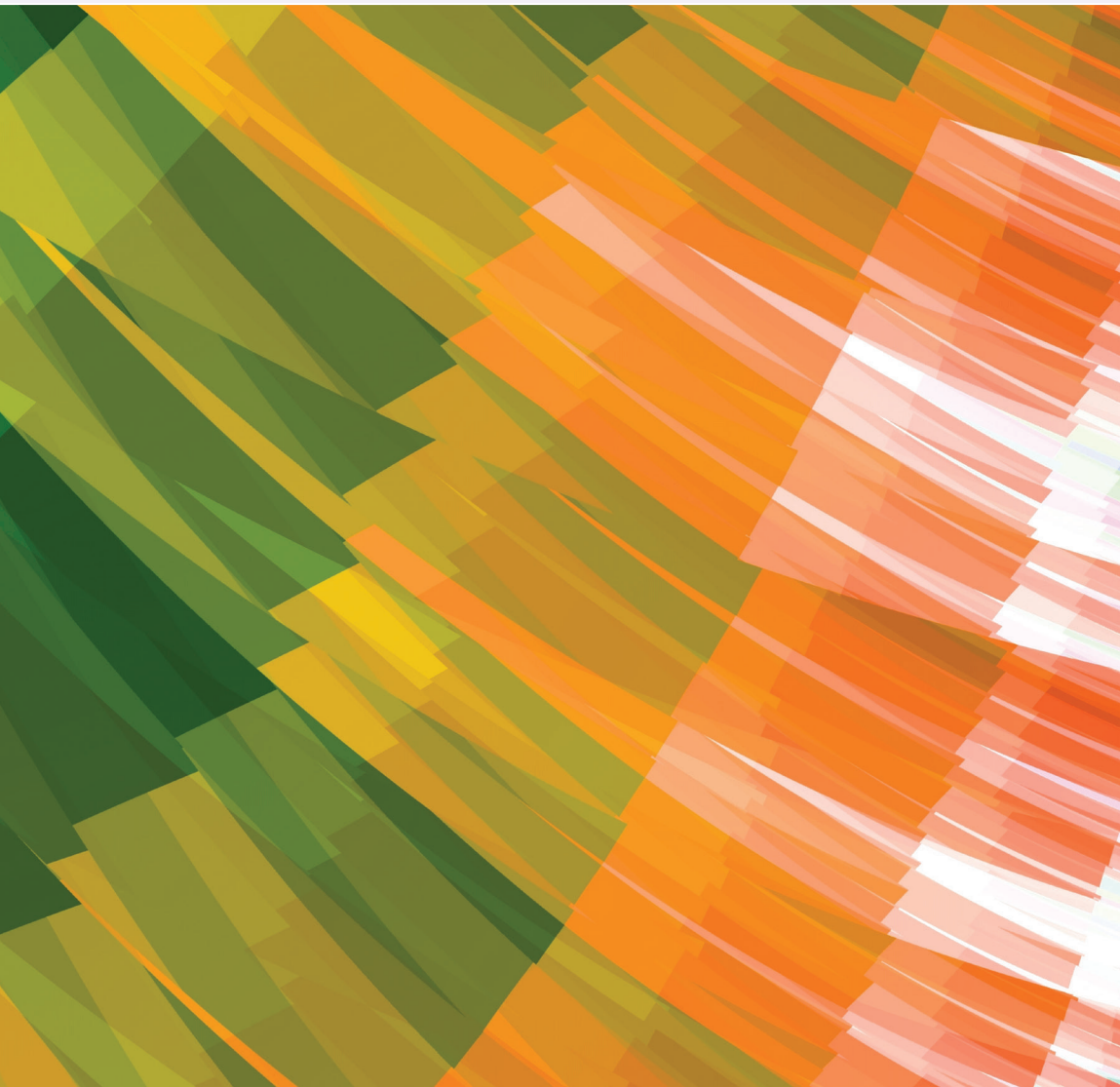
THIRD EDITION

Kathy Cikulin-Kulinski

PHYSICAL THERAPY CLINICAL HANDBOOK

for PTAs



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Dedication

To Tim, Charleigh, and Alyssa for your patience, support, encouragement, and love

To Dad, Mom, and Nick for always believing in me and giving me a solid foundation to build upon

Contents

Preface

Welcome to the third edition of *Physical Therapy Clinical Handbook for PTAs*.

This text is designed as a reference for a diverse audience including the PTA graduate, the second-year PTA student, PTA faculty, clinical instructors who mentor PTA students throughout their clinical field work, as well as veteran PTAs who are interested in staying abreast of the most current information and guidelines for treatment.

The *Third Edition* espouses and embraces the inclusion of evidence-based intervention choices into clinical practice in alignment with the American Physical Therapy Association. The role of the PTA and the implications related to interventions provided by the PTA in a variety of clinical settings are considered and incorporated throughout this edition. With the changing healthcare environment, it is imperative that the PTA has the strongest skill set available to make sound clinical judgements while incorporating evidence-based interventions to optimize functional outcomes that are expected in our profession today. This is reinforced throughout the text by use of ICF terminology linking with evidenced-based intervention choices to address impairments related to functional activities and participation restrictions.

This handbook strives to fortify the PTA's understanding with its expanded sections on Medicare guidelines for treatment by a PTA, enhanced documentation guidelines related to traditional and electronic medical recording, an expanded integumentary section, and medication tables relative to systemic pathologies.

The text remains divided into nine parts, followed by appendices which include two sample balance assessment tools, the Borg Scale of Rating of Perceived Exertion, and three patient education samples for lymphedema, skin care, and diabetic foot care. Finally, new supplemental slides in PowerPoint format are available to instructors.

Benefits and Additional Resources

This edition strives to maintain and build on the benefits offered by prior editions, including the following:

- Tabbed sections for easy referencing
- Easy-to-read tables
- Inclusion of clinical pearls for the PTA
- Updated pictures for manual muscle testing, range of motion, PNF, and developmental sequences

Slides in PowerPoint format are now available to instructors. These slides can be used by the Director of Clinical Education for remediation purposes, the Clinical Instructor as an additional means for assessing a student's understanding or for the classroom instructor to solidify current concepts. Lastly, the slides can be utilized as a

potential adjunct for the hybrid classroom, as they can be used as a pre-lecture tool so that classroom time can focus on the interventions associated with the topic presented in the slides.

