. http://pjmhsonline.com/computer_literacy_among_the_medi.htm*

[9]*Virgona, Thomas. "Graduate Nursing Student Self-assessment: Fundamental Technology Skills." April 5, 2013. Accessed March 5, 2015. http://www.sciedu.ca/journal/index.php/jnep/article/viewFile/1425/1035*.

Your Role in Computer Literacy

The goal is to provide a foundational level of awareness and understanding of basic computer concepts and navigation skills in order to support CST health informatics competencies and readiness for staff to adopt a new clinical information system and supporting workflows.

This document is intended for various users outlined in the table below:

Role	Role	Responsibility	Supporting Tools
Users of Electronic Health Records	• Achieve basic level competencies outlined in tool kit • Provide feedback on tools and resources available to support your learning • Share the tools and resources with teams, colleagues, and leaders. • Champion computer literacy and informatics in your area	• Perform Self-Assessment • Develop learning plan to meet the gaps • Use recommended resources in tool kit • Promote learning and champion the change	• CST Health Informatics Competencies • Competency Self-Assessment • Online Courses • In Person Education Sessions • Talk to your Educator, Manager, Leader
Clinical Educators/ Clinical Leaders / Front Line Leaders	• Champion computer literacy and informatics in your area • Reporting on staff readiness closer to go-live • Refer staff to tool kit and resources	• Support staff in identifying learning needs • Create awareness • Start now – start well in advance of electronic health record implementation cycles • Identify staff who may benefit from early computer navigation support • Provide 1:1 support • Develop regular check-ins with staff • Role will evolve with go-live schedule • Promote learning and champion the change • Develop readiness reports for unit areas as required (TBD)	• Computer Literacy Poster • Computer Literacy Pamphlet • CST Health Informatics Competencies • Self-Assessment • Tool Kit with resources for staff • Go no go and staff readiness criteria (CST)

Managers	• Champion computer literacy and informatics in your area • Communicate the link between CST and computer literacy as foundational competency for CST success and adoption • Communicate importance of transition to electronic format of documentation • Contextualize CST to make it relevant for your team and clinicians • Help link CST initiatives and relevancy to unit/department • Reporting on staff readiness closer to go-live • Refer staff to tool kit and resources	• Identify staff who may benefit from early computer navigation support • Implement elements of the tool kit in your area • Discuss strategies to increase computer literacy with staff and leaders/ educators • Increase integration of computers in day to day work ex: email communication to staff; online collaboration tools such as Share Point; etc • Role will evolve with go-live schedule • Promote learning and champion the change • Develop readiness reports for unit areas as required (TBD)	• Computer Literacy Poster • Computer Literacy Pamphlet • CST Health Informatics Competencies • Self-Assessment • Tool Kit with resources for staff • Departmental Collaboration Tools ex: Share Point, Team Site, CST Website: cstproject.ca • Go no go and staff readiness criteria (CST)
Directors and Corporate Leaders	• Champion computer literacy and informatics in your area • Develop policies for computer literacy • Develop intake assessments for new staff to identify baseline computer literacy across all areas requiring access to the new EHR • Review reports on staff readiness from leaders and managers related to gaps in computer literacy	• Screen staff for computer literacy at hiring • Implement computer literacy pre-requisite for hiring • Determine appropriate level of tool kit dissemination in alignment with CST implementation timelines • Champion and communicate importance of computer skills early on • Promote learning and champion the change	• Go no go and staff readiness criteria (CST)
HO Sponsors	• Champion computer literacy and informatics in your area • Support assessment of staff in computer literacy • Lead policy changes related to basic foundational computer literacy and informatics	• Lead organizational accountability to support skills and competencies related to informatics • Promote, support, and endorse importance of computer literacy and informatics competencies to support adoption and go	• Go no go and staff readiness criteria (CST)

	competencies of incoming employees • Remove barriers related to foundational informatics and computer literacy in preparation for EHR implementation	lives • Role will evolve with go-live schedule	
CST Coaches/ Super Users/ CST SMEs and Experts	• Champion computer literacy and informatics in your area • Help staff and leaders navigate resources • Refer staff to tool kit and resources	• Provide elbow support and 1:1 throughout go-live period • Use tool kit to assist users to increase computer literacy skills • Identify remediation (catch-up) training requirements • Communicate importance of computer literacy as foundation for implementation and adoption success • Promote learning and champion the change	• Computer Literacy Poster • Computer Literacy Pamphlet • CST Health Informatics Competencies • Self-Assessment • Tool Kit with resources for staff • CST Coaches/Super Users Roles and Responsibilities • CST Coaches/ Super Users Resource guide
Academic Partners	• Ensure students have baseline competency requirements prior to clinical placement • Champion computer literacy and informatics education in academic settings	• Disseminate self-assessments • Provide top education as required to meet learning gaps • Refer students and staff to tool kit for additional resources • Promote learning and champion the change	• Computer Literacy Poster • Computer Literacy Pamphlet • CST Health Informatics Competencies • Self-Assessment • Tool Kit with resources for staff • Computer an d Health Informatics Competencies for Academic Programs

Items in Red are noted items for future development.

Computer Literacy Strategies

VCH, PHC and PHSA

The rapidly approaching transition to the utilization of an EHR has sparked the topic of computer literacy across the Health Organizations. While the approaches and techniques varied across the Health Organizations, the outcome and goals are the same – develop a computer literate workforce.

Computer literacy training at PHSA was conducted in small classes that focused on basic Windows operating procedures, as well as basic mouse operation. Coupled with this training was encouragement for learners to familiarize themselves with computer by playing games, such as Solitaire. It was reported that playing games was not an effective tool, rather instead of games; it was recommended by some of the educators that learners should engage themselves with training content that is focused on Cerner applications. The goal of focusing more on Cerner applications is to make the material more relatable and practical for learners.

Some VCH educators recommended the use of the CAPE tool, which is an assessment that identifies learners' level of computer literacy. The CAPE tool assesses learners' knowledge on using three different tiers of competencies. Tier 1 is basic computer operation, Tier 2 is intermediate computer operation and EHR integration, and Tier 3 is more advanced EHR functions. Some VCH educators suggest that training focused on Cerner applications will make the material more relatable and practical for learners.

In addition to these strategies, several others were proposed at the Learning Leader's Forum on November 13 & 21, 2014. Below is a collection of these strategies and tips.

- CST to provide managers with simple practice examples that help inexperienced staff to perform basic computer tasks (logon, sign-in, navigate, save, open email, send email, mouse/right click, save, sign-out, logout).
- Managers to take responsibility for arranging computer learning time and learning buddy/partner for inexperienced staff to go through exercises.
- Pair experienced staff/student computer users with inexperienced users for learning
- Start approximately 12 months before Go-Live.
- Gain skills by moving other activities online (signing in for shift/sick call etc.)
- Managers should arrange local, appropriate support for inexperienced individuals.
- Ultimately basic computer skills are foundational and staff has the responsibility to develop their own proficiency.
- Roles of the Educators in terms of on-site support?

