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Standard Guide for Medical Transcription Workstations[1]

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1. Scope

1.1 This guide identifies ways to improve the medical transcription workstation, including, but not limited to, the work environment, which encompasses ergonomics and security issues, equipment, references, and tools.

1.2 This guide will assist healthcare managers, vendors, medical transcription service owners, and individual medical transcriptionists to make informed decisions related to the design of an efficient medical transcription work environment compliant with federal regulatory agencies.

1.3 This guide does not address the medical transcription process or training.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E1130 Test Method for Objective Measurement of Speech Privacy in Open Plan Spaces Using Articulation Index

E1869 Guide for Confidentiality, Privacy, Access, and Data Security Principles for Health Information Including Electronic Health Records

E1902 Specification for Management of the Confidentiality and Security of Dictation, Transcription, and Transcribed Health Records (Withdrawn 2011)[3]

E1988 Guide for Training of Persons who have Access to Health Information (Withdrawn 2007)[3]

E2117 Guide for Identification and Establishment of a Quality Assurance Program for Medical Transcription

2.2 *Ergonomic Resources:*

Office Ergonomics Training: www.office-ergo.com[4]

National Institutes of Health—Division of Occupational Health and Safety: http://dohs.ors.od.nih.gov/ergo_computers.html[5]
http://dohs.ors.od.nih.gov/ergonomics_home.html[5]

Department of Health and Human Services—Centers for Disease Control and Prevention: www.cdc.gov/od/ohs/ergonomics/compergo.html[6]

Backrelief.com: www.backrelief.com/prevention/work_erg.html[7]

HealthyComputing.com: www.healthycomputing.com[8]

Occupational Safety and Health Administration: www.osha.gov[9]

Cornell University Ergonomics: http://ergo.human.cornell.edu/CUVDTchecklist.html[10]

2.3 *HIPAA Resources:*

Public Law 104-191 Health Insurance Portability and Accountability Act of 1996 (HIPAA)

American Association for Medical Transcription, HIPAA for MTs, July 2005

Guide to HIPAA Privacy Rule, Lippincott Williams & Wilkins, 2006

3. Terminology

3.1 *Definitions:*

3.1.1 *color temperature*—a scale used to express the content of the color of a light source.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Office Ergonomics Training, Ankrum Associates, 949 Lake Street, 3-G, Oak Park, IL 60301.

[5] National Institutes of Health, Division of Occupational Health and Safety, Building 13, Room 3KO4, 13 South Drive, MSC 5760, Bethesda, MD 20892-0003.

[6] Department of Health and Human Services, Centers for Disease Control and Prevention, Public Inquiries/MASO, Mailstop E11, 1600 Clifton Road, Atlanta, GA 30333.

[7] Backrelief.com, Wyeth Consumer Healthcare Inc., 5975 Whittle Road, Mississauga, Ontario, L4Z 3M6.

[8] HealthyComputing.com, Inc., 9245 Regents Road, Suite 324, LaJolla, CA 92037.

[9] Available from Occupational Safety and Health Administration (OSHA), 200 Constitution Ave., NW, Washington, DC 20210, http://www.osha.gov.

[10] Cornell University Ergonomics, Professor Alan Hedge, PhD, FErgS, AFBPsS, Dept of Design & Environmental Analysis, College of Human Ecology, Cornell University, MVR Hall, Forest Home Drive, Ithaca, NY 14853-4401.

3.1.2 *desk*—a furniture form and class of table for writing or keyboarding. This may include a computer cart, PC stand or other types of furniture products that support keyboarding.

3.1.3 *ergonomics*—the engineering science concerned with the physical and psychological relationship between machines and the people who use them.

3.1.4 *light intensity*—the amount of light given off by a light source.

3.1.5 *seat pan*—the seat surface of the chair that supports the majority of the user's weight.

3.1.6 *task lighting*—task lighting increases light levels over the work and immediate surroundings.

3.1.7 *workspace*—the area where work is generally performed.

3.1.8 *workstation*—an area outfitted with equipment and furnishings. This may include, but is not limited to, desk, chair, printer stand, computer, monitor, bookcases, equipment, storage, etc.

3.1.9 *work surface*—the space available on a desk.