New to this Edition

The following changes have been incorporated into this edition:

- Medication tables for common pathologies associated with the four main systems identified in the APTA's *Guide to Physical Therapist Practice 3.0* (Musculoskeletal, Neurological, Integumentary, and Cardiopulmonary) have been incorporated into the text.
- Part 1, "Safety in the Clinical Environment," discusses the role of the PTA and the PT/PTA relationship and includes an expanded section on domestic violence and elder abuse.
- Part 2, "Clinical Documentation," includes Electronic Medical Recording (EMR) guidelines incorporating HIPAA and security measures, documentation pearls for the PTA with inclusion of ICF terminology, and APTA's defensible documentation guidelines.
- Part 3, "Musculoskeletal Interventions," includes updated pictures for manual muscle testing and range of motion, medication tables for musculoskeletal pathologies, greater differentiation between tendinosis and tendinitis pathologies, and lastly, the addition of a prosthetic wear time schedule.
- Part 4, "Neurologic Interventions," now includes a medication table for neurologic conditions and a table for orientation terminology.
- Part 5, "Cardiopulmonary Interventions," features new medication tables for common cardiovascular and pulmonary conditions.
- Part 6, "Integumentary Interventions," is the most heavily revised chapter in this edition and now boasts tables for medications related to wound management, pictorial illustrations of cancerous skin lesions and vascular ulcerations, dressing choices for wound care management, and documentation pearls associated with wound care.
- Part 7, "Geriatric Interventions," incorporates the levels of supervision for the PTA with the Medicare patient, an explanation of Medicare Part C and D, general considerations for common geriatric-related conditions, and pearls for treatment for the PTA.
- Part 8, "Pediatric Interventions," is updated to include medication tables for commonly treated pediatric conditions.
- Part 9, "Basic Acute Care Physical Therapy Interventions," has expanded to include not only basic acute care principles of treatment for the musculoskeletal, neurological, or other systems special considerations, but also kyphoplasty considerations in the Spinal Surgery Procedures and Precautions section.
- Four supplemental slides in PowerPoint format designed to augment classroom discussion and/or topics of interest for the PTA are now available and offer coverage of Balance and Falls, Pressure Injuries (Wound Management), Achilles Tendinopathy, and Parkinson's Disease.

Acknowledgments

To Olga Dreebin-Irimia for all her hard work and dedication to making the first two editions of this book a valuable resource for PTA students and clinicians alike, and for providing such a great foundation to build upon. Thank you.

To my Fox College colleagues Carol Fawcett, Monique Flemings, Kerrie Geovanes, Lisa Krog, and Linda Stampley, along with my colleagues at AthletiCo, for their guidance, expertise, and support with this endeavor! I am truly blessed to be associated with such great examples of those who love this awesome profession of physical therapy and who are always selflessly paying it forward!

About the Author

Kathy Cikulin-Kulinski, PT, DPT, OCS has been practicing the healing art of physical therapy for 30 years. She started her career as a PTA and has continued on this lifelong journey, obtaining her Masters in Physical Therapy from Nova Southeastern University and, most recently, her Doctorate of Physical Therapy from the University of Montana in 2015. Ms. Cikulin-Kulinski is also a Board Certified Orthopaedic Clinical Specialist and an LSVT Big™ Certified Clinician. Ms. Cikulin-Kulinski's training has encompassed most settings including acute care, skilled nursing, and home health care, but she has spent the majority of her career in the out-patient orthopaedic rehabilitation setting. Currently, Ms. Cikulin-Kulinski is an educator at Fox College for their PTA program and a part-time clinician for AthletiCo Physical Therapy.

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Part 1

Safety in the Clinical Environment

SECTION 1-1

Physical Therapist and Physical Therapist Assistant Relationship

The Collaborative Path Between the PT and the PTA[1]

- The physical therapist (PT) performs an initial examination of the patient. The physical therapist assistant (PTA) helps the PT with the initial examination, gathering specific data that the PT requested. The PTA accepts the delegated tasks within the limits of his or her capabilities and considering legal, jurisdictional, and ethical guidelines.
- The PT evaluates the results of data collection and makes a judgment about data value. The PTA does not interpret the results of the initial examination.
- The PT establishes the goals or outcomes to be accomplished by the plan of care and the treatment plan.
- The PT performs the patient's interventions. The PTA performs the patient's selected interventions as directed by the PT.
- The PTA may perform data collection during the course of the patient's interventions to record the patient's progress or lack of progress since the initial examination and evaluation. The PTA may ask the PT for a reexamination.
- The PT performs the reexamination and establishes new outcomes and a new treatment plan.
- The PT performs the patient's new interventions. The PTA performs the selected patient's new interventions as directed by the PT.
- The PT performs the discharge examination and evaluation of the patient.

PTA Duties (as per the American Physical Therapy Association)

Table 1-1 PTA Duties[2]

- Perform selected physical therapy interventions under the direction and at least the general supervision of the PT. The ability of the PTA to perform the selected interventions as directed shall be assessed on an ongoing basis by the supervising PT.
- Make modifications to selected interventions either to progress the patient as directed by the PT or to ensure patient safety and comfort.
- Document the patient's progress.
- Perform routine operational functions, including direct personal supervision, where allowable by law, of the physical therapy aide and the PTA student and other personnel.

The PTA's Clinical Considerations During Interventions[1]

- The complexity, criticality, acuity, and stability of the patient
- The accessibility to the PT
- The type of setting where services are provided
- Federal and state statutes
- The available PT supervision in the event of an emergency
- The mission of physical therapy services for that specific clinical setting
- The needed frequency of reexamination

SECTION 1-2

Patient Communication

General Recommendations for Verbal Communication

Table 1-2 General Recommendations[1]

- Verbal commands should focus the patient's attention on specifically desired actions for intervention.
- Instructions should remain as simple as possible and must never incorporate confusing medical terminology.
- The general sequence of events should be explained to the patient before initiating the intervention.
- The PTA should ask the patient questions before and during the intervention to establish a rapport with the patient and to provide feedback on the status of the current intervention.
- The PTA should speak clearly in moderate tones and vary his or her tone of voice as required by the situation.
- The PTA should be sensitive to the patient/client's level of understanding and cultural background.

Methods of Effective Patient Communication[1]

- Greet the patient and provide a nonthreatening environment for the patient so that he or she feels welcome and valued.
- Display sensitivity to cultural influences through the careful selection of words and actions.
- When introducing yourself to the patient, position yourself to greet the patient at eye level.
- Be aware of cultural differences when establishing eye contact with the patient, as this behavior may not be appropriate in some cultures.
- Introduce yourself by stating your name and title, and refer to the patient by his or her last name and title. Avoid using first names, and do so only if deemed appropriate by the patient. Ask the patient which name he or she would prefer that you use when addressing the patient to avoid offending and showing disrespect for the patient.
- Explain to the patient your role in the therapeutic relationship.
- Inform the patient what you plan to do initially.
- Advise the patient in regard to options for therapeutic interventions. If more than one option is available, share possibilities and invite the patient's input.
- Obtain informed consent from the patient for the intervention that is to be rendered.
- Advise the patient about the intervention's effects, indications, contraindications, and alternatives.
- Actively involve the patient in the intervention by determining the patient's participation during and after the intervention.
- Respond to the patient's questions and concerns throughout interactions.
- Promote patient autonomy and responsibility throughout interactions.

Informed Consent

Table 1-3 Intervention Elements of Informed Consent for the Patient[1]

- Clear description of the proposed intervention
- Reasonable alternatives to the proposed intervention
- Risks, benefits, and concerns of the proposed intervention
- Assessment of patient understanding
- Patient's acceptance of the intervention

Methods of Effective Listening[1]

- The PTA focuses his or her attention on the patient.
- The PTA helps the patient to feel free to talk by smiling and looking at the patient.
- The PTA pays attention to the patient's nonverbal communication, such as gestures, facial expressions, tone of voice, and body posture.
- The PTA asks the patient to clarify the meaning of words and the feelings involved or to enlarge upon the statement.
- The PTA reflects the patient's message to confirm that he or she understands completely the meaning and the content of the message.
- The PTA takes notes as necessary to help remember or document what was said.
- The PTA uses body language such as nonverbal gestures (nodding the head, keeping eye contact, or keeping hands at side if culturally appropriate) to show involvement in the patient's message.
- The PTA does not abruptly interrupt the patient, giving him or her adequate time to present the full message.
- The PTA empathizes with the patient.

