Chapter 3
Clinical Decision-Making for Massage

The clinical decision-making process guides the therapist through the examination, treatment, and discharge of the client. The decision-making process proposed for Outcome-Based Massage addresses issues that are specific to the integration of massage techniques into clinical practice. This chapter discusses clinical decision making over four phases: the Evaluative Phase, the Treatment Planning Phase, the Treatment Phase, and the Discharge Phase. It provides guidelines for therapists to use to enhance the appropriateness and adequacy of the client examinations, plans of care, and interventions they plan and provide.

Note that the numbers of the steps in Figures 3-1, 3-2, 3-3, and 3-4 correspond to the step numbers that appear in Theory in Practice 3-1 through 3-27 and in many of the headings in this chapter.

Clinical Decision-Making for Massage: Foundations

THE CLINICAL DECISION-MAKING PROCESS

The terms clinical decision making, clinical reasoning, and clinical problem solving are used to describe the process by which therapists analyze client information and formulate and progress therapeutic regimens for their clients.[1–6] The **clinical decision-making model** for Outcome-Based Massage discussed in this chapter integrates clinical reasoning models with the frameworks for massage discussed in the earlier chapters.

Although we present this model graphically as a series of numbered steps, we do not intend therapists to use it in a linear, sequential manner. In reality, as research indicates, therapists who are engaged in the clinical decision-making process often perform several steps of the process concurrently.[4] In addition, therapists use an iterative

decision-making process, rather than a linear process. In other words, they cycle through the same steps of the decision-making process several times, and each time that they repeat the steps, they expand on their information and refine their hypotheses.

Phases in Clinical Decision-Making

This clinical decision-making model has four phases: the **Evaluative Phase**, the **Treatment Planning Phase**, the **Treatment Phase**, and the **Discharge Phase**; each of the phases has a distinct purpose and procedures. Together, these phases lead the therapist through a systematic process that enhances the fit between the client's presenting issues and treatment techniques. This will ultimately improve the quality of care that therapists deliver, their clients' outcomes, and client satisfaction.

The Evaluative Phase provides the foundation of the clinical treatment process. The steps in the Evaluative Phase revolve around formulating and confirming a **clinical hypothesis** about the client's clinical problem or wellness goals. This phase begins with data gathering through the **client examination** and also involves confirming the **clinical problem** or articulating the **wellness goals**, creating a summary of clinical findings, and deciding whether to pursue treatment.

The steps in the Treatment Planning Phase involve identifying body structures and functions that are appropriate for treatment and selecting treatment techniques that will produce improvements in the client's impairments in body structures and functions, functional limitations, or overall wellness.[5] The Treatment Planning Phase for Outcome-Based Massage begins with the summary of clinical findings from the Evaluative Phase and ends with a written **plan of care**.

The Treatment Phase is an ongoing cycle of treatment, **re-examination**, and treatment progression that begins after the therapist completes the plan of care. The end of this phase is not clearly delineated; instead, there is a gradual transition from Treatment Phase to Discharge Phase.

The final phase is the Discharge Phase. **Discharge** involves the transition of the client from the therapist's care to self-care or to treatment by another therapist. The Discharge Phase begins before the client's discharge date; it spans the period from the initiation of discharge planning to the actual discharge date.

Clinical Decision-Making for Wellness Interventions

Therapists will use this four-phase clinical decision-making process for both the treatment of impairments in body structures and functions and wellness **interventions**. The primary distinction between clinical decision making for the treatment of impairments and wellness is the need to address impairments in body structures and functions. These impairments can be any loss or abnormality of the client's body structures or functions that occurs as a result of the pathophysiology of a medical condition.[1] Treatment of impairments takes place after an individual has experienced a medical condition and addresses those impairments in body structures and functions (grades 1 to 4) that are the result of that medical condition. In the Evaluative Phase, the therapist creates a list of impairments and a list of outcomes that focus on the **treatment of impairments**, recovery, and the prevention of secondary impairments. This is in contrast to clinical decision-making for wellness, which focuses on body structures and functions that are free of impairments. In this case, the therapist creates a list of body structures and functions and outcomes for optimizing these during the Evaluative Phase. The Theory in Practice clinical scenario of the client with neck pain will illustrate the steps in the clinical decision-making process for Outcome-Based Massage in the treatment of impairments. Readers can apply the information on the distinction between clinical decision-making for treatment of impairments versus wellness interventions to arrive at the guidelines for the latter.

EVALUATIVE PHASE

We cannot emphasize the importance of the Evaluative Phase enough. When a client presents for clinical care, it is often because he or she has a problem. Through the client examination and the **evaluation** of the clinical findings, the therapist clarifies the client's clinical problem and identifies the client's relevant impairments and functional limitations.

Theory In Practice Scenario

Patient with "Neck Pain"

The patient is a 28-year-old woman who works as a cashier in a supermarket with a 2-month history of neck pain of gradual onset. Her referral states "Neck Pain."

We have written a clinical scenario that is broad enough to apply to multiple professions. Readers need to use the scope of practice for their professions to guide their use of the examination and treatment techniques noted in this scenario.