Health Organizations Outside of BC

To work in healthcare today, computer literacy for clinicians is a requirement. As technology becomes more of a common place within the healthcare environment, many sites are adapting their workforce to utilize the new digital environment.

The tactics for ensuring the workforce is capable and comfortable with using technology in their work varied from site to site. However, one string of continuity that appears to have run across all sites, which was an important element in developing a computer literate workforce was that of a positive attitude from the learners. When the learners were positive and excited about learning the new material, all learning objectives were often achieved.

Aside from instilling a positive attitude the next most common and important item utilized in creating computer literacy was that of self-assessments. These self-assessments were typically distributed to the learners prior to any formal training with the newly implemented systems. Penn Highlands – Dubois posted their self-assessment to their intranet and any participant who failed would be contacted and provided training materials so the learners' gaps in basic computer knowledge could be filled. Some sites, such as Doctors Hospital at Renaissance in Texas had basic computer skills assessments classes that developed their baseline and taught important skills. However, it should be noted though that few participants attended the basic computer skills classes. It was assumed the clinicians were embarrassed or intimidated by their lack of computer skills, and therefore this site suggested smaller sessions to develop baselines and deliver basic computer literacy.

Children's Cancer Hospital, Egypt utilized a similar approach to the Doctors Hospital at Renaissance; however, their training sessions were grouped into smaller groups, such as nurses, clerks and physicians. It was reported that the basic computer courses helped the staff feel more confident with the new system and alleviated basic issues during Go-Live.[10]

To ensure all individuals participated in basic computer literacy training/base-lining, Advocate Health Care made basic computer literacy mandatory by not giving out user names until the user had completed their self-assessment.

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[10]*"Using Electronic Health Record to Achieve Quality Care in Developing Countries." March 14, 2012. Accessed March 3, 2015.*
https://www.cerner.com/uploadedFiles/Content/About_Cerner/Children_Cancer_Hospital Egypt_Achieving_Quality_Care_FINAL.pdf.

Recommendations & Next Steps

Recommendations

Computer literacy does not directly translate into skills using EHRs. While the skills do not directly translate, there is still a strong need to develop a computer literate workforce. The comfort in intuitively knowing how and where to click will ease the burden of transitioning to an EHR, especially in a big bang approach where learners are bombarded with many new systems simultaneously. Attached to this document is a toolkit with self-assessments designed to identify potential gaps in knowledge, skills and abilities with regards to computer usage. This toolkit also provides self-directed learning resources to address these gaps in knowledge.

It should be noted though that this is only a recommended approach, and PHSA, VCH and PHC should address computer basics training in the manner most suitable for their respective organizations.

Appendix 1 contains a list of complementary learning activities that can be utilized in addition to the tool kit resources.

Future recommendations for HOs include:
- Implementing Computer Literacy Assessment at point of hire for all staff who will have access to EHR
- Embedding Introductory Health Informatics Competencies as part of New Hire Orientation Programs

Next Steps

- Work with HOs in embedding computer literacy tool kit within existing education infrastructure
- Develop computer literacy roll-out strategy at enterprise level that can then be tailored to local site needs and infrastructures.
- PDSA tool kit across clinical areas and continue building on resources and learning materials
- Quantify gap in learning and basic computer literacy across the HOs
- Publish the computer literacy tool kit on the CSTproject.ca website and make widely available across HOs and LMC groups.

COMPUTER LITERACY TOOL KIT

CLINICAL + SYSTEMS
TRANSFORMATION

Our path to smarter, seamless care

Computer Literacy Self-Assessments

Overview

The implementation of an Electronic Health Record (EHR) promises to usher in a variety of benefits to healthcare providers and patients. The transition from a paper based or hybrid system to a complete EHR is supported by a workforce that is comfortable and skilled with using computers and technology.

The Computer Literacy Self-Assessment is a tool that staff, educators, and leaders can use to identify areas where they can benefit from additional computer navigation support. The goal is to identify these gaps early, develop a learning plan, and bridge knowledge gaps before using new electronic health record and clinical information system documentation.

Intended Use

This package was designed to build confidence, knowledge and skills with all individuals who will be part of the Clinical and Systems Transformation. The steps below outline how this package should be used:

- **Site Educators:** Distribute Computer Literacy Self-Assessment #1 to all staff members at your site. This self-assessment provides a high level summary of the entire set of computer skills required for EHR training.
- **Staff:** Complete Computer Literacy Self-Assessment #1, and tally score
    - Individuals who **scored above 30** are proficient computer users –minimal or no basic computer training required.
    - Individuals who **scored less than 30** on this assessment have some challenges with computers and would benefit from further practice and learning.
- **Staff:** Individuals who **scored less than 30** on Computer Literacy Self-Assessment #1 should then take Computer Literacy Self-Assessment #2. This self-assessment identifies specific areas to focus on for further development.
- **Staff:** After completing the Computer Literacy Self-Assessment #2, individuals should refer to the Recommended Learning Activities guide for any areas that they identified as "Need Learning and Practice" or "Know but Need Practice". This guide parallels the Computer Literacy Self-Assessment #2 and provides recommended learning activities to address the gaps identified.
- Given the majority of the recommended learning activities are accessed through the internet, a computer basics guide has been included to give step-by-step instructions for accessing this content.

Target Audience

- Staff and Students
- Providers and Residents
- Researchers
- Non clinical staff
- Users of electronic health records or clinical information systems
- Educators, Leaders, and Managers

Computer Literacy – Self-Assessment #1
Rate yourself on the following computer tasks. Can you:

Use a Computer			
Turn on a computer	❑Yes	❑No	❑Not Sure
Sign on to a computer using a username and password	❑Yes	❑No	❑Not Sure
Use an icon to open an application on a computer	❑Yes	❑No	❑Not Sure
Use the X or Close feature to exit an application	❑Yes	❑No	❑Not Sure
Log off and Shut down a computer properly	❑Yes	❑No	❑Not Sure
Use Email			
Read an email message	❑Yes	❑No	❑Not Sure
Compose and send an email message	❑Yes	❑No	❑Not Sure
Delete an email message	❑Yes	❑No	❑Not Sure
Print an email message	❑Yes	❑No	❑Not Sure
Reply to and forward an email message	❑Yes	❑No	❑Not Sure
Send an attachment with an email	❑Yes	❑No	❑Not Sure
Save files from an email to a folder	❑Yes	❑No	❑Not Sure
Use a Keyboard and Mouse			
Use keyboard functions: space bar, return, enter, shift, arrows, delete, backspace, tab	❑Yes	❑No	❑Not Sure
Use a mouse to point, click, double-click and select text	❑Yes	❑No	❑Not Sure
Scroll up and down a screen using the mouse or keyboard keys	❑Yes	❑No	❑Not Sure
Differentiate on a computer screen between a mouse pointer, insertion point, and hand pointer	❑Yes	❑No	❑Not Sure
Use a mouse to navigate toolbars, windows, menus, submenus, tabs and dialog boxes	❑Yes	❑No	❑Not Sure
Use Multi-Media and Internet			
Insert and eject removable storage media, such as a CD, USB or flash drive	❑Yes	❑No	❑Not Sure
Resize windows with minimize, restore and maximize	❑Yes	❑No	❑Not Sure
Adjust the volume on a computer	❑Yes	❑No	❑Not Sure
Launch an internet browser to access the internet	❑Yes	❑No	❑Not Sure
Locate a website with a URL address	❑Yes	❑No	❑Not Sure