SECTION 1-3

Cultural Competence

General Methods to Increase Cultural Competence

Table 1-4 Methods[1] to Increase Cultural Competence

- Identify personal cultural biases (ethnocentrism) and personal values and beliefs.
- Understand general cultural differences.
- Accept, respect, and value cultural differences.
- Apply cultural understanding.

Guidelines to Cultural Competence

- Provide training to increase cultural awareness, knowledge, and skills.
- Recruit and retain minority staff.
- Provide interpreter services.
- Provide linguistic competency that extends beyond the clinical encounter to the appointment desk, advice lines, medical billing, and other written material.
- Coordinate evaluations and interventions with traditional healers.
- Use community health workers.
- Incorporate culture-specific attitudes and values into health promotion tools.
- Include family and community members in healthcare decision making.
- Locate clinics in geographic areas that are easily accessible for certain populations.
- Expand hours of operation.

Religious Beliefs and Health Concepts

Table 1-5 Selected Religious Beliefs and Health Concepts[3]

Patients/clients who are members of the Baha'i religious conviction essentially believe that "all healing comes from God." In regard to concepts of health, they have the following beliefs:

- Abortion is forbidden. Birth control is acceptable.
- Alcohol and drugs are forbidden.
- Medications can be used as necessary.
- Healing beliefs are that there is harmony between religion and science. No restrictions are placed on medical healing practices.
- Religious healing practices include prayer. Family and community members assist and support the patient/client.
- Organ donations are permitted.
- Surgical procedures are acceptable.
- Autopsy is not restricted if necessary (from a legal or medical perspective).

Patients/clients who are members of the Buddhist Churches of America religious conviction essentially believe that "to keep the body in good health is our duty—otherwise we shall not be able to keep our mind strong and clear." In regard to concepts of health, they have the following beliefs:

- Abortion is determined by the patient's condition. Birth control is acceptable.
- Food combinations are restricted, and extremes of diets must be avoided.
- Medications can be used as necessary.
- Healing beliefs are that people should not believe in healing through faith. No restrictions are placed on medical healing practices.
- Family and community members assist and support the patient/client.

(*continues*)

Table 1-5 Selected Religious Beliefs and Health Concepts[3] (continued)

- Organ donations are considered an act of mercy, and if there is a hope for recovery, all means may be taken.
- Surgical procedures are acceptable, avoiding the extremes.
- Autopsy is a matter of individual practice.

Patients/clients who are members of the Roman Catholic American religious conviction essentially believe that "the prayer of faith shall heal the sick, and the Lord shall raise him up." In regard to concepts of health, they have the following beliefs:

- Abortion is prohibited. Birth control is unacceptable.
- Food must be used in moderation.
- Medications may be taken if the benefits outweigh the risks. Healing beliefs vary depending on the regional religious belief system.
- No restrictions are placed on medical healing practices. Religious healing practices include the sacrament taken by the sick, praying by lighting candles, and having the priest perform a "laying on" of hands.
- Family, friends, the priest, and many outreach programs through the church are ready to assist and support the patient/client.
- Organ donations are permitted if are justifiable.
- Most surgical procedures are acceptable, except for abortion and sterilization.
- Autopsy is permissible.

Patients/clients who are members of the Christian Science religious conviction believe the following in regard to concepts of health:

- Abortion is prohibited, being incompatible with the faith. Birth control is a matter of individual judgment.
- There are no food restrictions except for alcohol, tobacco, and some tea and coffee.
- Medications are not permitted at all.
- Healing belief is that there is acceptance of physical and moral healing. No medical healing practices are permitted.
- Religious healing practices are permitted only when they are performed by full-time healing ministers. Also, spiritual healing practices are advocated. Family, friends, and church members (such as the Christian Science Community and the Healers and Christian Science Nurses) provide health care to the sick.
- Organ donations depend on the individual's decision.
- Surgical medical procedures are all prohibited.
- Autopsy is not a usual event, but may be decided by the individual and the family.

Patients/clients who are members of the Church of Jesus Christ of Latter Day Saints religious conviction believe the following in regard to concepts of health:

- Abortion is forbidden. Birth control is unacceptable, as it conflicts with the Mormon religious belief.
- Alcohol, tea (except for herbal teas), coffee, and tobacco are forbidden. Fasting (24 hours without food and drink) is required once a month.
- Medications are not restricted, but patients/clients may use herbal folk remedies.
- Healing beliefs state that the power of God can bring healing. Medical healing practices are permitted. Religious healing practices include anointing with oil, sealing, prayer, and "laying on of hands."
- Family, friends, church members (such as the Elder and the Sister), and the Relief Society help other church members in case of sickness.
- Organ donations are permitted.
- Surgical medical procedures are permitted, being a matter of individual choice.
- Autopsy is permitted with consent from the next of kin.

Patients/clients who are members of the Hinduism religious conviction essentially believe that "Enricher, Healer of disease, be a good friend to us." In regard to concepts of health, they have the following beliefs:

- There is no policy in regard to abortion. All forms of birth control are acceptable.

Table 1-5 Selected Religious Beliefs and Health Concepts[3] (continued)

- Eating meat is forbidden.
- Medications are acceptable.
- Healing beliefs vary. Some Hindus believe in medical interventions; others believe in faith healing. In terms of the regional religious belief system, no restrictions are placed on medical healing practices.
- Religious healing practice includes a traditional faith healing system. Family, friends, the priest, and the community provide support to the sick.
- Organ donations are permitted.
- Surgical procedures are acceptable. If a member needs an amputation, the loss of the limb is seen as a consequence of sins from a previous life.
- Autopsy is permissible.

Patients/clients who are members of the Islam religious conviction essentially believe that "the Lord of the world created me—and when I am sick, He healeth me." In regard to concepts of health, they have the following beliefs:

- Abortion is not permitted. Birth control is acceptable.
- Foods made with pork and those containing alcohol are forbidden.
- Medications are acceptable, except insulin, which may be refused if it is made from a porcine base (i.e., made from the pancreas of the pig).
- Medical interventions are acceptable. Faith healing generally is not acceptable, although some Muslims use it. In terms of the regional religious belief system, religious healing practices differ. Some Muslims use herbal remedies. Family and friends provide support to the sick.
- Organ donations are permitted.
- Most of the surgical procedures are permitted.
- Autopsy is permissible for medical and legal purposes.

Patients/clients who are members of the Jehovah's Witnesses religious conviction believe the following in regard to concepts of health:

- Abortion is forbidden. Birth control and sterilization are prohibited.
- Tobacco is restricted, and alcohol can be consumed in moderation.
- Medications are acceptable if are not derived from blood or blood products.
- Medical interventions are acceptable if they do not involve blood or blood products. Faith healing is forbidden.
- Religious healing practices involve reading the scriptures to comfort the individual and to lead to mental and spiritual healing. Members of the congregation and Elders pray for the sick.
- Organ donations are forbidden.
- Surgical medical procedures are not opposed, but the administration of blood during surgery is strictly prohibited.
- Autopsy is acceptable if it is required by the law.

