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Computers for NURSES



Editors
Niranjan Shendurnikar
Naveen Thacker

2nd Edition

Executive Editors
Manoj Ambwani
Bakulesh M Chauhan

Foreword
Anita Deodhar

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3

Computer Security and Virus Protection

Yatin Mehta

INTRODUCTION

In this era of information technology (IT), use of computers has become common in hospitals to store and retrieve patient data. The patient data is very precious and confidential. Thus it has to be stored properly and should be protected from prying eyes and also from damage by virus attack. Every computer has precious data in it and the one that is connected with other computer(s) or to the internet is vulnerable. It has to be protected from hacking and virus attack. The onus lies on the user of computer, to keep the data confidential and try to protect the computer from virus attack. It is worthwhile to know certain terminologies.

MALWARE

Malware is a term that is used for malicious software, which is designed to do damage or unwanted actions to a computer system. Examples of malware include the following:

- Viruses
- Worms
- Trojan horses
- Spyware
- Rogue security software.

Computer Virus

A computer virus is a small software program that spreads from one computer to another and interferes with computer operations. A computer virus might corrupt or delete data on a computer, use an email program to spread the virus to other computers or even delete everything on the hard disk.

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Computer viruses are frequently spread by attachments in Email messages or by instant messages. Therefore, the users must never open an Email attachment unless he/she know, who sent the message or expecting the Email attachment. Viruses can be disguised as attachments of funny images, greeting cards or audio and video files. Computer viruses also spread through downloads on the internet. They can be hidden in pirated software or in other files or programs downloaded.

Worm

A worm is computer code that spreads without user interaction. Most worms begin as Email attachments that infect a computer, when they are opened. The worm scans the infected computer for files, such as address books or temporary webpages, which contain Email addresses. The worm uses the addresses to send infected Email messages and frequently mimics (or spoofs) the 'from' addresses in later Email messages, so that those infected messages seem to be from someone you know. Worms then spread automatically through Email messages, networks or operating system vulnerabilities, frequently overwhelming those systems before the cause is known. Worms are not always destructive to computers, but they usually cause computer and network performance, and stability problems.

Trojan Horse

A trojan horse is a malicious software program that hides inside other programs. It enters a computer hidden inside a legitimate program, such as a screensaver. Then it puts code into the operating system that enables a hacker to access the infected computer. Trojan horses do not usually spread by themselves, but are spread by viruses, worms or downloaded software.

Spyware

Spyware can install on your computer without your knowledge. These programs can change your computer's configuration or collect advertising data and personal information. Spyware can track internet search habits and can also redirect the web browser to a different website than you intend to go to.

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Rogue Security Software

A rogue security software program tries to make think that your computer is infected by a virus and usually prompts you to download or buy a product that removes the virus. The names of these products frequently contain words such as antivirus, shield, security, protection or fixer. This makes them sound legitimate. They frequently run right after you download them or the next time that your computer starts. Rogue security software can prevent applications such as Internet Explorer from opening. Rogue security software might also display legitimate and important Windows files as infections. Typical error messages or pop-up messages might contain the phrases mentioned in Box 3.1.

Box 3.1: Typical error messages

Warning!
Your computer is infected!
This computer is infected by spyware and adware

TIPS FOR PROTECTING COMPUTER FROM HACKERS AND VIRUSES

Use Protection Software 'Antivirus Software' and Keep it Up-to-date

It is now mandatory to keep good antivirus software installed in the computer. All good antivirus software give almost daily updates. So check it that the antivirus program is getting daily updates and is fully updated. It is also advisable to do regular scheduled scan of the computer.

It is a good idea to install total internet security instead of only antivirus software. Because the former not only includes antivirus but also include antiphishing, antimalware, antispyware, firewall, etc.

Do Not Open Email from Unknown Sources

A simple rule of thumb is that if you do not know the person who is sending the Email, be very careful in opening the Email. If you receive a suspicious Email, the best thing is to delete the entire message, including any attachment. Even if you do know the person sending you the Email, you should exercise caution if the message is strange

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and unexpected, particularly if it contains unusual hyperlinks. Your friend may have accidentally sent you a virus. When in doubt, delete.

Use Hard to Guess Passwords

Passwords are the key to important data on the computer/internet. Passwords will only keep out of reach the outsiders if they are difficult to guess. Do not share the password and do not use the same password in more than one place.

Golden rules of password: A password should have a minimum of eight characters—use uppercase letters, lowercase letters and numbers, should have special character such as C5k$u8*, should not be a word found in dictionary, change passwords regularly at least every 90 days, do not give out your password to anyone, one can use password generator software for generating difficult password.

Protect the Computer from Internet Intruders by Using 'Firewalls'

Equip the computer with a firewall. Firewalls create a protective wall between the computer and the outside world. They come in two forms; software firewalls that run on personal computer and hardware firewalls that protect a number of computers at the same time. They work by filtering out unauthorized or potentially dangerous types of data from the internet, while still allowing other (good) data to reach the computer. Firewalls also ensure that unauthorized persons cannot gain access to computer, while anyone is connected to the internet. One can find firewall hardware and software at most computer stores nationwide. Do not let intruders in.

Use the Browser's Privacy Settings

Every browser has privacy settings that can be modified to make it more secure. This allows or disallows the website to use the private information. This is very important to prevent fraud and identity theft.