Use a browser's navigation tools to go back, forward, refresh and to a homepage	❏Yes	❏No	❏Not Sure
Find information using search engine	❏Yes	❏No	❏Not Sure
Download and save files from the internet such as a PDF document	❏Yes	❏No	❏Not Sure
Bookmark a website	❏Yes	❏No	❏Not Sure
View a video on the internet	❏Yes	❏No	❏Not Sure
Use Computer Applications			
Open a document from a word processing system such as Microsoft Word or PowerPoint	❏Yes	❏No	❏Not Sure
Type in a document (e.g. progress note or report) with reasonable speed and accuracy	❏Yes	❏No	❏Not Sure
Create a folder with a meaningful name	❏Yes	❏No	❏Not Sure
Save a document or file with a meaningful name to a file folder	❏Yes	❏No	❏Not Sure
Use "save as" to create a copy of a document or file	❏Yes	❏No	❏Not Sure
Use folders to locate, manage or organize files	❏Yes	❏No	❏Not Sure
Print a document	❏Yes	❏No	❏Not Sure
Identify file types associated with different types or documents such as .pdf, .doc, .docx.	❏Yes	❏No	❏Not Sure
Run more than one program simultaneously and navigate between multiple open windows	❏Yes	❏No	❏Not Sure
Use Online Interaction			
Participate in a computer conference or on-line chat group.	❏Yes	❏No	❏Not Sure
Use social media to communicate with friends (e.g. Facebook, etc)	❏Yes	❏No	❏Not Sure

Tally the tick marks in each column to get Your Score   ❏   ❏   ❏

My Rating – How many times did you answer YES?

30 or more   You are a proficient computer user.

20 to 29   You have some challenges using computers – please practice these tasks.

Less than 20   You might benefit from computer practice and training; please practice and seek training.

✂ -
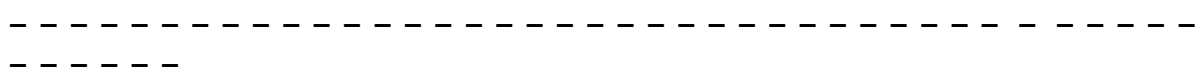
Yes, put me in the Prize Draw!

Name:_____   Dept/Work Location _____

Email address: _____

Computer Literacy - Self Assessment#2
Assess yourself on the following computer skills and abilities.

#	Criteria: Do I Consistently… Am I Consistently able to…	
1	**Identify how to complete basic PC set up ensuring all connections are properly plugged into the appropriate ports.**	❏Yes ❏No ❏Not Sure
2	**Distinguish between *hardware* as equipment and *software* as application programs (clinical system for patient record, word processing, spreadsheet, database, email, etc.)**	❏Yes ❏No ❏Not Sure
3	**Identify and demonstrate use of main input devices/ports: mouse, keyboard, USB, tablets**	❏Yes ❏No ❏Not Sure
4	**Use intranet, internet, extranet networks including SharePoint, team sites, browsers (Internet Explorer, Firefox, Chrome)**	❏Yes ❏No ❏Not Sure
5	**Use electronic communication: email to create, send, respond, attach and receive attachments**	❏Yes ❏No ❏Not Sure
6	**Use multimedia presentations for learning (videos, YouTube, podcasts, blogs, media site, etc.)**	❏Yes ❏No ❏Not Sure
7	**Use word processing, spreadsheets (Excel) and presentation graphics (PowerPoint)**	❏Yes ❏No ❏Not Sure
8	**Navigate primary operating systems (e.g. Windows to manage files, access installed applications, use common icons)**	❏Yes ❏No ❏Not Sure
9	**Use technology for self-paced learning (e-learning, Learning Hub)**	❏Yes ❏No ❏Not Sure
10	**Use social networking applications ethically and responsibly (Facebook, discussion forums, Twitter)**	❏Yes ❏No ❏Not Sure

My Rating – Questions Answered No or Not Sure

For questions answered No or Not Sure, please complete the Recommended Learning Activities on the next page. The Recommended Learning Activities parallel Computer Literacy Self Assessment#2.
Question #1 = Activity #1, etc.

Recommended Learning Activities to Increase Computer Literacy

The below is a list of recommended learning activities to bridge gaps in knowledge related to specific competencies. The Recommended Learning Activities parallel Computer Literacy Self Assessment#2. Question #1 = Activity #1, etc. For questions answered "No or Not Sure" on the Computer Literacy Self Assessment #2, please complete the learning activities below.

#	Competency	Skills Required	Recommended Resources
1	Basic PC set up. Correctly identify how to complete basic PC set up. Ensure all connections are properly plugged into the appropriate ports.	1) Basic troubleshooting 2) Identify different ports and connections on PC and what they are used for 3) Describe various input and output devices	1) Reference guide explaining what all of the ports and buttons on a PC do. http://www.gcflearnfree.org/computerbasics/6.2 2) Step by step process as to how to set up a pc (can be printed) http://www.gcflearnfree.org/computerbasics/10 3) YouTube video that explains how to set up a PC – identifies ports and cables https://www.youtube.com/watch?v=KdQeU5QTfYE
2	Distinguish between *hardware* as equipment and *software* as application programs (clinical system for patient record, word processing, spreadsheet, database, email, etc.)	1) Starting Computer 2) Desktop and Start Tool Bar 3) How to operate a mouse 4) Basic computer symbols 5) Manipulating program windows 6) Windows file structure 7) Describe basic components of computer system 8) Use computer operating system 9) Use external peripheral devices and computer applications	1) Computer Literacy – A printable document that provides computer basics such as turning on and off the computer, mouse operation, navigating Windows file structure and start tool bar. 2) A short article on what the differences between hardware and software is. http://www.differencebetween.info/difference-between-hardware-and-software 3) An online guide that explains all basic computer skills, such as mouse operation, basic computer symbols, manipulating windows, etc. http://spclc.org/curricula-resources/computer-curriculum#basic
3	Navigate primary operating systems (e.g. Windows to manage files, access installed applications, use common icons)	1) Use computer operating system 2) Navigate Windows file structure	1) An outdated guide that contains many lessons, such as navigating file structures, finding files and basic Windows operating skills. http://spclc.org/curricula-resources/computer-curriculum
4	Identify and demonstrate use of main input devices/ports: mouse, keyboard, USB, tablets	1) Identify different ports and connections on PC and what they are used for 2) How to install USB devices 3) Describe various	1) Reference guide explaining what all of the ports and buttons on a PC do. http://www.gcflearnfree.org/computerbasics/6.2 2) http://techchannel.radioshack.com/transfer-files-another-computer-using-flash-drive-1470.html 3) This is a tool to help users practice with the mouse. http://www.seniornet.org/howto/mouseexercises/mousepractice.html