Patients/clients who are members of the Judaism religious conviction essentially believe that "O Lord, my God, I cried to Thee for help and Thou has healed me." In regard to concepts of health, they hold the following beliefs:

- Abortion is therapeutically permitted, and some groups accept abortion on demand. Birth control is acceptable, except within Orthodox Judaism.
- Strict dietary laws prohibit mixing of milk and meat. Foods made with pork, meat of predatory animals, fowl, and shellfish are forbidden. Kosher products are required in the diet.
- Medications are not restricted. Medical interventions are expected.
- Religious healing practices include prayers for the sick. Family, friends, the rabbi, and many community services are available to provide support to the sick.
- Organ donations are not permitted, being a very complex issue. Nevertheless, some people of the Judaism conviction practice organ donations.
- Most surgical procedures are permitted.
- Autopsy is permissible under certain circumstances.

(*continues*)

Table 1-5 Selected Religious Beliefs and Health Concepts[3] (continued)

Patients/clients who are members of the Mennonite religious conviction believe the following in regard to concepts of health:

- Abortion is acceptable for therapeutic reasons. Birth control is acceptable.
- There are not specific dietary restrictions.
- Medications are not restricted.
- Healing beliefs are considered part of God's work. To pray for the sick is the common practice. Medical interventions are acceptable.
- Religious healing practices include prayers and anointing with oil. Family and the community are available to support the sick.
- Organ donations are acceptable.
- Surgical medical procedures are acceptable.
- Autopsy is acceptable.

Patients/clients who are members of the Seventh-Day Adventists religious conviction believe the following in regard to concepts of health:

- Abortion is acceptable for therapeutic purposes. Birth control is an individual choice.
- A vegetarian diet is encouraged.
- Medications are not restricted.
- Healing beliefs include the concept of divine healing. Medical interventions are permitted. Religious healing practices are anointing with oil and prayer. The family, the pastor, and the Elders pray and anoint the sick person.
- Worldwide, the Seventh-Day Adventist health system includes hospitals and clinics. Organ donations are permitted. Surgical medical procedures are permitted.
- Autopsy is acceptable.

Patients/clients who are members of the Unitarian/Universalist Church religious conviction believe the following in regard to concepts of health:

- Abortion is acceptable, is therapeutic, and can be offered on demand. All types of birth control are acceptable.
- Medications are not restricted. Healing beliefs are that faith healing is superstitious. Medical interventions are permitted.
- Religious healing practices are based on the belief that the use of science facilitates healing. Family, friends, and the church members support the sick. The pastor and the Elders pray and anoint the sick person.
- Organ donations are permitted.
- Surgical medical procedures are permitted.
- Autopsy is acceptable and recommended.

Note: The PTA is urged not to generalize from this guide but to show respect, sensitivity, and understanding to the individual patient/client.

Intervention Strategies Considering Cultural Diversity

Table 1-6 Intervention Strategies[1] Considering Cultural Diversity

When providing intervention to **Native American patients**, the therapist needs to recognize the importance of nonverbal communication.

- For example, for Navajo Native Americans, sustained eye contact when speaking directly with someone is rude and possibly confrontational, whereas avoiding eye contact is deemed a sign of respect.
- The therapist needs to focus on positive facial expressions without frowning or negative expression such as the flat affect.
- The therapist needs to address the older member of the family first, rather than the patient.
- Often, Native American patients observe the provider and say very little. They expect the provider to figure out their health problem through instinct rather than through the use of questioning.
- The conversation must be in a very low tone of voice. It is impolite to say, "I beg your pardon" or to imply that the communication was not heard.
- The therapist must speak with the patient or the older member of the family in a quiet setting. Note taking is taboo.
- The therapist needs to use memory skills and not to record patient's history on a writing pad. If the therapist needs to take patient history, he or she has to use a conversational approach while taking the history.
- Native American patients respond to interventions using silence; at other times, they leave and do not return.
- Consideration must be given to maintaining a very accessible, open schedule for the patient because time orientation is not a priority for Native American patients.
- Native American patients believe that health and wellness exist in a harmonious relationship with all other living things, including spirits.
- Problem solving and decision making are group experiences. Respected elders or the family have to make decisions about rehabilitation.

When providing interventions or administering tests and measures to **brown- or black-skinned patients**, the therapist is required (for safety purposes) to consider the patient's physiological and integumentary needs.

- For example, to identify pallor, the therapist should determine whether there is an absence of underlying red tones. The skin of the brown-skinned patient with pallor appears yellow-brown, whereas that of the black-skinned patient appears ashen-gray.
- Mucous membranes appear ashen, and the lips and nail beds show similar coloring.
- Erythema (redness) can be detected by palpation. The skin is usually warmer in the area, is tight, and is edematous, and the deeper tissues are hard.
- Cyanosis can be seen by close inspection of lips, tongue, conjunctiva (of the eyelids), palms of the hands, and the soles of the feet. One method of testing is pressing the palms. Slow blood return indicates cyanosis.
- Another sign is ashen-gray lips and tongue. Ecchymosis (superficial bleeding under the skin) from trauma can be detected by swelling of the skin surface.
- Keloids are scars that form at the site of the wound. Keloids appear on a wound that is highly elevated and irregular in shape, and that continues to enlarge.

When providing interventions to **African American patients**, the therapist should consider the patient's beliefs and practice of folk medicine. Physical therapy interventions can be combined with folk treatments as long as they are not antagonistic to each other.

- The patient's background, income, religious practices, and accessibility to health resources also need to be included in the list of considerations. For example, when suggesting an assistive device or an orthosis, the therapist must be familiar with formal and informal sources of help in the African American community.
- Including the patient's family in the rehabilitation process is essential to ensure the patient's motivation and positive outcomes. Because African Americans are verbally expressive, family members should be encouraged to discuss who will take responsibility as the primary caregiver.

(*continues*)

Table 1-6 Intervention Strategies[1] Considering Cultural Diversity (continued)

- The therapist should keep an open line of communication and be sensitive to the need of African American patients to operate within a family unit.

When providing interventions to **Asian American patients (including Pacific Islanders)**, the therapist should keep in mind the importance of communication and possible difficulties in communication. Many Asian American cultures value silence, such that talking too much can give a negative impression.

- Most East and Southeast Asian cultures emphasize respect and high consideration for authority. Consequently, patients from these cultural backgrounds will never disagree with or contradict the therapists.
- When patients cannot understand specific patient education topics, they may agree to follow through to "save face," and not to embarrass the authority figure (such as the healthcare provider).
- Patients try to avoid being disruptive and will agree to what is said so as not to be offensive.
- An interpreter can be used if the interpreter is able to understand the patient's dialect and regional language differences. Also, the interpreter's gender can be a problem if the interpreter is of the opposite gender and the patient is not comfortable sharing personal or intimate information with a stranger.
- As with any other patient, the therapist needs to establish a partnership with the Asian American patient. Having such a relationship will allow the patient to share information about use of alternative therapies and alert the therapist of any antagonist effects with medications or interventions.
- The therapist needs to help Asian American patients understand that they have a choice in making healthcare decisions. The patient or the patient family may make decisions based on family needs and not medical needs, also considering financial and/or physical hardship faced by the family.
- In regard to interventions, the therapist should include the patient's extended family and the environmental context in which the patient lives.
- The interventions may have to integrate the Asian American patient's values that differ from Western ideology. These values may include interdependence, social belonging, and agreement with the patient's illness-related conditions.

When providing interventions to **Hispanic American patients**, the therapist should consider the importance of nonverbal communication, the patient's practice of folk medicine, language barriers, time orientation issues, and the caregiver's practice of performing self-care or activities of daily living for the patient.