3.2 *Acronyms:*

3.2.1 *AAMT*—American Association for Medical Transcription

3.2.2 *AHIMA*—American Health Information Management Association

3.2.3 *BOS*—AAMT book of style

3.2.4 *HIPAA*—Health Insurance Portability and Accountability Act

3.2.5 *MT*—medical transcriptionist

3.2.6 *MTSO*—Medical Transcription Service Organization

3.2.7 *NIH*—National Institutes of Health

3.2.8 *OSHA*—Occupational Safety and Health Administration

3.2.9 *PHI*—protected health information as defined by HIPAA in its Privacy and Security Rule regulations

4. Significance and Use

4.1 This guide provides recommended guidelines for the essential elements to be included in the design and implementation of an efficient, secure, risk-free work environment for medical transcription and health information documentation.

4.1.1 Improve and increase production.

4.1.2 Reduce healthcare costs by minimizing injury/illness.

4.1.3 Increase retention and professional longevity.

4.1.4 Ensure regulatory compliance with state and local government requirements as well as federal privacy and security regulations.

5. Workstation Environment

5.1 *Location*—Place workstation in a secure and quiet environment with limited access, free from interruptions from nonwork-related activities. This should not be in any public area, such as waiting rooms within physician offices or family rooms within a home environment. The work area should be large enough to allow full range of motion involved in performing required tasks, and provide room for the equipment and materials that make up the workstation.

5.1.1 Organize the desktop so that frequently used objects are close to the user to avoid excessive extended reaching.

5.1.1.1 Avoid overcrowding computer work areas.

5.1.1.2 Control climate to proper temperature, humidity, ventilation, and absence of drafts.

5.1.1.3 Allow adequate space to accommodate ventilation and electrical/connectivity access.

5.1.1.4 Secure cables, cords, and phone lines.

5.1.2 The office location should be in a secured area that will limit access to PHI by others. (See Specification E1902.)

5.1.2.1 Either an office with a door that can be locked.

5.1.2.2 Or an area that is accessed only by the MT with the computer facing away from view by passers by.

5.1.2.3 Locate monitors and desktops away from windows and traffic areas to ensure the security of PHI.

5.1.2.4 Safeguards should be in place to prevent voice files from being overheard by unauthorized individuals. (See Test Method E1130.)

5.2 *Lighting*—Lighting can enhance or detract from the quality of work and overall productivity. Illumination by hyperbolic florescent lighting is preferable. Proper lighting, without glare and shadows, can reduce eye fatigue and headaches.

5.2.1 Avoid intense or uneven lighting as high illumination may "wash out" images on the display screen, so illumination levels should be fairly low. Options for reducing illumination include the use of appropriate lighting fixtures, installation of variable lighting, or turning off overhead lights. (See CDC.)

5.2.2 Adjust lighting to avoid direct glare on the computer monitor. Soften the back light on the computer screen to avoid excessive brightness and eye fatigue. Adjust drapes and blinds to reduce glare. Position desk lamp if used so that it illuminates source documents without causing either glare on the computer screen or direct illumination to eyes.

5.2.3 All light bulbs should have the same color temperature. Use indirect or shielded lighting where possible to avoid uneven lighting.

5.2.4 Use task lighting as needed.

5.3 *Flooring*—Unobstructed, stable, and static-free flooring or mats are recommended.

5.3.1 Keep wires, cords, and cables out of the traffic area and secured in a fashion so that they cannot be easily dislodged.

5.3.2 Flexible cords should be connected to devices and fittings so that strain relief is provided in order to prevent pull.

5.4 *Color*—Color can play a key role in mood, enhancing or detracting from concentration.

5.4.1 Keep the color of the workstation area a neutral, glare-resistant matte finish. Softer, lighter colors should be used to better reflect indirect lighting and reduce dark shadows and contrast.

6. Workstation

6.1 *Desk*—The desk is a key component of the workspace. It supports equipment, references, and can enable efficiencies

of tasks. A properly designed and adjusted desk provides an ergonomically-correct work environment. (See HealthyComputing.com and Guide E2117.)

6.1.1 Dependent upon the user, the desk height should be between 20 to 28 in. high.

6.1.2 Provide stable, height-adjustable keyboard/mouse tray system beneath the work surface.

6.1.3 Use a matte finish on the work surface to minimize glare and reflections.

6.1.4 Select a desk with rounded desktop edges or pad the edges to avoid contact stress.

6.1.5 Arrange the desk so there is space to access cords or cables and allow ventilation.

6.1.6 Provide adequate storage and shelving for needed work and reference materials.

6.1.7 Use a document holder if documents are referred to while transcribing.

6.1.7.1 The document holder should be stable and adjustable (height, position, distance, and angle of view).

6.1.7.2 The document may be supported on either side of the monitor at the same distance from the eyes as the display screen to avoid frequent changes of focus without moving the neck or back.