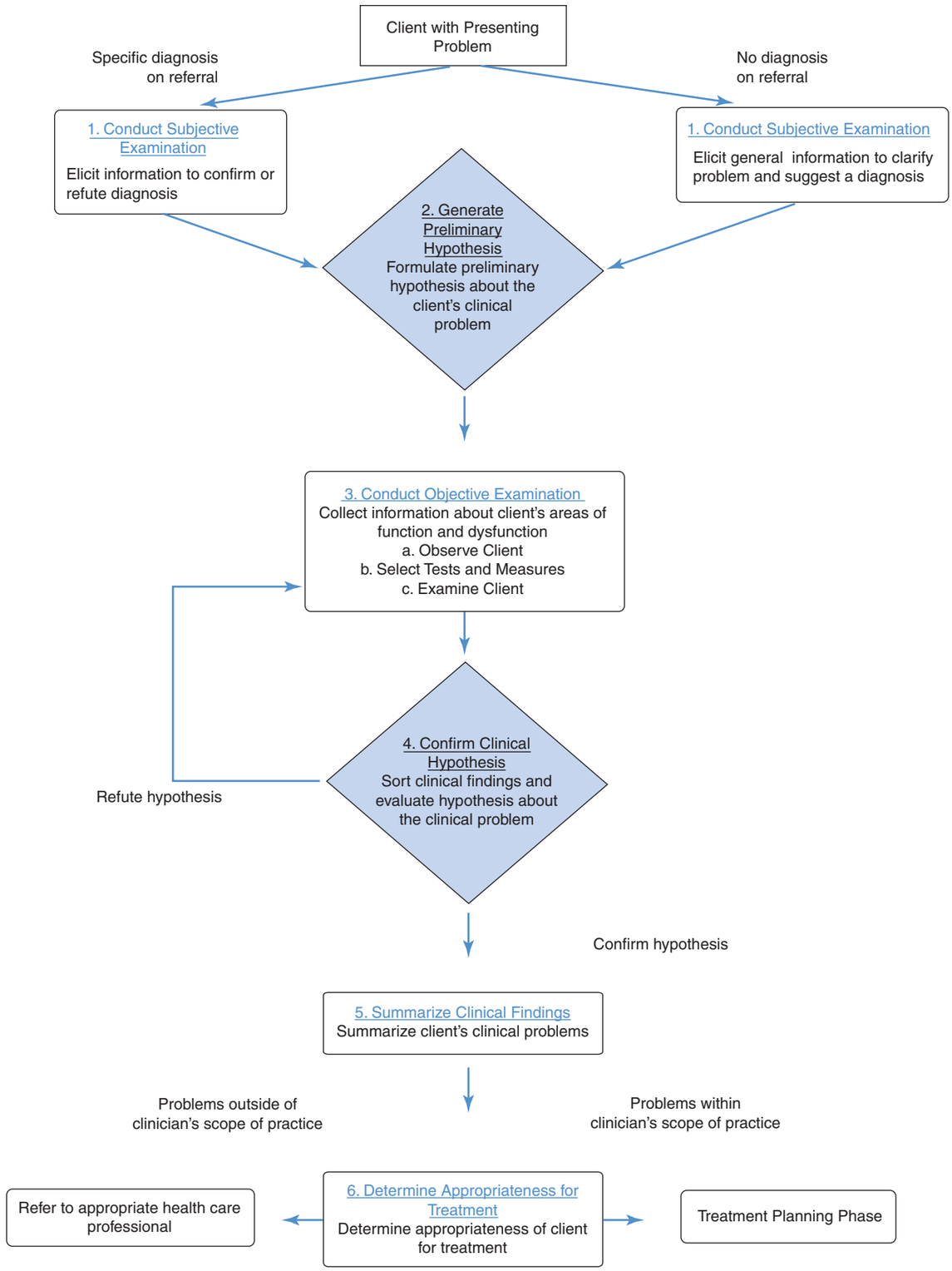

Figure 3-1 Clinical Decision-Making Model: The Evaluative Phase.

She will then use this information for outcome identification and treatment planning. Consequently, an appropriate, accurate, and comprehensive Evaluative Phase can enhance the potential effectiveness of an intervention.

Client Examination

The Evaluative Phase begins with the client examination, which involves collecting information on the client's health status and clinical condition through history taking, a general systems review, and tests and measures.[7] Therapist and client characteristics can influence the scope of the examination a therapist performs. Relevant therapist characteristics include: her scope of practice, her area of specialization, and the type of examination she selects. Client characteristics include: the client's diagnosis and general health status, the nature of the clinical setting, and the acuity, severity, complexity, and stability of the client's condition (Table 3-1). The initial multidisciplinary neurological examination for a geriatric client with Parkinson's disease in an inpatient setting, for example, would be broader in scope and cover the issues in more detail than an interim examination of an adolescent with chondromalacia patellae in an outpatient orthopedic clinic.

Conduct Subjective Examination (Step 1)

Prior to taking the client history, the therapist identifies whether or not there is a specific diagnosis on the client's referral. If there is a specific diagnosis, then the therapist's **history taking** and **subjective examination** will include questions relating to that diagnosis and will focus on eliciting information to confirm or refute the client's presenting diagnosis. If, on the other hand, the client has a referral without a **medical diagnosis**, the therapist begins by eliciting general information that will serve to clarify the client's presenting problem and suggest a clinical diagnosis. Chapter 5, Client Examination for Massage, provides suggestions for issues to consider in history taking for massage. Therapists can document the client's history within the written plan of care or separately.

Generate Preliminary Clinical Hypothesis (Step 2)

Existing clinical decision-making models all include some form of data gathering and the formulation and testing of a clinical hypothesis.[1–5] In the current model, the therapist forms a preliminary clinical hypothesis about the client's key clinical problems based on the diagnosis on the client's referral and the information she has gathered from the history and subjective examination.