- Important customs include communication strategies such as a smile that expresses warmth and concern, arms relaxed at sides (not crossed), good eye contact (not to members of the opposite sex), shaking hands, and speaking first with the male patient or caregiver.
- The therapist must consider that common folk remedies for patients of Puerto Rican and Mexican backgrounds can be found in "botanicas"–stores that sell folk remedies such as herbs, potents, ointments, amulets, candles, medals, relics, and religious statues.
- A spiritualist may be present in the "botanica" and recommend certain herbs for the patient's illness.
- Other Hispanic American patients may visit a "santeria," a practitioner of Latin American magic who uses spirits to treat illness, or a "curandero," a traditional holistic healer.
- Physical therapy interventions can be combined with folk treatments as long as they are not antagonistic.
- A language barrier, if present, can be remedied by using certified interpreters, who are generally accurate and nonjudgmental.
- The time orientation issue can be accommodated by maintaining an open or "walk-in" schedule.
- The therapist may need to explain to the caregiver the importance of increasing the patient's independence by having the patient take responsibility for activities of daily living and work with the caregiver by showing how to help the patient (without doing all the work for the patient).

Note: The PTA is urged to consider that each patient/client is unique; the strategies described here are simply intended to help maximize use of a culturally competent approach to delivering physical therapy interventions.

SECTION 1-4

Infection Control

Personal Protective Equipment Overview

Many employers have a standardized policy regarding infection control measures and provide the necessary training and equipment for healthcare workers that are exposed to various bacterial and viral infections throughout the course of their normal work day. It is imperative that the healthcare worker comply with these established policies to protect himself or herself from unavoidable exposure as well as prevent cross contamination from those patients whom may be afflicted with a communicable disease. Decreasing risks to exposure of infectious disease processes can be readily achieved by the use of standardized hand washing between each patient encounter as well as wearing personal protective equipment.

Personal protective equipment, according to Siegel and coauthors, is any means or combination of various types of barriers that may be used to protect an individual from an unwanted exposure to some type of infectious agent or contamination.[5]

This may include the use of gowns, masks, boots, boot coverings, coveralls, and safety glasses. Masks can come in two forms: surgical masks or respirators. According to the OSHA.gov, FIT testing for a respirator is a practice that may reduce infectious transmission of diseases related to droplet or airborne types of exposure (i.e., coughing, sneezing, and sputum exposure). These diseases may include but not be limited to severe strains of influenza and tuberculosis. FIT testing is typically performed by the Occupational Medical Department of the hospital or skilled nursing facility where the clinician is employed or at the local health department.

Some home health clinicians may also need to be FIT tested if they will be working with a homebound patient that may have some type of droplet-related precautions. The benefit of FIT testing is that it promotes a tighter seal over the nose and mouth and has a one-way valve to prevent the infection from being breathed in by a clinician who must work in direct contact or within 6 feet of an infected individual.[6]

Centers for Disease Control and Prevention's Recommended Standard Precautions[4]

Table 1-7 Centers for Disease and Prevention's Control Standard Precautions

Practicing Hand Hygiene

Wash hands with soap and water or use an alcohol-based hand sanitizer before and after patient contact and after having direct contact with any substance/stuff found in the patient care environment. Alcohol-based hand rubs (gel or foam) kill bacteria more effectively and more quickly than hand washing with soap and water. Alcohol-based hand rub is the preferred method for hand hygiene in *all situations,* except in situations when the hands are visibly dirty or contaminated.

Wash hands or use an alcohol-based hand sanitizer immediately:

- Before touching a patient
- Before putting on gloves
- Before performing an invasive procedure or manipulating an invasive device
- After having contact with the patient's skin
- After having contact with bodily fluids or excretions, nonintact skin, a wound dressing, or contaminated items
- After having contact with inanimate objects near a patient
- After removing gloves

Table 1-7 Centers for Disease and Prevention's Control Standard Precautions (continued)

- After touching items, or surfaces, or physical therapy equipment in the immediate patient care environment (even if the patient was not touched by the PT/PTA)

Gloves

- Wear gloves when touching blood, body fluids, secretions, excretions, mucous membranes, nonintact skin, and contaminated items/surfaces.
- Put on clean gloves just before touching mucous membranes and nonintact skin. Change gloves between tasks and procedures on the same patient after contact with any material that may contain a high concentration of microorganisms.
- Remove gloves promptly after use, before touching noncontaminated items and environmental surfaces and before going to another patient. Wash hands immediately to avoid transfer of microorganisms to another patient or environment.
- Do not reuse or wash gloves.
- Perform hand hygiene after removing gloves.

Mask, Eye Protection, Face Shield

- Wear a mask and eye protection or a face shield to protect mucous membranes of the eye, nose, and mouth during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.
- Wear a FIT tested face mask during procedures or encounters that are likely to result in airborne exposure or dropout precautions of highly communicable diseases.

Gown

- Wear a clean, nonsterile gown to protect skin and to prevent soiling of clothing during procedures and patient care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.
- Select a gown that is appropriate for the activity and the amount of fluid likely to be encountered.
- Remove a soiled gown as promptly as possible, and wash hands to avoid transfer of microorganisms to other patients or environments.

Patient Care Equipment

- Handle used patient-care equipment that has been soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients or environments.
- Ensure that reusable equipment is not used for the care of another patient until it has been cleaned and reprocessed appropriately.
- Ensure that single-use items are discarded properly.

Environmental Control

- Ensure that the hospital has adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other frequently touched surfaces, and ensure that these procedures are being followed.

Linen

- Handle, transport, and process used linen that has been soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures and contamination of clothing, and avoid transfer of microorganisms to other patients and environments.

Occupational Health and Bloodborne Pathogens

- Take care to prevent injuries when using scalpels, needles, and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles.
- Never recap used needles or otherwise manipulate them by using both hands or any other technique that involves directing the point of a needle toward any part of the body. Instead, use either a one-handed scoop technique or a mechanical device designed for holding the needle sheath.

(*continues*)

Table 1-7 Centers for Disease and Prevention's Control Standard Precautions (continued)

- Do not remove used needles from disposable syringes by hand. Do not bend, break, or otherwise manipulate used needles by hand.
- Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers, which should be located as close as practical to the area in which the items were used. Place reusable syringes and needles in a puncture-resistant container for transport to the reprocessing area.
- If you are exposed to infectious bloodborne pathogens, immediately irrigate the exposed area with water and clean any wounds with soap and water or skin disinfecant immediately.
- Report exposures immediately to your employer and seek medical attention.

Resuscitation

- Ensure that resuscitation bags or other ventilation devices are readily available where the need for resuscitation is predictable.

Patient Placement

- Place a patient who contaminates the environment or who does not (or cannot be expected to) assist in maintaining appropriate hygiene or environmental control in a private room.
- If a private room is not available, consult with infection control professionals regarding patient placement or other alternatives.