6.1.8 Keep area underneath the desk uncluttered. There should be adequate legroom to allow the MT to stretch out and prevent sitting with the legs in a fixed position for long periods. Cables should be secured so that they do not become dislodged.

6.1.9 Use of an adjustable foot rest is recommended.

6.2 *Chair*—A properly designed and adjustable chair provides appropriate support to the back, legs, buttocks, and arms. Adequate support can reduce contact stress, overexertion, and fatigue and allow for proper circulation to the extremities. The correct adjustment of the chair is related to the proper placement of the monitor, keyboard, mouse, and work surface.

6.2.1 Don't stay in one static position for extended periods of time.

6.2.2 When performing daily tasks, alternate between sitting and standing at regular intervals.

6.2.3 Adjust the height of the backrest to support the natural inward curvature of the lower back.

6.2.3.1 It may be useful to use a rolled towel or lumbar pad to support the lower back.

6.2.3.2 The backrest angle should be set so that the hip-torso angle is 90° or greater.

6.2.4 Choose a seat pan and backrest to support a comfortable posture that allows for frequent changing of the seating position. Proper size, shape, or choice of material for the seat and backrest results in even weight distribution, reduced stress, and promotes circulation of the extremities and good posture. (See OSHA.)

6.2.4.1 Select a seat pan to accommodate the user. It should be padded and have a rounded edge in order to reduce contact stress to the back of the legs.

6.2.4.2 Choose a seat pan with an adjustable tilt to assure the worker is able to maintain proper support in different positions.

6.2.5 *Chair Height Adjustment:*

6.2.5.1 Adjust chair height so that the entire soles of the feet can rest on the floor or a footrest, and the backs of the knees are slightly higher than the seat of the chair. This position allows blood to circulate freely in the lower extremities. (See NIH.)

6.2.5.2 Position trunk and upper legs to form an angle of 90°.

6.2.5.3 Use a footrest if the soles of the feet do not rest flatly on the floor.

6.2.5.4 Ensure adequate space between the tops of the thighs and the underside of the keyboard tray or work surface.

6.2.6 Use a wide-based pedestal for stability and casters that move smoothly for mobility.

6.2.7 Sit upright in the chair with the lower back and shoulders against the backrest.

6.2.8 Thighs should be parallel to the floor and knees at about the same level as the hips.

6.2.9 Backs of the knees should not come in direct contact with the edge of the seat pan (there should be 2 to 3 in. between the edge of the seat and the back of the knee).

6.2.10 Adjust height and/or width of armrests so they allow the user to rest arms at their sides and relax/drop their shoulders while keyboarding. (See NIH.)

6.2.10.1 Where armrests are used, elbows and lower arms should rest lightly so as not to cause circulatory or nerve problems.

6.2.10.2 Do not use armrests to slouch.

7. Equipment

NOTE 1—Equipment includes the monitor, keyboard, computer, peripherals, software, and network interface as applicable. When in a network situation, the computer should have the stand-alone option available when needed.

7.1 *Monitor*—The monitor placement is important in creating a comfortable workstation in order to reduce awkward head and neck postures, fatigue, eyestrain, and/or headaches. Position the monitor directly in front of the user to avoid excessive twisting of the neck. A display screen that is placed too high or too low or placed to the side may, over time, cause awkward postures and increased stress of the muscles of the neck, shoulders, and upper back.

7.1.1 The computer screen should be positioned so the top of the screen is slightly below eye level. When the screen is too low, the neck is forced to flex or bend forward. (See Backrelief.com.)

7.1.1.1 Bifocal and trifocal wearers should lower the computer monitor or purchase glasses specifically designed for working at the computer. Wearers of bifocals and trifocals often unknowingly tilt their heads backwards so they can read the screen through the lower portion of their glasses.

7.1.1.2 Divert eyes from the computer screen every 20 min to avoid staring and eye strain. (See Office Ergonomics Training.)

7.1.2 Comfortable viewing distance should be 18 to 24 in. from the user. Viewing distances that are too long or too short can cause eyestrain. Comfortable viewing distance will vary proportionally to the size of the monitor. Tilt the top of the monitor back 15 to 35°.

7.1.3 Position the viewing screen away from direct lighting, which creates excessive glare, or use a glare-blocking device.