Conduct Objective Examination (Step 3)

Observe Client

Once the therapist has formed her preliminary clinical hypothesis, she observes the client to identify observational cues that may support her hypothesis. At this early stage of the examination, the therapist needs to avoid having too narrow a focus. The observation of the client should be general enough to provide data that may suggest an alternative hypothesis, yet still enable the therapist to identify specific clinical signs that are consistent with her hypothesis. This observation can include postural alignment, muscle bulk and contours, and other areas outlined in this chapter and the individual techniques chapters. Based on her observations, the therapist may be able to refine her hypothesis about the client's clinical problem.

Select Tests and Measures

The therapist then proceeds to the next step in gathering data to confirm or refute her clinical hypothesis: the selection and application of **tests and measures**. The types of tests and measures and the order in which the therapist conducts them will differ with the client's characteristics and condition. In other words, therapists use different examination approaches for clients with neurological, musculoskeletal, cardiopulmonary, or psychoneuroimmunological conditions. For example, a musculoskeletal examination in physical therapy may consist of postural analysis, visual inspection, range of motion testing, muscle performance testing, and palpation. By contrast, a cardiopulmonary examination in physical therapy may consist of visual inspection, palpation, percussion, and auscultation. Additional modifications exist for examinations for adult, pediatric, and geriatric clients.

The selection of appropriate tests and measures is one of the most difficult components of the examination. The problem lies not in a lack of information but in the possibility of being overwhelmed by the considerable number of possible special tests and clinical signs. The therapist faces the challenge of recalling appropriate examination techniques, noting the client's response, and making a correct interpretation of the findings. Having one or two hypotheses about the client's problem can assist the therapist in refining her choice of examination techniques.

Table 3-1 Scope and Content of Client Examinations

	Initial Examination	Interim Examination or Re-Examination	Discharge Examination	Follow-Up Examination
Scope	■ Detailed exploratory examination	■ Focused examination related to the identified outcomes related to impairments and functional limitations	■ Detailed examination related to the intervention provided and the outcomes related to impairments and functional limitations the client has achieved	■ Focused examination related to (a) the maintenance of previously achieved outcomes related to impairments and functional limitations or (b) the identification of ongoing treatment needs
Timing	■ Performed prior to the initiation of treatment	■ Performed at intervals following the initiation of treatment	■ Performed at the end of the intervention period and prior to discharge of the client	■ Performed following discharge from an episode of care
Objectives	■ Confirm or refute the client's presenting diagnosis ■ Identify and measure the client's impairments, functional limitations, and functional areas to provide a basis for treatment planning and a baseline for interim examinations ■ Identify and measure the client's prior and presenting level of function to provide a basis for identifying reasonable functional outcomes	■ Identify and measure changes in the client's impairments and functional level from the baseline established at the initial examination ■ Determine the client's achievement of outcomes ■ Determine the client's readiness for treatment progression ■ Determine the need to modify the plan of care or outcomes	■ Determine the client's readiness for discharge through measurement of progress on outcomes ■ Identify and measure client's discharge needs ■ Identify and measure changes in the client's impairments and functional level from the baseline established at the initial examination.	■ Identify and measure changes in the client's health status, impairments, and functional level from the baseline established at the most recent discharge examination ■ Determine client's level of safety and adaptation to their environment ■ Determine client's ongoing treatment needs
Components	■ History to elicit information to confirm or refute the presenting diagnosis or to establish a diagnosis if none is given ■ Tests and measures to (a) confirm or refute the presenting diagnosis or to establish a diagnosis if none is given and (b) identify and measure impairments and functional limitations	■ Tests and measures to determine changes in impairments and functional limitations	■ History to summarize treatment ■ Discussion of the client's perceived discharge needs ■ Tests and measures to determine client's impairments and functional level at discharge	■ History to elicit information on changes in health status, safety, and adaptation to the environment ■ Tests and measures to determine changes in impairments and functional limitations

Theory In Practice 3-1

Conduct Subjective Examination

Since the referral does not provide a specific diagnosis, the practitioner includes questions aimed at clarifying whether the patient has a radiculopathy or a soft-tissue injury. These questions include:

- Radiation of pain
- 24-hour pain behavior
- Effect of position on pain
- Presence of paresthesia

The patient's responses about her neck pain do not include radiating pain below the elbow, paresthesia, or pain increasing with cervical extension or lateral flexion.

The patient reports:

- An insidious onset of localized neck and shoulder pain
- Stiffness and decreased active cervical range of motion
- Neck muscle tightness
- Neck muscle spasm
- Transient headaches

Examine the Client

To keep data at a manageable level, the therapist may find it effective to first select and carry out a few tests that therapists commonly use to confirm or refute a given condition. If the findings are positive, the therapist can then collect more general information about the client's impairments, functional limitations, and areas of function. If the findings from these confirmatory tests are negative, the therapist can decide whether she needs additional tests or needs to change her hypotheses. In situations in which the therapist does not have a clear clinical hypothesis, scanning examinations provide a means of quickly determining the integrity of several systems and assessing the nature of the client's symptoms.[9] Chapter 5, Client Examination for Massage, provides information on some examination techniques for massage that the reader can use to guide his or her selection of examination techniques.

Theory In Practice 3-2

Generate Preliminary Clinical Hypothesis

Based on the findings of the history and subjective examination, the practitioner hypothesizes that the patient's symptoms are due to the presence of active myofascial trigger points.