CDC Guidelines for Airborne, Droplet, and Contact Transmission-Based Precautions

Table 1-8 Airborne Transmission Guidelines—Infections: Tuberculosis, Measles, and Chickenpox

1. Respiratory isolation room
2. Mask or FIT test respirator mask when entering the room
3. Limitation of patient movement out of the room
4. Patient mask when transporting the patient out of the room

Table 1-9 Coughing, Sneezing, and Talking Transmission Guidelines—Infections: Mumps, Rubella, Pertussis, and Influenza

1. Isolation room
2. Mask when entering the room
3. Limitation of patient movement out of the room
4. Patient mask when transporting the patient out of the room

Table 1-10 Direct Contact Transmission Guidelines

1. Isolation room
2. Gloves and gown (when touching the patient or the patient's environmental surfaces)
3. Single-patient-use equipment
4. Limitation of patient movement out of the room

Occupational Safety and Health Administration's Universal Precautions Recommendations

Table 1-11 Universal Precautions Recommendations for Bloodborne Pathogens[4]

- Use protective equipment and clothing whenever in contact with bodily fluids.
- Dispose of waste in proper containers and follow the appropriate procedures for handling infectious waste.
- Dispose of sharp instruments and needles in the proper containers.
- Keep the work area and the patient area clean.
- Wash hands immediately after removing gloves and at all times, as required by the agency policy.
- Immediately report any exposure to needle sticks or blood splashes or any personal illness to the direct supervisor and receive instructions about follow-up action.

Asepsis Methods

1. Sterilization of instruments
   - Heat (250–270°F) and water pressure
   - Ionizing radiation to sterilize medications, plastics, or sutures
   - Boiling water (212°F) for non-spore-forming organisms
   - Dry heat and gas (ethylene oxide, or formaldehyde gas)
2. Disinfection (reducing microorganism)
   - Filtration (for water purification)
   - Ultraviolet light—for air and surface disinfection
   - Ultrasonic cleaning—for instruments
   - Washing with antimicrobial products—for surfaces and hands
   - Chemicals such as chlorination, iodine, phenols, quaternary ammonia, formaldehyde
   - Hydrotherapy disinfection—includes draining and cleaning tanks, and scrubbing pumps and equipment with a germicidal agent such as bleach, povidone-iodine, or Chloramine-T
   - Antiseptic solutions: alcohol and iodine
   - Quaternary ammonia
   - Germicidal soaps
   - Mercurial products
   - Antibacterial additives to whirlpools, tubs, tanks, or pools

Types of Nosocomial Infections

1. Urinary tract infections
2. Surgical site infections
3. Respiratory tract infections
4. Bloodstream infections
5. Intestinal tract infections
6. Central nervous system infections
7. Nosocomial fungal infections
8. Nosocomial pneumonia such as bacterial pneumonia, Legionnaires' pulmonary aspergillosis, *Mycobacterium* tuberculosis, viral pneumonias, or influenza

9. Other nosocomial infections by pathogen—*Staphylococcus, Pseudomonas, Escherichia coli*; antibiotic-resistant nosocomial infections such as methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococci

Infectious Diseases

1. AIDS: caused by the human immunodeficiency virus[5] (HIV); loss of immune system function resulting in:
   - Opportunistic infections: *Pneumocystis carinii* pneumonia, esophageal candidiasis, cytomegalovirus infection, cryptococcus, atypical mycobacteriosis, chronic herpes simplex, toxoplasmosis, or *Mycobacterium* tuberculosis
   - Neurologic dysfunctions: AIDS dementia complex, central nervous system toxoplasmosis, cryptococcal meningitis, encephalopathy, peripheral neuropathy
   - Unusual cancers: Kaposi's sarcoma, non-Hodgkin's lymphoma, primary brain lymphoma
   - Diseases associated with bloodborn pathogens
     - HIV/AIDS
     - Hepatitis B (HBV)
     - Hepatitis C (HCV)

Table 1-12 Possible Transmission of AIDS

Direct contact with infected body fluids:

- Blood
- Semen
- Cerebrospinal fluid
- Human milk
- Vaginal/cervical secretions

Table 1-13 High-Risk Behaviors for AIDS

- Unprotected sexual contact
- Needle sharing or injections with contaminated needles
- Maternal–fetal transmission before and during birth or through human milk

Table 1-14 Low-Risk Behaviors for AIDS

- Needle sticks
- Casual contacts such as hugging and kissing

Table 1-15 Medical Management of AIDS (to Stop HIV Replication)

- Multidrug therapy
- Patient education to prevent the spread of the disease and live a healthy lifestyle
- Supportive care

2. Hepatitis—inflammation of the liver caused by viral or bacterial infection or by chemical agents:
   - Hepatitis A virus (HAV)—acute infectious hepatitis transmitted through the fecal-oral route, contaminated food or water, and infected food handlers
   - Hepatitis B virus (HBV)—serum hepatitis transmitted through contact with infected body fluids or tissues via oral or sexual contact, blood and blood product exposure, maternal fetal transmission, and contaminated needles
   - Hepatitis C virus (HCV)—transmitted in the same manner as HBV. It can cause liver damage and liver cancer.

Table 1-16 Prevention of HAV

- Good hygiene
- Hand washing after using the toilet
- Sanitation
- Immunization
- Healthcare workers wear personal protective equipment

Table 1-17 Medical Management of HAV

- Intravenous fluids
- Analgesics
- Treatment of acute symptoms

Table 1-18 Prevention of HBV

- HBV vaccine
- Education
- Lifestyle changes
- Healthy habits
- Healthcare workers wear personal protective equipment

Remember that the HBV is more contagious than HAV and can survive on a contaminated surface for as long as 7 days.

Table 1-19 Medical Management of HBV

- No cure is available
- Interferon for chronic HBV

Table 1-20 Medical Management of HCV[7]

- Hepatitis C may be cleaned from the body if the person remains virus-free for 3 months after treatment is completed with combined medication protocols
- Interferon, Ribavirin, protease inhibitors

Table 1-21 Prevention of HCV[8]

- Education
- Lifestyle changes
- Sterilization of piercing or tatoo equipment
- Healthcare workers wear personal protective equipment
- Patient education to decrease the spread of the disease and to encourage healthy habits

Table 1-22 Medical Management of HCV

- Interferon
- Treatment of acute illness

3. Tuberculosis (TB)—highly contagious airborne respiratory infection
   - Transmitted through *Mycobacterium* tuberculosis from contact with an infected person
   - Spreads from coughing and sneezing through droplets or sputum

Table 1-23 Medical Management of Tuberculosis

- Isolation until cleared from the contagious stage
- Chemotherapy using anti-TB medications for acute illness (Rifampin and Isoniazid)

SECTION 1-5

Family Violence

Family Violence Overview

The American Physical Therapy Association defines family violence as: "the intentional intimidation or abuse of children, adults, or elders by a family member, spouse/partner, or caretaker to gain power and control over the victim."[8] The Centers for Disease Control and Prevention (CDC) reports that on average, 20 people per minute are victims of physical violence by an intimate partner in the United States.[9] In 2013, 678,932 victims of child abuse and neglect were reported to Child Protective Services (CPS) with child abuse claiming the lives of at least 1,520 children.[10] The government's Administration on Aging reports that hundreds of thousands of elders are abused each year.[11]

Elder Abuse

Elder abuse is defined as "a single, or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person" and is considered to be under reported globally (World Health Organization, 2004).[11]

In a systematic review by Johannesen and LoGiudice in the Journal *Age and Ageing* (2013), elder abuse can be broken into the following five subtypes:[12]

- Psychological: where the abuser demeans, threatens, causes fear, isolation, deprivation, feelings of shame and powerlessness to the person (see Table 1-25 for an example).
- Physical abuse may take the form of intentional acts that cause physical pain or injury.
- Sexual abuse includes unwanted sex acts, both physical (fondling, rape) or through exploitative behavior or sexual language that was not consented to by the victim or where consent was garnered in a coercive manner.
- Financial abuse includes gaining control over the victim's finances by illegal use, improper use, or mismanagement of the personal property or financial resources of the victim.
- Neglect occurs when the caregiver does not provide the person with life's necessities or prevents others from providing the necessary and appropriate care.