5	Use intranet, internet, extranet networks including SharePoint, team sites, browsers (Internet Explorer, Firefox, Chrome)	input and output devices 4) Accurately and effectively use a keyboard	
		1) Definitions of what these tools are 2) Use the internet to locate and download resources for patients 3)Use technologies for patient education 4) Help patients locate and evaluate patient resources on the internet 5) Conduct online literature searches 6) Assess the accuracy of health information on the internet 7) Access and use database applications, such as SharePoint	1) This training defines what the internet is, and its various parts. Contains items such as how to connect to the internet, browser basics, search engine strategies and how to guides. http://www.gcflearnfree.org/internet101 2) This website provides information on assessing the validity of information found on the web. http://www.ed.ac.uk/schools-departments/information-services/library-museum-gallery/finding-resources/library-databases/databases-overview/evaluating-websites 3) This is a lengthy guide for how to use SharePoint – it is designed for beginners. http://www.sru.edu/SP-training/Documents/Basic-SharePoint-Training-GuideIE9.pdf 4) A basic guide as to how to properly complete internet research. http://www.wikihow.com/Do-Internet-Research
6	Use electronic communication: email to create, send, respond, attach and receive attachments	1)Use email (open, compose and send emails.) 2) Attach documents, open and view received attachments	1) This guide outlines how to compose, send, and attach documents to emails. http://digitalunite.com/guides/email/how-send-email
7	Use multimedia presentations for learning (videos, YouTube, podcasts, blogs, media site, etc.)	1) Identify sources for multimedia content 2) Understand how to access and use these sources	
8	Use word processing, spreadsheets (Excel) and presentation graphics (PowerPoint)	1)Use presentation graphics to create slides, display 2) Use MS Word to create and modify documents 3) Use excel to store and manipulate data	1) This guide outlines the basics of MS Excel, Word and PowerPoint. http://spclc.org/curricula-resources/computer-curriculum
9	Use technology for self-paced learning (e-learning, Learning Hub)	1) Locate, enroll and complete eLearning courses on HO intranet	
10	Use social networking applications ethically and responsibly (Facebook, discussion forums, Twitter)	1)Use social media appropriately	1)This is a guide on how to appropriately use social media (taken from the College of Physicians and Surgeons of Ontario) http://www.cpso.on.ca/policies-publications/positions-initiatives/social-media-appropriate-use-by-physicians

Computer Hardware Basics Overview

Overview

This document is designed to familiarize staff and clinical information system users on how to access additional internet based Recommended Learning Activities and familiarize themselves with basic computer hardware.

Objective

- Familiarize yourself with basic computer hardware
- Use a Windows-based computer to navigate the computer using basic functions

Duration

30 Minutes

Supplies Needed

- Computer
- Keyboard
- Mouse

Computer Components

Windows based computers come in different sizes, shapes and capabilities, but they all have some basic similar functions and features.

Keyboard and Mouse

The keyboard and mouse are the two most common ways that users tell the computer what they want it to do.

Keyboard

Mouse

Left Clicking   This is the primary "click" that you will use.

Right Clicking   This is used to add options to a function.

Double Clicking   You are usually prompting the computer to take an action on the item you selected (double clicking on an icon on your computer desktop may open or start a program)

Scroll button   Allows the user to scroll up or down on a document.

Turn Your Computer On

On most computers and monitors, there is an on/off switch that will be similar to this. Press to turn it on.

Once you turn your computer and monitor on, you will see something like the image below. This is called the Desktop. The **red arrows** call out some of the main features of the Desktop.

Regardless of the version of Windows you may have, there are main consistencies. All will include the following on your Desktop. For illustration purposes, on the left is Windows XP; on the right is Windows Vista.
- **Icons** Quick way to access programs- double click to open.
- **Taskbar** Area to keep your programs organized.
- **Start Menu** Opens a menu of options.

Icons
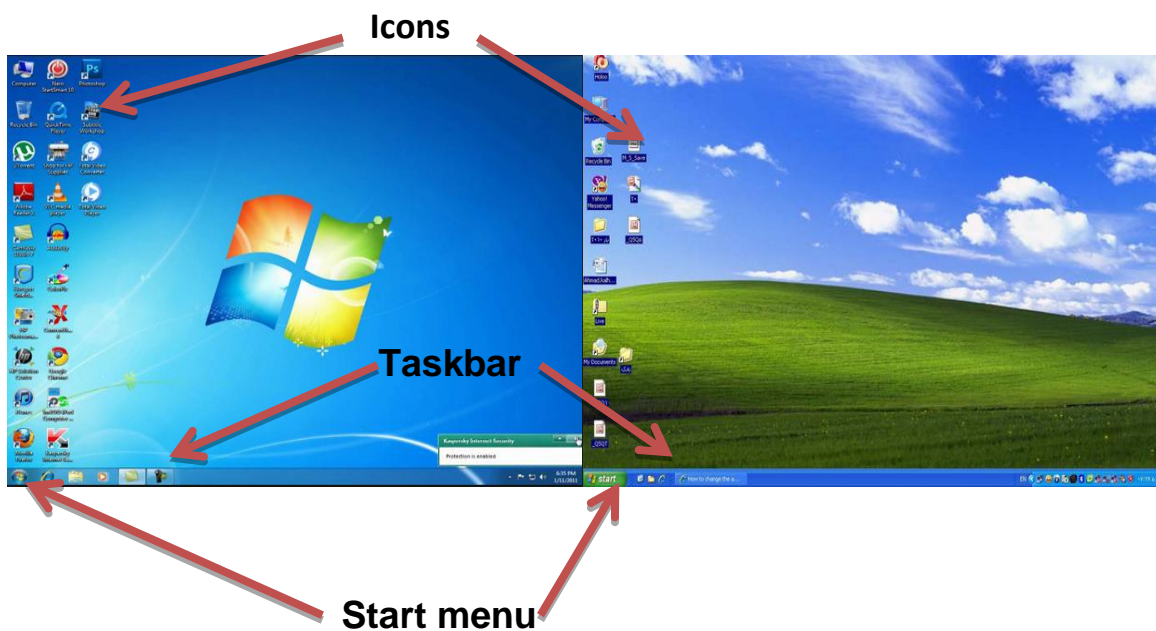
Taskbar

Start menu

Now that your computer is on, let's open an application.

Accessing the Internet

Press the Start Menu, located on the lower left hand corner of your screen – on the taskbar. It's used to access all of the programs on the computer so you can "start" them. You will see something like this, depending on your Windows version and applications loaded onto your computer.