A myofascial trigger point is a hyperirritable spot within a skeletal muscle that is associated with a hypersensitive palpable nodule in a taut band.[8] Trigger points may refer pain, create nerve entrapment, contribute to muscle weakness, and significantly limit range of motion. Active trigger points, which are painful even when they are not being palpated, contribute to the following:

- Decreased muscle flexibility and muscle strength
- Increased referred pain during compression. In this case, they will produce referred pain in a pain pattern specific to that trigger point and can produce referred motor and autonomic responses.
- Local twitch response in the muscle fibers in the area of the active trigger point when stimulated

Theory In Practice 3-3a

Observe Client

The practitioner gathers observational data to initiate his identification of whether the patient has myofascial neck pain, rather than a radiculopathy.

His observations include:

- No neck or shoulder girdle muscle wasting
- Forward head posture
- Visible muscle spasm in the region of the right upper trapezius

Using this information, the practitioner refines his clinical hypothesis to state that the patient has active myofascial trigger points in the right upper trapezius and possibly levator scapula muscles.

Evaluation of Findings

Confirm the Clinical Hypothesis (Step 4)

At the conclusion of her client examination, the therapist analyzes the impairments stemming from the client's clinical condition and either confirms or refutes her clinical

Theory In Practice 3-3b

Select Tests and Measures

The practitioner selects tests and measures that will provide information that will confirm or refute the presence of myofascial trigger points. These include:

- Palpation of trapezius and levator scapulae muscles
- Cervical range of motion
- Upper extremity dermatomes
- Upper extremity myotomes
- Cervical compression and distraction
- Performance of functional activities

Theory In Practice 3-3c

Examine the Client

1. The practitioner examines the patient for signs of trigger points through palpation of the patient's trapezius and levator scapulae muscles for:
   - The presence of taut bands or nodules
   - The occurrence of a twitch response
   - Specific patterns of pain referral
2. The practitioner examines the patient's cervical spine with the following tests:
   - Range of motion: He notes that the patient presents with decreased active cervical range of motion.
   - Strength: He documents decreased strength of the right scapular elevation and retraction (trapezius and levator scapulae).
3. The practitioner rules out the presence of a radiculopathy by testing:
   - Upper extremity dermatomes and myotomes
   - Cervical compression
   - Cervical distraction

   He records the negative findings on these tests.
4. The practitioner assesses the patient's functional level since he can use the patient's functional areas to compensate for areas of dysfunction. In doing so, he notes the patient's difficulty performing the functional tasks associated with her job as a cashier, including:
   - Driving to work
   - Lifting and transferring objects with her right arm
   - Reaching objects above her head

hypothesis. Some health care professions call the process and result of analyzing and organizing the findings from the client examination into clusters or syndromes the **therapy diagnosis**.[7] If the findings from the client examination do not support the therapist's clinical hypothesis, she will have to reformulate her hypothesis and repeat the process of selecting and carrying out appropriate tests and measures. There are situations in which the client may not present with a clearly defined clinical condition. In that case, it may be appropriate for the therapist to focus the treatment planning process on the general goal of improving the client's presenting impairments and functional limitations, rather than on identifying and treating a specific clinical condition.[7]

Summarize Pertinent Clinical Findings (Step 5)

Once the therapist confirms her clinical hypothesis, she produces a summary of the impairments and functional limitations with which the client presents. This summary can be documented within the written plan of care or separately. In Outcome-Based Massage, as with other clinical approaches, failure to identify the impairments that are contributing to the client's functional limitations can lead to the development of an intervention that is not effective in achieving the established **functional outcomes**. In the clinical example, had the therapist assumed that the client was presenting with functional limitations secondary to a radiculopathy, he would have provided a regimen that would not have relieved the client's symptoms or improved the client's functional level.

Theory In Practice 3-4

Confirm the Clinical Hypothesis

The practitioner identifies the critical impairments stemming from the patient's medical condition. He also confirms his clinical hypothesis that the following clinical signs are secondary to active myofascial trigger points in the right upper trapezius and right levator scapulae muscles:

- Neck pain and headaches
- Spasm
- Muscle tightness
- Decreased range of motion
- Decreased strength
- Inability to lift and reach

Determine Appropriateness for Treatment (Step 6)

Not all clients who receive a referral for treatment will actually require treatment. Therefore, therapists must review the findings from the client examination and determine whether the client would benefit from treatment such as the direct application of treatment techniques, education, or coordination of services. Once the therapist has confirmed that treatment is appropriate, and before she begins treatment planning, she needs to determine whether she has a **legal right to treat** and the **clinical competence to treat** the client's clinical condition.

In addition to legal issues related to right to treat, the therapist also has to make an ethical decision regarding her competence to treat the client's presenting clinical problems. This is a subjective decision that requires a balance of confidence in one's clinical skills and an objective assessment of the limitations of one's clinical expertise. In other words, it is not sufficient that the therapist's practice act permits the provision of interventions for a condition or the application of selected techniques; the therapist must also have sufficient training to administer this care appropriately, safely, and effectively.