Turn on User Account Control

When changes are going to be made to the computer that require administrator level permission User Account Control (UAC) notifies and gives the opportunity to approve the change. UAC can help to keep viruses from making unwanted changes.

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Let Not Any Other Person Access Your Computer (Log Off After Every Use)

The computer operating system may allow other computers on a network, including the internet, to access the hard drive of computer in order to 'share files'. This ability to share files can be used to infect computer with a virus or look at the files on the computer if do not pay close attention. So, unless one who really need this ability, make sure to turn off file sharing. Also when not working on your computer, log off. This will not allow any other co-workers access the computer without password.

Disconnect from the Internet When Not in Use

Remember that the digital highway is a two-way road. One can send and receive information on it. Disconnecting the computer from the internet when not in online, lessens the chance that someone will be able to access the computer. It is similar to closing and locking the main door of house, when you are not expecting anybody. Disconnect and be safe.

Backup Your Computer Data

If a virus destroys your files, at least you can replace them with your backup copy. You should store your backup copy in a separate location from your work files, one that is preferably not on your computer. So, all the important data should be backed up daily. Backup will save your system from any data loss in case of virus attack, malfunction, hard disk drive (HDD) crash, accidental deleting of data. One can take backup on thumb drive [available from 1 to 64 gigabyte (GB)] or on compact disk (CD), digital versatile disk (DVD) or external hard drive or on cloud.

Regularly Download Security Protection Update 'Patches'

No software is made perfect from the beginning. And so the importance of security patches. Regularly download and update such security patches for your operating system (OS) and for the browser (Internet Explorer, Mozilla Firefox, etc.) and for the office suite.

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CONCLUSION

Keeping the computer safe, secure and virus free is just similar to protecting the home from thief and unwanted intruders. One should be prepared from advance. The antenna should always be on to sense the attack and to take proper action. By using common sense and caution, one will be rewarded.

FURTHER READING

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Computers for NURSES

Computers, digital world and the information technology have already touched the vast areas of varied professions and the benefits of this ever evolving technology are now widely appreciated. Healthcare professionals have to keep up the pace with the societal, cultural and professional developments and hence these tools have become extremely useful, practical and beneficial in the provision and sustenance of healthcare in the modern era of medical sciences.

Keeping these perspectives, *Computers for Nurses* aims to disperse, disseminate and update the ongoing and present information that has become so essential in the current times. Whether it is an issue regarding the protection from computer viruses or working ergonomics at the computer terminal or systematizing an internet search for a medical topic, the best of healthcare cannot be provided, if the healthcare provider is not constantly informed and updated about these practical and applicable aspects. The aim of this book is to target exactly the nursing care professionals to reap the maximum benefits form this technology in a simple, easy to follow and applicable manner.



Niranjan Shendurnikar is a former Associate Professor of Pediatrics, Medical College, Baroda, Gujarat, India. Currently, he is working as Consultant Pediatrician at Ankur Children Hospital, Vadodara, Gujarat, India and DNB Course Coordinator of Pediatrics at KG Patel Children Hospital, Vadodara, Gujarat, India. He has authored several articles in medical scientific journals and also chapters in pediatric books for the undergraduate and postgraduate medical students. Along with Dr Naveen Thacker, he has co-authored several booklets on vaccines and polio eradication strategies earlier. He has been awarded the Fellowship of Indian Academy of Pediatrics (FIAP) for his contributions towards the child healthcare.



Naveen Thacker is a Consultant Pediatrician at Deep Children Hospital and Research Center, Gandhidham, Gujarat, India. He was the President of the Indian Academy of Pediatrics (IAP) in the year 2007. He is also President of Asia Pacific Pediatric Association for year 2016–18. He is a board member of Global Alliance for Vaccines and Immunization (GAVI), Coordinator of Development in International Pediatric Association (IPA) and also a Member of Technical Advisory Group on Immunization of IPA. He is the recipient of several awards including the Outstanding Asian Pediatrician Award, FIAP and Rotary International Regional Award for Polio Free World. He is well-known for his work for Polio Eradication and Pulse Polio Campaign. He is a faculty for The India Vaccinology Course (INDVAC) from 2010 onwards. He was first to design and implement Basic Newborn Care and Resuscitation Program in India, biggest ever Child Survival Project in the world.



Manoj Ambwani is a Consultant Pediatrician in Ideal Clinic & Nursing Home for last twenty five years at Vadodara, Gujarat, India. He is a pioneer in the use of computers in the field of clinical and medical sciences for more than two decades. He is presently the Secretary of Computer and Medical Informatics Chapter of Indian Academy of Pediatrics (IAP). He is also actively associated and attached with Disha Special School & Autism Center.



Bakulesh M Chauhan is a Consultant Pediatrician in Manav Hospital at Vadodara, Gujarat, India. He is also attached as Consultant and Co-coordinator of DNB Pediatrics at Kashiben Gordhandas Patel Children Hospital, Vadodara, Gujarat, India. Being a holder of postgraduate diploma in Adolescent Pediatrics, he is passionate in teenage counseling. He also goes to lots of school for taking guest lecture on different issues of Teenage and Parenting. He is also interested and involved in different nursing teaching programs. He is President (2016-17) of Indian Medical Association (IMA), Vadodara, Gujarat, India.

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