To use the start menu to open programs:

1. Point and click the mouse pointer at the button at the lower left corner of the Windows Desktop (the screen that appears when you first start up your computer).
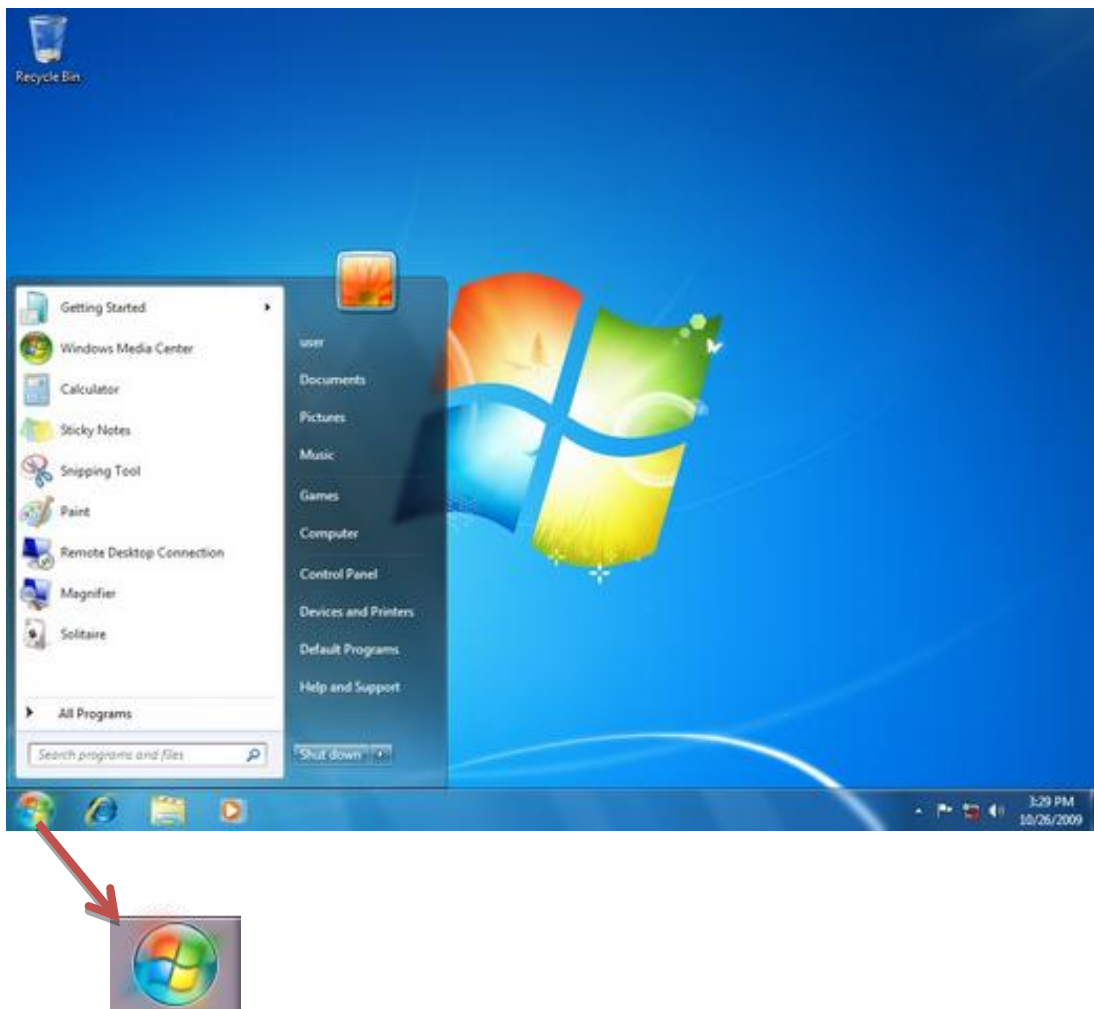
This activates a pop-up menu.

1. Hover your mouse over the Programs tab. This will open a slide that has all of the computers available programs.

2. Search for a program called **Internet Explorer**

3. Once Internet Explorer is located, click to open.
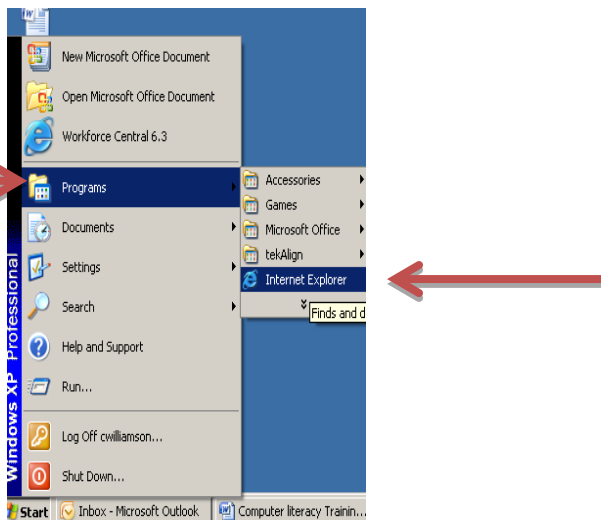
4. Once Internet Explorer is open, you will see your homepage, which may look something like this. Let's look   a   little   closer   at   the   address

bar.
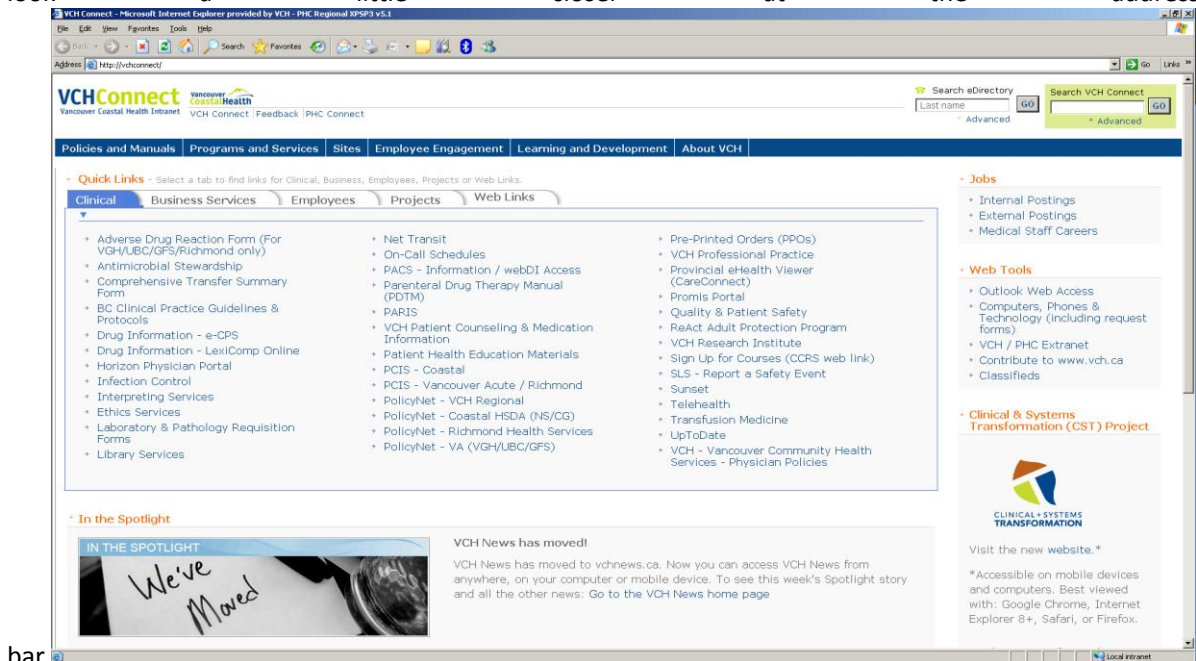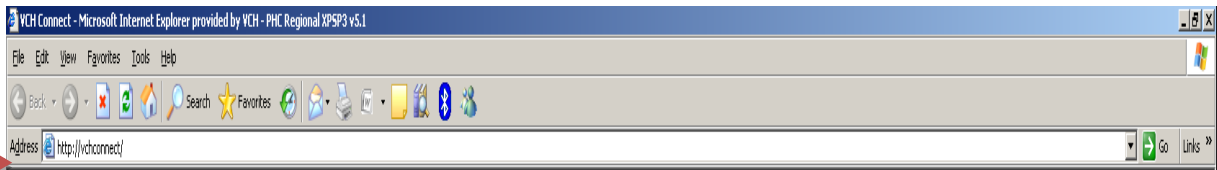
5. The address bar is where a websites address is typed. This is how a website is accessed.