Theory In Practice 3-5: Items to Chart

Summarize Pertinent Clinical Findings

Subjective

Pain:
- Neck pain at rest, at end of range of motion, and during functional activity; reported pain intensity of 8/10 on a visual analog scale
- Reported inability to drive or check out groceries at the cash register for > 10 minutes secondary to increased neck pain
- Tightness of neck muscles on waking and with fatigue
- Transient headaches (temporal region)

Functional Limitations:
- Inability to drive for > 10 minutes secondary to increased neck pain
- Inability to perform repetitive upper extremity movements in standing using the right arm for > 10 minutes (as required for checking out groceries at the cash register) secondary to neck pain
- Inability to perform lifting and transferring tasks required for her job

Objective

Observation:
- Forward head posture

Palpation:
- Palpable muscle spasm in the right trapezius
- Palpable taut bands in trapezius and levator scapulae
- Reported positive pattern of pain referral on palpation of the right trapezius trigger point
- Reported positive pattern of pain referral on palpation of the right levator scapulae trigger point
- Twitch response on palpation of trigger point locations in upper trapezius and levator scapulae muscles

Range of Motion:
- Decreased active cervical range of motion: flexion 50%, extension 75%, right rotation 75%, left lateral flexion 50%
- Tightness of the right trapezius and the right levator scapulae muscles
- Range of motion of shoulder, elbow, wrist, and hand within normal limits

Strength:
- Decreased strength: right levator scapulae—scapular elevation = grade 4–, right trapezius—scapular elevation, scapular retraction = grade 4–
- Strength of other shoulder, forearm, and hand muscles = 5/5

Functional Activities
- Inability to reach objects placed 1 foot above head with the right arm (as required for retrieving items from overhead shelves) secondary to neck pain
- Inability to lift a 5-lb object above shoulder level using the right arm (as required for placing boxes of dried goods on overhead shelves) secondary to neck pain
- Inability to lift and transfer a 15-lb object using the right arm (as required for placing customers' purchases into shopping carts) secondary to neck pain
- Inability to perform > 3 repetitions of lifting and transferring a 3-lb object at waist level using the right arm (as required for checking out customers' groceries and placing them in shopping bags) secondary to neck pain.

Critical Thinking Question

Your client presents with a referral stating "Back Pain" after a recent fall. During your history taking, you suspect that he may have both a back injury and a hamstring strain. What are the steps that you would follow in the Evaluative Phase to address these two issues?

Theory In Practice 3-6

Determine Appropriateness for Treatment

The practitioner in this clinical scenario has training in trigger point therapy and considers the treatment of this patient with myofascial neck pain to be within his professional scope of practice and clinical competence. If this patient with neck pain had signs of an underlying metabolic disorder, significant radiculopathy, or any unusual clinical findings, it would be appropriate for the practitioner to refer the patient to a physician for further examination and treatment.

TREATMENT PLANNING PHASE

Analyze Findings and Generate the Clinical Problem List (Step 7)

Before the therapist can begin selecting treatment techniques, she needs to organize the clinical findings on the client's impairments and functional limitations into a **clinical problem list** to guide treatment planning. First of all, it is important for the therapist to distinguish between the client's areas of function and dysfunction or those areas that will respond to the direct application of treatment techniques and those that will not. Rather than dismissing areas of function because they do not require treatment, the therapist is wise to identify which of these areas she can use to compensate for impairments that are not amenable to active treatment. An example of this strategy occurs later in this chapter.

Once the therapist has identified the areas of dysfunction, it is important for her to differentiate between the client's impairments and functional limitations. Impairment can be any loss or abnormality of the client's body structures or functions, whereas functional limitations refer to the individual's ability to execute tasks within his or her environment.[1] The strategy used in treatment planning for Outcome-Based Massage will be to select treatment techniques to treat the identified impairments and to use the identified functional limitations as a baseline for setting functional outcomes. Once the therapist completes these tasks, she can compile the clinical problem list.

Identify Functional Outcomes (Step 8)

The therapist can now focus on identifying relevant functional outcomes in collaboration with the client and predicting the amount of time needed to achieve these outcomes. These outcomes should be consistent with the functional limitations that she documented during the client examination. Table 1-5 (Chapter 1) gives examples of functional outcomes. The therapist will base the outcomes and the time needed to achieve them on several factors:

- The client's current and prior level of function
- The severity, complexity, stability, and acuity of the client's condition
- The client's discharge destination
- The literature on the prognosis for an individual with that condition
- The therapist's judgment, from clinical experience, of what the client has the potential to achieve[7]

In addition, therapists can seek guidance from articles on clinical practice and research in professional journals, clinical texts, general practice guidelines for professions, or the numerous practice guidelines that are available for specific clinical conditions. In some health care professions, this process of predicting the client's level and timing of improvement is know as the **therapy prognosis**.[7]

It is not sufficient to identify the long-term functional outcomes for the client; the therapist must also identify short-term outcomes and predict what level of improvement the client can achieve in a given time frame. This is necessary because, although long-term functional outcomes are useful for gauging the client's readiness for discharge, they are of little value in evaluating the client's immediate and ongoing response to treatment. A short-term outcome that the client can achieve within a few sessions provides a useful early benchmark of the effectiveness of the intervention and can be an invaluable aid to the ongoing modification and progression of treatment. The time period for achieving these short-term outcomes will vary with the acuity, severity, complexity, and stability of the client's condition; the expected rate of change in the client's functional level; the frequency of interventions; the anticipated duration of the treatment; and the clinical setting. The therapist's goal is to set outcomes in measurable and meaningful increments that the client can reasonably achieve in the allocated time period. It may be appropriate, for example, to set weekly, or even daily, outcomes for a client in an acute care or outpatient setting who the therapist expects to have significant functional gains over a short course of treatment. By contrast, monthly outcomes may be more meaningful for a geriatric client in a skilled nursing setting who receives treatment for a chronic condition.