Child Abuse[10]

Child abuse as described by the CDC is "all types of abuse or neglect inflicted on anyone under the age of 18 by a parent, caregiver, or person assuming a custodial role (coach, teacher, clergy) that results in harm or potential harm." Children under the age of three are most vulnerable. The four common types of child abuse are listed below:

- Physical abuse is the use of physical force, such as hitting, kicking, shaking, burning, or other shows of force against a child.
- Sexual abuse involves engaging a child in sexual acts. It includes behaviors such as fondling, penetration, and exposing a child to other sexual activities.

- Emotional abuse refers to behaviors that harm a child's self-worth or emotional well-being. Examples include name-calling, shaming, rejection, withholding love, and threatening.
- Neglect is the failure to meet a child's basic physical and emotional needs. These needs include housing, food, clothing, education, and access to medical care.

Healthcare workers, especially PTs and PTAs, are in a unique position to identify potential abuses that may be occurring in the relationships of those patients that we service during the rehabilitation process just by virtue of the various types of environments in which we work (hospitals, skilled nursing, home health, school based/early childhood intervention).

Keen observation skills coupled with exposure to the integumentary system allows our profession to recognize the signs and symptoms that often accompany any type of abusive situation. Standard 4D of the American Physical Therapy Association's (APTA) Ethical Code of Conduct for the PTA endorses the reporting of suspected abuse first to the supervising PT of record and then to the appropriate agency.[2]

Physical therapy providers may be able to intercede through routine screening including keen observations and active listening, allowing for early identification and intervention for an abusive situation. Community awareness and appropriate referral resources also are responsibilities of the PT and PTA when working with a patient in an abusive situation.

Regardless of the setting, it is important that clinicians realize that any form of abuse warrants action regardless of age, gender, sexual orientation, race, cultural beliefs, or socioeconomic status.

Table 1-24 PTA Action Steps Related to Suspected Abuse[9-11]

1. Inform supervising PT of suspected abuse and if directed by the supervising PT, you may be asked to contact one of the national call centers.
   - National Child abuse Hotline: 1-800-4-A-Child (1-800-422-2253)
   - Elder Abuse Helplines and Hotlines: 1-800-677-1167
   - National Family Violence Hotline: 1-800-799-SAFE (7233)
2. Always dial 911 or local police during emergencies.

How to Recognize Forms of Family Abuse

Table 1-25 Forms of Family Abuse (Sexual, Child, Spousal/Partner/Elder)[1]

- Using sexual violence, such as forcing the victim to have sexual intercourse or to engage in other sexual activities against the intimate partner's will
- Using children as pawns, such as accusing the intimate partner of bad parenting, threatening to take the children away, or using the children to relay messages to the partner
- Using denial and blame, such as denying that the abuse occurred or shifting responsibility for the abusive behavior onto the partner
- Using coercion and threats, such as threatening to hurt other family members, pets, children, or self
- Using economic abuse, such as controlling finances, refusing to share money, sabotaging the partner's work performance, making the partner account for money spent, or not allowing the partner to work outside the home
- Using intimidation, such as using certain actions, looks, or gestures to instill fear, and breaking things, abusing pets, or destroying property
- Using emotional abuse, such as insults, criticism, or name calling
- Using social isolation, limiting the victim's contact with family and friends, requiring the partner to obtain permission to leave the house, not allowing the partner to attend work or school, or controlling the partner's activities and social events
- Using privilege, such as making all major decisions, defining the roles in the relationship, being in charge of the home and social life, or treating the partner as a servant or possession

Difficulties in Identifying and Helping Victims of Family Violence[1]

1. Healthcare provider's fears or experiences of exploring the issue of family violence
2. Healthcare provider's lack of knowledge of community resources
3. Healthcare provider's fear of offending the victim and jeopardizing the provider-patient relationship
4. Healthcare provider's lack of time or lack of training
5. Healthcare provider's unresponsiveness, feeling powerless, and not being able to fix the situation
6. Infrequent victim's visits as a patient
7. Victim's unresponsiveness to questions (asked by the healthcare provider)

Methods to Overcome Difficulties in Identifying and Helping Victims of Family Violence

Table 1-26 Methods to Overcome Difficulties in Identifying and Helping Victims of Family Violence

- Observe the victim for physical and behavioral clues.
- Question the victim and validate the presence of family abuse.
- Respect the victim's privacy and use confidentiality measures.
- In physical therapy, the PT examines and treats the victim. If a PTA suspects a patient to be a victim of family abuse, the PTA should immediately report the findings to the PT of record.
- Keep accurate records and precise documentation about the victim's abuse.
- Support and follow up the victim's care.

Signs Indicating a Victim of Family Violence

1. The abuser accompanies the victim to all appointments and refuses to allow the victim to be interviewed alone. The abuser uses verbal or nonverbal communication to direct the victim's responses during appointments.
2. The patient is noncompliant with physical therapy treatment regimens and/or frequently misses appointments.
3. The patient makes statements about not being allowed to take or obtain medications (prescription or nonprescription medication).
4. The abuser cancels the victim's appointments or sabotages the victim's efforts to attend appointments (by not providing child care or transportation).
5. The patient engages in therapist hopping.
6. The patient lacks independent transportation, access to finances, or ability to communicate by phone.
7. The abuser tries to explain away the braising or fraction as the victim's clumsiness.[13]

Family Violence Signs Requiring Screening

- The victim's chronic pain, and injuries during pregnancy
- The victim's repeated and chronic injuries and gynecological problems
- The victim's exacerbated or poorly controlled chronic illnesses such as asthma, seizure disorders, diabetes, hypertension, and heart disease
- The victim's physical symptoms related to stress, anxiety disorders, or depression; hypervigilant signs such as being easily startled or very guarded; the victim experiencing nightmares or emotional numbing
- The victim's suicide attempts and eating disorders
- The victim's self-mutilation and car accidents in which the victim is the driver or the passenger
- The victim's overuse of prescription pain medications and other drugs

Table 1-27 Methods to Overcome Difficulties in Identifying and Helping Victims of Child Abuse

- Observe the victim for physical and behavioral clues.
- Question the victim and validate the presence of abuse.
- Respect the victim's privacy and use confidentiality measures.
- Observe the victim for signs of fear or unwillingness to answer questions with the parent/guardian present.
- Observe the victim looking for approval from the parent/guardian before answering any questions.
- Question answering by the adult/guardian for the child and use of words as "clumsy" to explain away the potential signs of bruising/injury.
- Keep accurate records and precise documentation about the victim's abuse.
- In physical therapy, the PT examines and treats the victim. If a PTA suspects a patient to be a victim of child abuse, the PTA should immediately report the findings to the PT of record.
- Support and follow up the victim's care.

The Joint Commission's Guidelines and Goals for Identifying Victims of Family Violence

Table 1-28 The Joint Commission's Guidelines and Goals[1]

- All physical therapy facilities should develop objective criteria for identifying victims of family violence.
- All individuals who may be involved in screening, evaluating and examining, reevaluating, and caring for patients should be knowledgeable in the criteria for identifying and caring for victims of family violence.
- Supervisors are responsible, either personally or through delegation, for orienting and for providing in-service training and continuing education to all such individuals.
- The evaluation and examination of victims of alleged or suspected family violence should be conducted with the consent of the patient or the parent or legal guardian or as otherwise provided by the law.
- The examination and evaluation of victims of alleged or suspected family violence should be conducted in accordance with the facility's policies for the collection, the retention, and the safeguarding of evidentiary material released by the patient.
- The evaluation and examination of victims of alleged or suspected family violence includes, as legally required, the notification and release of information to the proper authorities.
- A list of appropriate referrals to community agencies should be available on-site for patients.
- A family violence protocol for emergencies should be developed and implemented in all physical therapy practice settings (such as a clinic or private practice department).