6. To enter an address, first make sure there are no letters or characters in the address bar. If there are characters or letters, click on the address bar. This will highlight everything blue. Once the text is blue, press the Backspace or Delete key on your keyboard.
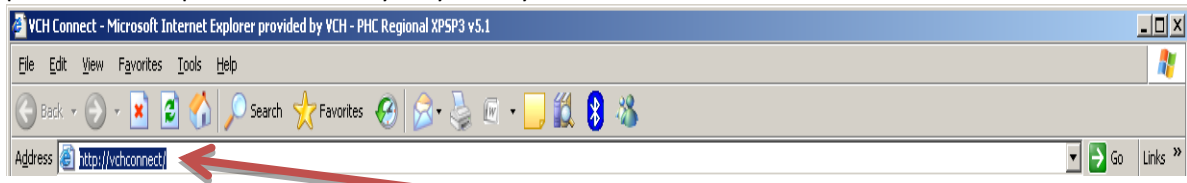
7. Now that the address bar is empty, locate which training you would like to access from the recommended learning activities page. The address of the website you wish to visit is underlined and will begin with **http://** . Below are a few examples.

8. Enter the address **exactly** as it appears on the document into the address bar. Once fully entered, press the Enter key on the keyboard to take you to the website.

9. Once on the website, you will see the training material, which will have instructions as to how to use.

Glossary of Common Computer Terms

The table below outlines key computer and Clinical and Systems Transformation terms used throughout this document.

Term	Definition
PC	Personal Computer – A general purpose machine that processes data according to a set of instructions that are stored internally either temporarily or permanently.
Hardware	The physical parts of a computer
Software	Instructions executed by a computer. Most common type of software is applications.
Applications	Complete, self-contained programs that perform a specific function. (Examples include Microsoft Word, Microsoft PowerPoint, Internet Explorer, etc…)
Operating System	System software that allows a computer to work, such as Windows 7.
Desktop	The screen you see when your computer
Monitor	The computer monitor is a screen or display unit
Icon	A small clickable picture that opens applications on a computer
Pointer	The name of the arrow that tracks across the screen as you move the mouse.
Mouse	Is a hand held device that helps you control the pointer on the desktop/screen
Keyboard	The device used in typing words, numbers and to perform tasks.
File	A file is a block of information. Can be word documents, pictures, music, etc
Folder	The folder structure helps in organizing the files, programs and projects on the computer
Browser	Software that you use to access the internet. Internet Explorer and Google Chrome are two examples
Network	Physical or logical construction that connects different computers together and helps them communicate
Phishing	Is the attempt to acquire sensitive information such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in an electronic communication
Reboot	Restarting the computer
Peripherals	Peripherals are the input/output devices that are connected to the computer. The keyboard, mouse and printer are computer peripherals.
Port	A connection point or interface between a computer and a device. Can be used to connect monitors, keyboards, USB, etc…)
USB	The most common type of computer port used.
Flash Drive	A highly portable USB device used to store data.
Search Engine	A website or software that searches the internet for key words and phrases. Google, Yahoo and Bing are examples.
URL	A generic term for all types of names and addresses that refer to object on the internet. Web address is a synonym for URL.

Common Health Informatics Definitions	
Health Informatics	"Health informatics is the systematic application of information, computer science, and technology to public health practice, research, and learning."*11* Health Informatics represents a unique blend of knowledge, skills and abilities obtained from a variety of disciplines including information health and management sciences*12*.
Electronic Medical Record	According to the British Columbia Ministry of Health, "an Electronic Medical Record (EMR) is a computer-based patient medical record used by physicians, nurses and administrative staff. An EMR contains patient information that authorized health professionals can access electronically rather than through a traditional paper chart."13 "An EMR generally refers to an electronic version of the traditional paper record that physicians have long maintained for patients. The EMR may be a simple office-based system, but is more likely a sophisticated, shared electronic record accessible to those within a group practice, healthcare facility, or a network of health professionals (e.g. treating physicians, other healthcare providers, information managers, etc.). CMPA, page 5" *14*
Electronic Health Record	"the EHR represents the ability to easily share medical information among stakeholders to have a patient's information follow him or her through the carious modalities of care engaged by that individual."*15* "EHRs are typically maintained by a hospital, health authority, or provincial health ministry and generally include a variety of repositories of patient data. They are usually accessible by several authorized parties from a number of places of care." CMPA, page 5" *16* Through the digitization of health records, health care organizations will be empowered to provide enhanced patient care through such means as easily accessing a patient's medical history, diagnoses, medications, treatment plans, immunization dates, allergies, radiology images and laboratory and test results. This access will be granted to all authorized clinicians involved in the patient's care and allows health care providers and organizations – such as laboratories, specialists, medical imaging facilities, pharmacies, emergency facilities, and school and workplace clinics to administer to the patient's needs in a safer, more efficient and cost effective manner.17

11 *Karras,, Bryant. "Competencies for Public Health Informaticians."Center for Disease Control. January 29, 2009. Accessed March 3, 2015. http://www.cdc.gov/InformaticsCompetencies/downloads/PHI_Competencies.pdf.*

12 *HIP "Core Competencies v3.0" Coach: Canada's Health Informatics Association. Accessed March 3, 2015 https://www.coachorg.com/en/resourcecentre/resources/Health-Informatics-Core-Competencies.pdf*

13 *"Electronic Medical Records."BC Ministry of Health. Accessed March 3, 2015. http://www.health.gov.bc.ca/ehealth/emr.html.*