A common question is: "How can the therapist determine whether the functional outcomes are appropriate for massage?" In reality, the issue is whether the impairments that the therapist must address in order to achieve the functional outcome are appropriate for treatment with the use of massage as the primary treatment technique. This decision about the relevance of the impairments for massage comes later in this phase of the decision-making process.

Identify Treatable Impairments and Relevant Outcomes (Step 9a)

Once the therapist has established functional outcomes, she works backwards to identify:

- Which impairments need to be treated to facilitate the achievement of the functional outcomes

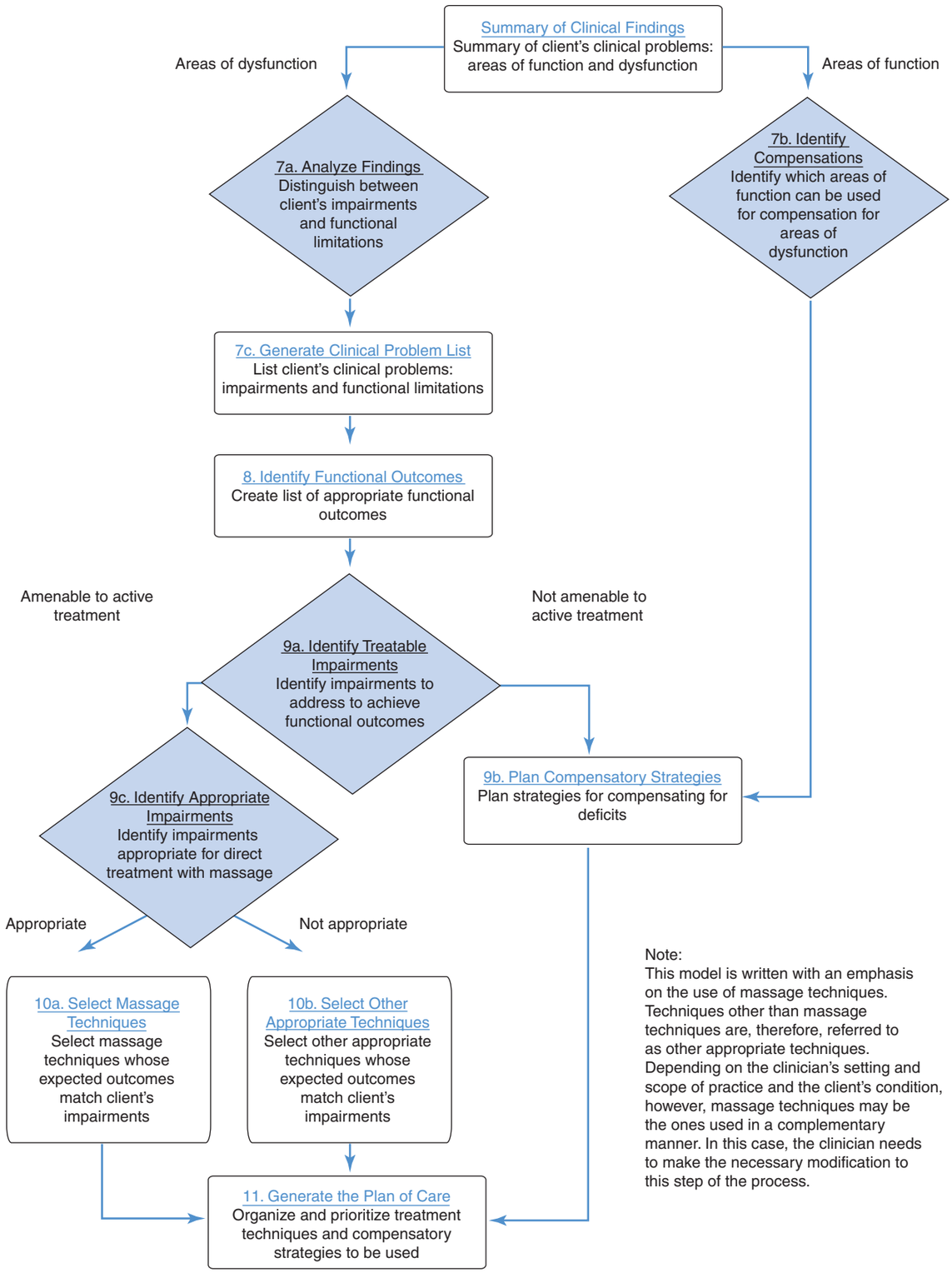

Figure 3-2 Clinical Decision-Making Model: The Treatment Planning Phase.

Theory In Practice 3-7: Items to Chart

Analyze Findings and Generate the Clinical Problem List

Impairments

- Pain: Neck pain and temporal headaches
- Decreased muscle extensibility: Tightness of trapezius and levator scapulae muscles
- Postural malalignment: Forward head posture
- Muscle resting tension: Muscle spasm in the right trapezius
- Decreased active cervical range of motion
- Decreased muscular performance: Decreased right trapezius and right levator scapulae strength and endurance
- Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae

Functional Limitations

- Inability to drive for > 10 minutes secondary to increased neck pain
- Inability to perform repetitive upper extremity movements in standing using the right arm for > 10 minutes secondary to neck pain
- Inability to reach objects placed 1 foot above head with the right arm secondary to neck pain
- Inability to lift a 5-lb object above shoulder level using the right arm secondary to neck pain
- Inability to lift and transfer a 5-lb object using the right arm secondary to neck pain
- Inability to perform > 3 repetitions of lifting and transferring a 3-lb object at waist level using the right arm secondary to neck pain

Theory In Practice 3-8: Items to Chart

Identify Functional Outcomes

The practitioner identifies the functional outcomes outlined below based on (a) the patient's presenting functional limitations and (b) the observation that the patient is a young woman who is in good health, besides the myofascial neck pain, and who had normal functional ability before the onset of pain 2 months prior to the examination.