7.1.4 The monitor should swivel horizontally and tilt or elevate vertically, which enables the user to select a comfortable viewing angle. A monitor riser may be used for this purpose.

7.1.5 Make sure the surface of the viewing screen is clean.

7.1.6 Adjust brightness, contrast, and color for optimal viewing comfort.

7.1.7 Benefits of LCD monitors versus CRT monitors.

7.1.7.1 Use less space on the work surface.

7.1.7.2 Reduced glare.

7.1.7.3 Improved image quality.

7.1.7.4 Some are easier to position.

7.2 *Keyboard and Mouse/Trackball/Touchpad*—The proper position of the keyboard and mouse is essential in creating a comfortable workstation. Consideration of the following factors can help prevent musculoskeletal disorders such as carpal tunnel syndrome and tendinitis.

7.2.1 Forearms should form a 90° angle with upper arms. Wrists should be kept in a straight and neutral position.

7.2.2 Adjust height of keyboard so shoulders can relax and allow arms to rest at sides.

7.2.3 Position the keyboard directly in front of and close to the user to avoid excessive extended reaching.

7.2.4 Use a negative-tilt keyboard position. (See Cornell University Ergonomics.)

7.2.5 Mouse should be placed adjacent to the keyboard and at the same height as the keyboard.

7.2.6 Avoid extended and elevated reaching when using the mouse.

7.2.7 A padded wrist rest may allow the individual to keep forearms, wrists, and hands in a straight and neutral position when using the keyboard or mouse.

7.2.8 A smooth-surfaced mouse pad should be used.

7.3 *Computer*—The computer hardware must have adequate capabilities as required.

7.3.1 Adequate RAM (random access memory).

7.3.2 Adequate processor (speed and type).

7.3.3 Adequate hard disk capacity.

7.3.4 Sound card compatible with application requirements.

7.3.5 Adequate ports (USB).

7.3.6 NIC (network interface card).

7.3.7 Removable media device, for example

7.3.7.1 CD drive

7.3.7.2 DVD drive

7.3.8 The computer should be located in a well-ventilated and dust-free area to prevent overheating. A smoke-free area may also be beneficial.

7.3.9 The computer should be in a secured environment to prevent theft, tampering, or inappropriate access. (See Guide to the HIPAA Privacy Rule.)

7.3.10 Due to the rapid advancement in technology, all systems should be periodically evaluated for updates.

7.4 *Peripherals,* as applicable:

7.4.1 UPS (uninterruptible power supply).

7.4.2 Surge protector (for computer, peripherals, modems, cable and telephone lines).

7.4.3 Internet and VPN connectivity devices.

7.4.3.1 Modems (DSL, cable, dial-up).

7.4.3.2 Router with firewall.

7.4.3.3 T1 line.

7.4.3.4 ISDN line.

7.4.4 Backup device/drive for removal media.

7.4.5 Headset (stereo delivery).

7.4.5.1 Volume amplifier.

7.4.5.2 Noise canceling.

7.4.6 Speakers.

7.4.6.1 Volume control.

7.4.6.2 Headset jack.

7.4.7 PC-compatible foot pedal/accommodative device.

7.4.7.1 Rewind.

7.4.7.2 Play.

7.4.7.3 Fast forward.

7.4.8 Printer of adequate speed.

NOTE 2—Employers may not allow printing capability due to the security of PHI as protected under HIPAA regulations.

7.4.9 Fax, programmable for speed dialing.

7.4.10 Scanner of adequate resolution.

7.4.11 Keyboard compatible with computer connection.

7.4.11.1 Ergonomic.

7.4.11.2 Wireless.

7.4.11.3 Wired.

7.4.11.4 Braille.

7.4.11.5 Dvorak.

7.4.11.6 QWERTY.

7.4.12 Mouse compatible with computer connection.

7.4.12.1 Wired.

7.4.12.2 Wireless.

7.4.12.3 Trackball/wheel.

7.4.12.4 Stick.

7.4.12.5 Touchpad.

7.4.13 Monitor (see 7.1) compatible with computer connection.

7.4.14 USB hub (highest speed available).

7.4.15 Security.

7.4.15.1 Password Token, Smart Card or Device.

7.4.15.2 PC locks.

7.4.15.3 Privacy filters for PC screens.

7.4.15.4 Biometric device identifier.

7.5 *Voice Delivery and Access*—There are multiple ways recorded voice can be accessed and/or delivered. Although the most common categories for voice technologies are analog and digital, there are also combinations of these technologies that will allow analog devices to be used to access digital voice recordings and vice versa.