14 *The Canadian Medical Protective Association, CMPA (2014).* Electronic Health Record Handbook. Accessed May 25 2015: https://www.cmpa-acpm.ca/documents/10179/24937/com_electronic_records_handbook-e.pdf

15 *Garrett, Peter. "EMR vs EHR What Is the Difference." HealthITBuzz. January 4, 2011. Accessed March 3, 2015. http://www.healthit.gov/buzz-blog/electronic-health-and-medical-records/emr-vs-ehr-difference/.*

16 *The Canadian Medical Protective Association, CMPA (2014).* Electronic Health Record Handbook. Accessed May 25 2015: https://www.cmpa-acpm.ca/documents/10179/24937/com_electronic_records_handbook-e.pdf

17 *"HealthIT.gov." What Is an Electronic Health Record (EHR)? Accessed March 3, 2015. http://www.healthit.gov/providers-professionals/faqs/what-electronic-health-record-ehr.*

	The successful implementation of an EHR will:
	- Improve patient care by giving physicians and clinicians better access to clinical information - Improve physician office efficiency and workflow - Reduce duplicate tests and clinical assessments - Improve accuracy of diagnoses and health outcomes - Improve care coordination - Enhance patient privacy and confidentiality as defined in legislation and professional practice standards[18][19]

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[18] *"Electronic Medical Records."BC Ministry of Health. Accessed March 3, 2015. http://www.health.gov.bc.ca/ehealth/emr.html.*

[19] *"HealthIT.gov." What Is an Electronic Health Record (EHR)? Accessed March 3, 2015. http://www.healthit.gov/providers-professionals/faqs/what-electronic-health-record-ehr*

Additional Learning Resources

| Area of Focus	Name	Description	Cost / Format	Location
Self-Assessments:				
Computer Skills Self-Assessment	**Basic Computer Skills Self-Assessment**	A self assessment for staff to help identify basic computer knowledge and navigation	Free **Print**	This self assessment is embedded into the CST Computer Literacy Tool Kit.
In-Person Workshops:				
Computer Basics **Vancouver Public Library**	**Computer Basics**	Get comfortable with using a computer during this 90-minute, hands-on course. Learn to use the mouse and the computer keyboard and get an overview of basic computer functions. No computer experience required.	Free **In Person**	http://www.vpl.ca/news/details/computer_basics_workshops Monthly Schedules available through the VPL website. Registration required: Tel: 604.331.3603 Evening sessions.
Computer Basics **University of British Columbia**	**Basic Computer Skills Workshop**	Basic computer skills workshops are for those with little or no computer experience. Maybe you haven't used a computer at all? Maybe you want to learn how to send an e-mail? Workshops include an introduction to computers, typing skills, word processing, using Microsoft Word, internet navigation and e-mail.	Free **In Person**	http://learningexchange.ubc.ca/community/individuals/learn-computer-skills/ Location: UBC Point Grey Campus To Sign Up, contact Dionne Pelan or Tel: all 604.408.5179. Free, small group workshops for learning basic and advanced computer skills in a welcoming and friendly environment.
	Advanced Computer Skills: "File Management" and "Image Editing". Call, email or drop in to find out what is coming up and when.	Advanced computer skills workshops are for those who are already comfortable with the basics of common software programs and would like to build on their skills. These workshops are led by local volunteers and UBC students, and their content varies depending on the interests of learners and volunteers. Past workshop topics include "MS Office vs. Open Office", "File Management" and "Image Editing". Call, email or drop in to find out what is coming up and when.	Free **In Person**	

Online Tool Kits and Resources				
Basic Hardware and Software	**Computer Hardware Basics Overview**	Learn about basic computer hardware and how to access additional internet based Computer Literacy Learning Activities.	Free **Print Tool Kit**	Pg. 19 of CST Computer Literacy Tool Kit
	Net Literacy	This material can easily be printed off and used to educate learners. Pictures and diagrams are helpful	Free **Online**	http://www.netliteracy.org/blog/2012/04/27/5908/
	Computer Basics	This material can easily be printed off and used to educate learners. Pictures and diagrams are helpful.	Free **Online**	This guide is embedded into the CST Computer Literacy Tool Kit.
Comprehensive Computer Literacy Tools	**St. Paul Community Literacy Consortium**	A collection of basic computer skills education modules including: • Very Basic Computer Skills • Computer Vocabulary • Opening and Saving Files • Skills and Activities Practice • MS Word Exercises • Excel Exercises • Internet • PowerPoint	Free **Online**	http://spclc.org/curricula-resources/computer-curriculum Includes a variety of: • Lessons (handouts) • Teacher Guides • Vocabulary Lists and • Activities
	Independence University	A collection of basic computer skills education modules including: • Basic Computer Skills • Basic Word Processing Skills • Basic Internet Skills • Basic E-Mail Skills • Basic Computer Ethics • Computer Literacy Test	Free **Online**	http://www.independence.edu/computer-literacy/
	Basic Computer Skills	Interactive guide includes the below modules: • Use a mouse to point, click and double-click • Keyboard and typing tips • Opening and closing software files • Accessing a CD-ROM • Locating a saved file • How to copy and paste files or text • Review Questions • Quiz	Free **Online**	http://www.ctdlc.org/remediation/indexcomputer.html

Mouse Navigation Skills	My Doctor Games	A **health care game** to help use the mouse more effectively	Free **Online**	http://www.mydoctorgames.com/heart-surgeon/game/
	Mouse Parts	A guide for using a mouse, track-pad and touch screen	Free **Online**	http://tech.tln.lib.mi.us/tutor/intro2.htm
	Senior Net	Games to help develop mouse navigation skills • Placing the mouse • Clicking the mouse • Drag and drop • Drawing with the mouse	Free **Online**	http://www.seniornet.org/howto/mouseexercises/mousepractice.html
Typing Kills	Good Typing	Online typing placement and typing practice course	Free **Online**	http://www.goodtyping.com/introduccion.htm?n=Guest&e=Invitado&t=1&
	Power Typing	A guide with several games to help with typing skills	Free **Online**	http://www.powertyping.com/
	Alison	Online typing guide to help improve typing speed	Free **Online**	http://alison.com/courses/Touch-Typing-Training/content
Online Videos				
Computer Basics	GCF Learning	The module has a number of videos and covers comprehensive list of topics from computer basics to navigating the internet and mobile devices.	Free **Online**	http://www.gcflearnfree.org/computerbasics
	Basic computer literacy - Level 1	Youtube video on computer literacy	Free Online **Video**	https://www.youtube.com/watch?v=ou7pWPUoIso 13:44 minutes long