Functional Limitations

1. Inability to drive for > 10 minutes secondary to increased neck pain
2. Inability to perform repetitive upper extremity movements in standing using the right arm for > 10 minutes (as required for checking out groceries at the cash register) secondary to neck pain
3. Inability to reach objects placed 1 foot above head with the right arm (as required for retrieving items from overhead shelves) secondary to neck pain
4. Inability to lift a 5-lb object above shoulder level using the right arm (as required for placing boxes of dried goods on overhead shelves) secondary to neck pain
5. Inability to lift and transfer a 15-lb object using the right arm (as required for placing customers' purchases into shopping carts) secondary to neck pain
6. Inability to perform > 3 repetitions of lifting and transferring a 3-lb object at waist level using the right arm (as required for checking out customers' groceries and placing them in shopping bags) secondary to neck pain

Functional Outcomes

Short-Term Outcomes (2 weeks)

1. Able to drive for ½ hour without complaints of pain
2. Able to work checking out groceries at the cash register for ½ hour, with appropriate breaks, without complaints of pain
3. Able to lift a 5-lb object and place it on shelf at shoulder level—1 repetition without complaints of neck pain
4. Able to reach objects placed 1 foot above head with the right arm without complaints of neck pain
5. Able to lift and transfer an 8-lb object at waist level with the right arm without complaints of pain
6. Able to perform 5 repetitions of transferring a 5-lb object at waist level using the right arm without complaints of pain.

Long-Term Outcomes (Discharge: 4 weeks)

1. Able to drive for 1.5–2 hours without complaints of neck pain
2. Able to work checking out groceries at the cash register for 2 hours, with appropriate breaks, without complaints of pain
3. Able to lift an 8-lb object and place it on shelf at shoulder level—5 repetitions without complaints of neck pain
4. Able to reach objects placed 2 feet above head with the right arm without complaints of neck pain.
5. Able to lift and transfer a 15-lb object at waist level with the right arm without complaints of neck pain
6. Able to perform 15 repetitions of transferring a 5-lb object at waist level using the right arm without complaints of neck pain

- Which of these impairments are amenable to active treatment
- Which impairments require compensations because they are not amenable to active treatment
- The **impairment-related outcome** for each impairment that she will treat

Traditionally, therapists established treatment goals and selected treatment techniques based solely on the impairments that they observed during the client examination. The adoption of models of functioning, disability, and health in health care has expanded this focus to include the impact of treatment on clients' body structures, body functions, level of activity, and functional limitations.[1] Therapists now identify and treat clients' underlying impairments and address their level of activity and functional limitations.[5] What remains unclear is whether there is a direct relationship between improved impairments and improvements in functional level. A balanced approach to treatment planning is to identify and treat the client's impairments as a means of facilitating the achievement of the functional outcomes, rather than focusing solely on impairments or functional limitations.

Theory In Practice 3-9a

Identify Treatable Impairments and Relevant Outcomes

Functional Limitation	Associated Impairments
Inability to perform driving tasks	■ Pain: Neck pain and temporal headaches ■ Postural malalignment: Forward head posture ■ Decreased active cervical range of motion ■ Muscle spasm in the right trapezius ■ Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae
Inability to perform repetitive upper extremity movements in standing	■ Pain: Neck pain and temporal headaches ■ Postural malalignment: Forward head posture ■ Decreased active cervical range of motion ■ Muscle spasm in the right trapezius ■ Decreased muscular performance: Decreased right trapezius and right levator scapulae strength and endurance ■ Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae ■ Decreased muscle extensibility: Tightness of trapezius and levator scapulae
Inability to perform lifting tasks	■ Pain: Neck pain and temporal headaches ■ Decreased muscle extensibility: Tightness of trapezius and levator scapulae ■ Muscle spasm in the right trapezius ■ Decreased muscular performance: Decreased right trapezius and right levator scapulae strength and endurance ■ Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae

Although the therapist will use the identified functional outcomes as the primary means of judging the client's progress, it is still beneficial for her to identify outcomes related to impairments. The therapist can then use the client's progress, or lack thereof, on the outcomes related to the client's impairments as a basis for determining whether the client is responding to the treatment techniques that she is applying. Table 13-1 (Chapter 13) contains some examples of outcomes related to impairments.