7.5.1 *Analog*—Desktop transcriber that plays appropriate sized tape or voice that is accessed through a remote transcribe station (that is, through a telephone line).

7.5.1.1 Speed control.

7.5.1.2 Play or rewind.

7.5.1.3 Auto back space.

7.5.1.4 Volume.

7.5.1.5 Tone.

7.5.2 *Digital*—Voice that is delivered through removal media or accessed and/or delivered through a secure connection (that is, VPN).
7.5.2.1 Speed control.
7.5.2.2 Play or rewind.
7.5.2.3 Auto back space.
7.5.2.4 Volume.
7.5.2.5 Tone.

7.6 *Telephone*—Use a headset or speaker to avoid neck and shoulder discomfort when using the phone frequently throughout the day. A land line is preferred due to the security (cell phones are not secure) if PHI is being discussed. Note: Care should be taken when using call waiting, call forwarding, speaker function, and conferencing features to avoid a breach of confidentiality if PHI is being discussed.
7.6.1 Headset, wired or encrypted wireless.
7.6.2 Caller ID.
7.6.3 Answering machine.
7.6.4 Voice mail with password protection.

7.7 *Shredder*—Use for discarding paper containing PHI. Cross-cut shredders are preferred.

7.8 *Smoke Detector*—Have a functional smoke detector/alarm present in the workstation area.

7.9 Have a fire extinguisher accessible near the work area.

7.10 *Locked Fire-Proof Safe*—For short-term storage of any backup media or papers containing PHI, and to protect any access of this material by unauthorized individuals, place all PHI in a locked, fire-proof container. (See HIPAA for MTs.)

8. Tools and References

8.1 *Software*—Updates should be maintained to match operating system. Upgrade as necessary and as applicable.

NOTE 3—Propriety software may package one or more of the following applications.

8.1.1 Word processing.
8.1.1.1 Compatible for interfacing, as applicable.
8.1.1.2 Capable of converting to ASCII text.
8.1.1.3 Shortcut keys for basic formatting and document navigation.
8.1.1.4 Compatible with some type of macro/abbreviation/word/text expander program.
8.1.1.5 For vision-impaired, it must be fully keyboard compatible.
8.1.2 Spellchecker.
8.1.2.1 English.
8.1.2.2 Medical.
8.1.3 Electronic references and resources (optional if printed versions are available).
8.1.3.1 Medical Dictionary.
8.1.3.2 Pharmaceutical.
8.1.3.3 Specialty Word Lists/Books.
8.1.3.4 Websites, some examples include:
(1) Pharmaceutical.
(2) Manufacturer.
(3) Teaching institutions.
(4) NIH.
(5) CDC.
(6) NLM.
(7) Medline.
(8) WebMD.
(9) Use caution with bulletin boards and search engines.
8.1.4 Grammar checker.
8.1.5 Macro/abbreviation/word/text expanders.
8.1.6 Virus protection.
8.1.7 Malware protection.
8.1.7.1 Spyware.
8.1.7.2 Adware.
8.1.7.3 Trojans.
8.1.7.4 Keystroke loggers.
8.1.7.5 Cookies.
8.1.8 Counting programs to measure production.
8.1.9 Media player for digital voice files and compatible with footpedal.
8.1.10 Accounting programs, as applicable.
8.1.11 Security.
8.1.11.1 Encryption. (See Guide E1869.)
8.1.11.2 Firewall.
8.1.11.3 System password. (See Guide E1988.)
8.1.11.4 Automatic log off, as applicable.
8.1.11.5 Password-protected screensaver.
8.1.12 Backup for system and current work.
8.1.13 Digital file shredder.
8.1.14 Communication/Connectivity.
8.1.14.1 Internet browser and email client software.
8.1.14.2 Fax.
8.1.14.3 Networking.
8.1.14.4 VPN, FTP, etc.
8.1.14.5 Wireless (WiFi, Bluetooth).
8.1.15 Speech recognition technology, as applicable.
8.1.16 Electronic templates, as applicable.
8.1.17 Screen readers for vision impaired, as applicable.

8.2 *References:*
8.2.1 Printed references.
8.2.1.1 Books.
8.2.1.2 Industry publications.
8.2.1.3 Periodicals.

9. Keywords

9.1 connectivity; ergonomics; HIPAA; medical transcription; medical transcriptionist; peripherals; security; workstation