Poster and Pamphlet
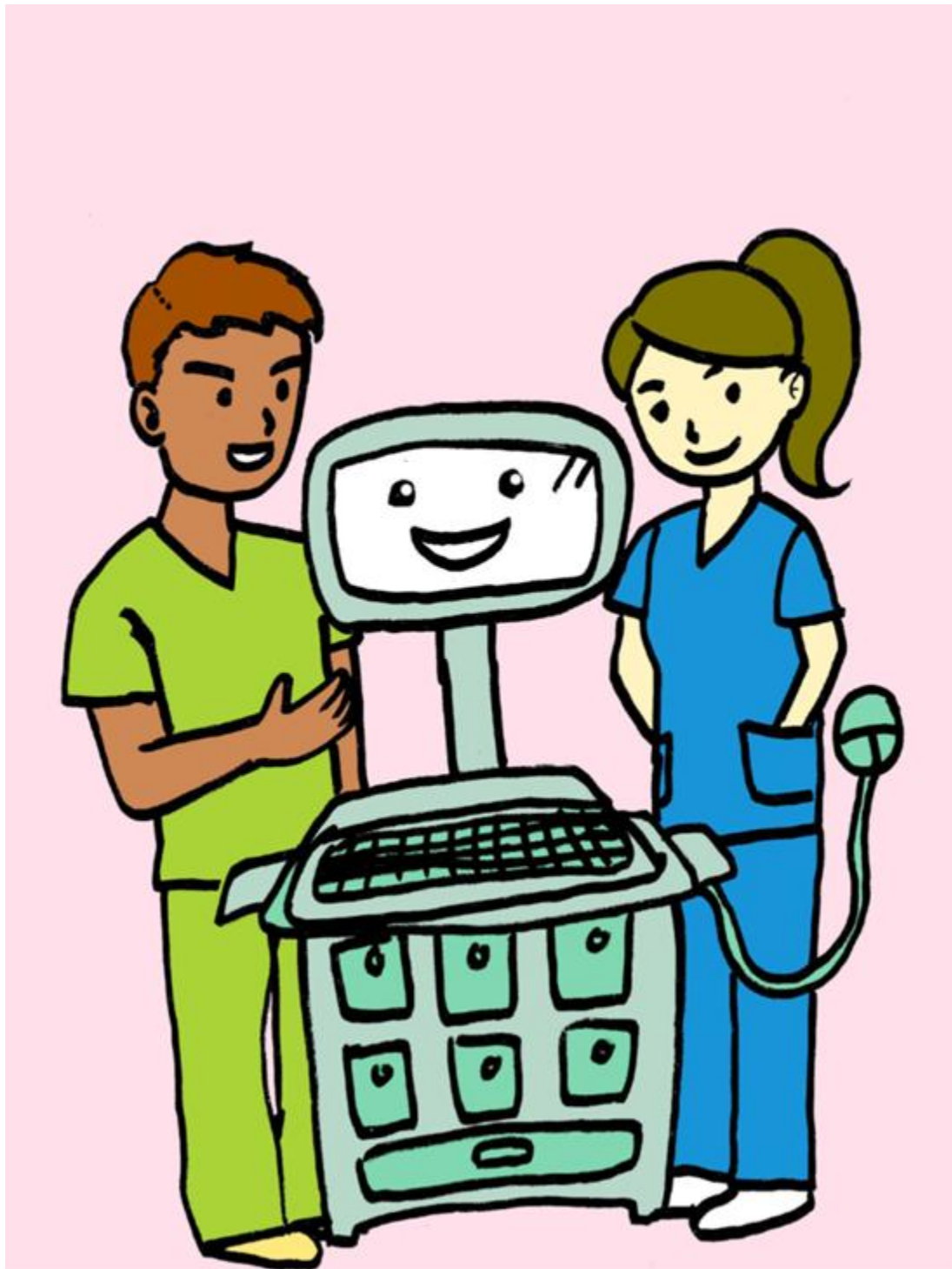
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TRANSFORMATION
Our path to smarter, seamless care

Practice your skills

Get some ONLINE Practice!

Heart surgery game

Practice basic navigation and improve mouse skills

http://www.mydoctorgames.com/heart-surgeon/game/

Typing games

Improve typing comfort and speed

http://www.powertyping.com/

Online banking and shopping

If you are already an online banker, you might be ahead of the game! Challenge your skills by completing a computer literacy self-assessment downloadable from **cstproject.ca**

How can I find out more?

Check out if **YOU ARE READY** by completing a basic computer literacy **self-assessment** available from our website at cstproject.ca

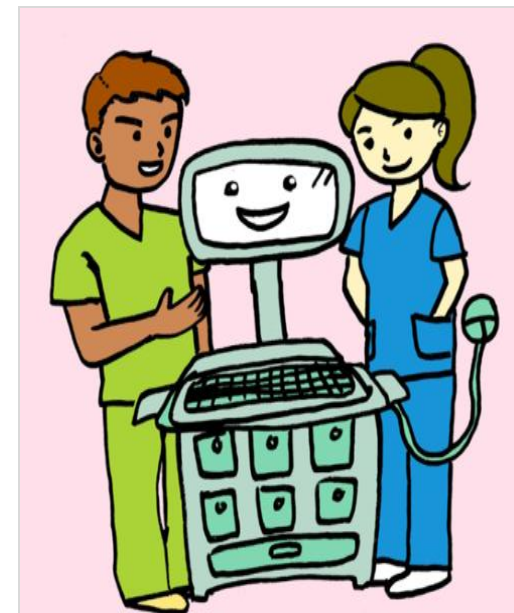Can't find it? Talk to your educator or manager for help accessing the resources.

Find new content and tools on our website to help increase your knowledge of electronic patient records and computers.

CLINICAL + SYSTEMS
TRANSFORMATION
Our path to smarter, seamless care

CSTproject.ca

ARE YOU READY?

…for working with Clinical Information Systems?!

(Lavrukh, Makowsky, Yuan, & Zhao, 2015)

CLINICAL + SYSTEMS
TRANSFORMATION
Our path to smarter, seamless care

What is A CLINICAL INFORMATION SYSTEM?

A clinical information system (CIS) is a computer system designed for collecting, storing, amending and retrieving information relevant to healthcare delivery.

Clinical information systems help improve patient care by enabling clinicians and clinical support staff to access an electronic patient record, with alerts and decision support built in, to provide more informed care.

Clinicians can access the system to quickly find information about a patient's condition, allergies, test results, and medical history.

What's the first step in preparing for Electronic Patient Records?

Build your computer skills!
To work in healthcare today, computer literacy is a crucial skill.

As technology becomes more commonplace within the healthcare environment, many sites are adapting their workforce to work within the new digital environment.

Get ahead of the curve by increasing your skills and comfort with basic computer navigation.

Why are computer skills important?
The foundation for Electronic Health Record (EHR) skills is computer literacy. You will need to feel comfortable and knowledgeable using computers in order to successfully use a clinical information system.

How CAN You Increase your Computer NAVIGATION SKILLS?

Attend a FREE Classroom Course

Vancouver Public Library
Computer Basics
90 min, hands-on class
Tel: 604.331.3603

http://www.vpl.ca/news/details/computer_basics_workshops

University of British Columbia (UBC)
Introduction to Computers, typing skills, word processing, internet navigation and e-mail
Tel: 604.408.5164

http://learningexchange.ubc.ca/community/individuals/learn-computer-skills/