SECTION 1-6

Patient Safety During Interventions

Vital Signs Normatives[1]

Table 1-29 Blood Pressure Normatives: Adult

Category	Systolic Blood Pressure	Diastolic Blood Pressure
Normal BP	120 mm Hg or less	80 mm Hg or less
Prehypertension	120–140 mm Hg	80–90 mm Hg
Stage I hypertension (HTN)	140–159 mm Hg	90–99 mm Hg
Stage II hypertension	160–179 mm Hg	100–109 mm Hg
Stage III hypertension	More than 180 mm Hg	More than 110 mm Hg

Table 1-30 Blood Pressure Normatives: Infant/Child/Adolescent

Normal blood pressure (BP): infant = 80/50 mm Hg
Normal BP: child = 100/55 mm Hg
Normal BP: adolescent = 115/70 mm Hg

Table 1-31 Heart Rate Normatives

Normal heart rate (HR): adult = 70 beats per minute (bpm) (range = 60–100)
Abnormal HR: adult = bradycardia = less than 60 bpm
Abnormal HR: adult = tachycardia = more than 100 bpm
Normal HR: infant = 120 bpm (range = 70–170)
Normal HR: child = 125 bpm (range = 75–140)
Normal HR: adolescent = 85 bpm (range = 50–100)

Table 1-32 Temperature and Respiratory Rates

Temperature	Respiratory Rate (RR)
Normal temperature: adult = 98.6°F	Normal RR: adult = 12–18 breaths/min
Normal temperature: infant = 98.2°F	Normal RR: infant = 30–50 breaths/min
Normal temperature: child = 98.6°F	Normal RR: child = 20–40 breaths/min
Normal temperature: adolescent = 98.6°F	Normal RR: adolescent = 15–22 breaths/min

Table 1-33 Elements that Increase or Decrease Blood Pressure, Heart Rate, Respiratory Rate, and Temperature

- Increase BP/HR/RR/temperature: infection, anxiety, pain, exercise (only systolic BP and HR), high blood sugar, low blood sugar, and low potassium (only HR), low hematocrit, and hemoglobin (only HR and RR), acute myocardial infarction, coronary artery disease, asthma, and anemia
- Decrease BP/HR/RR/temperature: decreased hemoglobin and hematocrit (only systolic BP and temperature), decreased potassium (only systolic BP), acute myocardial infarction (only HR and systolic BP), narcotics, increased potassium (only HR), decreased blood sugar (only temperature), and anemia (only systolic BP)

Patient Emergency Situations

1. BP = more than 160/100 mm Hg or less than 90/60 mm Hg (may not need to call the emergency medical services; the PTA must take into consideration the patient/client's age, medications, and interventions; may need to stop the interventions, inform the PT, and monitor the patient/client carefully)

2. Resting HR = more than 110 bpm or less than 60 bpm (may not need to call the emergency medical services; the PTA must take into consideration the patient/client's age, medications, and interventions; may need to stop the interventions, inform the PT, and monitor the patient/client carefully)
3. Resting RR = more than 30 breaths/min (may not need to call the emergency medical services; the PTA must take into consideration the patient/client's age, medications, and interventions; may need to stop the interventions, inform the PT, and monitor the patient/client carefully)
4. Absent or decreased breath sounds
5. Sudden cognitive changes
6. Chest discomfort, shortness of breath, sweating, or faintness
7. Sudden severe headache and facial pain
8. Abdominal discomfort, nausea, and/or bloody or dark, tarry stools

General Signs and Symptoms that Warrant Discontinuing Physical Therapy Interventions

Table 1-34 Signs and Symptoms[14] that Warrant Discontinuing Interventions

- Temperature: more than 100°F
- Systolic BP: more than 240 mm Hg
- Diastolic BP: more than 110 mm Hg
- Fall in systolic BP: more than 20 mm Hg; rise in HR: more than 20 bpm
- Resting HR: more than 130 bpm or less than 40 bpm
- Chest pain, palpitations, or irregular pulse
- Oxygen saturation: less than 90%
- Blood glucose: more than 250 mg/dL
- Cyanotic or diaphoretic
- Dizziness or syncope
- Bilateral leg/foot edema

Signs and Symptoms of Hyperglycemia: High Blood Sugar of More Than 200 mg/dL[14]

- Extreme thirst and frequent urination
- Blurred vision and dry skin
- Nausea, vomiting, or abdominal pain
- Fatigue and lethargy
- Dizziness and increased appetite
- Weight loss and infections
- Glucose and ketones in the urine

Table 1-35 Emergency Treatment: Hyperglycemia and Ketoacidosis

- Call for medical assistance; monitor the patient until help arrives; inform the PT.
- Hyperglycemia can cause ketoacidosis and ultimately diabetic coma (and death).

Signs and Symptoms of Hypoglycemia: Low Blood Sugar of Less Than 50 mg/dL[14]

- Increased heart rate and lightheadedness
- Sweating, unsteadiness, and weakness
- Headache, fatigue, and impaired vision
- Confusion, pallor, and behavior changes
- Clumsiness and tingling sensation in the mouth

Table 1-36 Emergency Treatment: Hypoglycemia

Patient needs sugar: half of a cup of orange juice, four or five candies, three glucose tablets, or a glass of milk.

Intervention Precautions for Patients with Diabetes

Table 1-37 Intervention Precautions for Diabetes

- Plan the patient's exercises in conjunction with food intake and insulin administration. Ask the patient about his or her nutritional status prior to performing interventions.
- Monitor the patient's glucose levels before exercises. Do not exercise patients with blood glucose of 250 mg/dL or higher.
- Monitor the injection site before exercises. Do not exercise at or near the muscles where the injection of insulin was administered. Do not administer interventions such as physical agents at the injection site.
- Exercise at or around the same time of day.
- Do not administer interventions such as physical agents without testing the patient's superficial sensations.
- Do not exercise patients with a high level of ketones in their urine or blood.
- Inform the PT if the patient experienced hypoglycemia or hyperglycemia.
- Educate the patient about avoiding exercising or activities late at night or just before sleep (can cause hypoglycemia at night).
- Educate the patient about diabetic foot care.
- Educate the patient about eating a slowly absorbed carbohydrate snack (e.g., pasta, crackers, or bread) after exercises. Educate the patient about eating a rapidly absorbed carbohydrate snack (fruit) after prolonged activities (for every 30 minutes of activity).

Signs and Symptoms of Electrolyte Disturbances: Hyperkalemia (High Potassium Level in Blood)

- Muscle weakness and flaccid paralysis
- Bradycardia and arrhythmia
- Diarrhea and abdominal cramps

Table 1-38 Possible Causes of Hyperkalemia

- High-potassium diet
- Kidney failure
- Addison's disease (hyposecretion of adrenocortical hormones secondary to infections such as tuberculosis or hemorrhage)
- Trauma to muscle
- Decreased aldosterone insulin