Plan Compensatory Strategies (Step 9b)

The therapist also distinguishes between the impairments that are amenable to active treatment and those for which she must plan a means of compensation. The clinical scenario of the client with myofascial cervical pain is admit-

Theory In Practice 3-9a (continued)

Identify Treatable Impairments and Relevant Outcomes

Impairment	Outcome
Pain: Neck pain and temporal headaches	Pain reported is 0/10 on a visual analog scale
Postural malalignment: Forward head posture	Normalized cervical and head posture
Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae	No signs of active trigger points on palpation of trapezius and levator scapulae muscles; no palpable taut bands, positive pattern of pain referral, or twitch signs
Decreased active cervical range of motion	Active cervical range of motion: Flexion 100%, extension 100%, right rotation 100%, left lateral flexion 100%
Muscle spasm in the right trapezius	No palpable muscle spasm in the right trapezius muscle
Decreased muscular performance: Decreased right trapezius and right levator scapulae strength and endurance	Muscle strength: Right levator scapulae—scapular elevation = grade 5; right trapezius—scapular elevation, scapular retraction = grade 5
Decreased muscle extensibility: Tightness of trapezius and levator scapulae muscles	Normal extensibility of the right trapezius and the right levator scapulae muscles

tedly a straightforward one in which all of the client's impairments are amenable to active treatment. A more complex case would be, for example, a 65-year-old client who is 3 months post a right-sided cerebrovascular accident. The therapists treating this client have identified a left drop foot, left-sided weakness, primitive movement patterns, increased tone in the trunk and involved extremities, painful left shoulder subluxation, and edema in the left hand as the primary impairments. Of these, the drop foot has shown no further signs of recovery and no longer appears amenable to active treatment. Consequently, the therapists do further examination to rule out a peripheral nerve injury or other localized damage to the tibialis anterior muscle. They then consider the drop foot to be an impairment for which they can use a **compensatory strategy** of an ankle-foot orthosis and ambulatory aids. The therapists can also use one of the client's available functional areas to compensate for this impairment in addition to using external orthoses and devices; for example, gait training in the use of the more functional pelvic and lower extremity muscle groups to compensate for the drop foot during ambulation.

Identify Impairments Appropriate for Massage Techniques (Step 9c)

In the clinical decision-making model for Outcome-Based Massage, the Treatment Planning Phase also includes the identification of those impairments that are most appropriate for the application of massage techniques. The therapist bases this decision on her knowledge of the expected outcomes of massage techniques and whether massage techniques can have a direct or secondary effect on the impairment. There are three possible options: massage has a **direct effect** on the impairment; massage has a **secondary effect** on the impairment; and massage has no effect on the impairment. Identifying between massage techniques that have a direct effect on the impairment and those that do not assists the therapist in creating an intervention that will result in improved functional outcomes and prioritizing treatment techniques within an intervention. If the massage technique has no documented or demonstrated effect on the impairment, the therapist has little justification for including it in the intervention. A general summary of the expected outcomes of Table 1-5 (Chapter 1) presents massage techniques to assist the therapist in determining when it is appropriate to treat an impairment using massage techniques.

At this point in the decision-making process, as previously mentioned, the therapist is able to determine whether the use of massage techniques is appropriate for the client's impairments.

Select Treatment Techniques (Steps 10a, 10b)

Once the therapist has identified the impairments for which massage techniques have a direct effect or secondary effect, she can proceed with selecting the techniques she

Theory In Practice 3-9c

Identify Impairments Appropriate for Massage Techniques

Impairments	Role of Massage
Pain: Neck pain and headaches	■ Direct effect on pain due to presence of active trigger points
Decreased muscle extensibility of trapezius and levator scapulae	■ Direct effect on muscle extensibility
Postural malalignment: Forward head posture	■ Direct effect on the lengthening of shortened anterior neck and trunk muscles ■ There will also be a secondary effect resulting from the inactivation of the trigger points since the decrease in pain will minimize the compensatory postural changes that are due to trigger point pain.
Spasm in the right trapezius	■ Direct effect on muscle spasm
Decreased active cervical range of motion	■ Direct effect on the lengthening of shortened anterior neck and trunk muscles that contribute to decreased range of motion ■ There will also be a secondary effect from the inactivation of the trigger points since the decreased range may be due, in part, to a combination of trigger point pain and compensatory muscle guarding.
Decreased muscular performance: Decreased right trapezius and right levator scapulae strength	■ Secondary effect since weakness is likely secondary to trigger point pain and disuse.
Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae	■ Direct effect on the active myofascial trigger points

will use in the intervention. The therapist matches appropriate massage techniques to impairments by considering three factors:

1. Match of expected outcome, related to impairments, of the massage technique to the client's impairment
2. Identification of **contraindications** or **cautions** in the application of that technique given the client's clinical condition
3. The therapist's legal right and competence to use the technique

The chapters on massage techniques describe the expected outcomes of each massage technique to assist therapists in selecting massage techniques.

Simply matching impairments to the outcomes of massage techniques is not sufficient to guarantee that a technique is appropriate for that client's condition. Before performing any massage technique, the therapist needs to consider the general cautions and contraindications to the application of that technique for the client's clinical condition (Table 3-2).[10–23] The techniques chapters cover the relevant clinical considerations, cautions, and contraindications for specific massage techniques.

While this list is a necessary starting point for the consideration of cautions and contraindications to treatment, the therapist should also use her judgment about the application of massage techniques to the client at hand. A useful rule of thumb is that, if a client's condition requires

Theory In Practice 3-10a, 3-10b

Select Treatment Techniques

Massage Techniques	Other Appropriate Treatment Techniques
■ Specific compression ■ Superficial effleurage ■ Superficial stroking ■ Petrissage ■ Broad-contact compression ■ Stripping ■ Self-care specific compression with a hand-held massage device	■ Moist heat for trigger point pain ■ Ice for acute spasm ■ Specific stretches for trapezius and levator scapulae muscles ■ Postural re-education ■ Active range of motion exercises ■ Strengthening exercises ■ Self-care education ■ Functional activity

Table 3-2 Suggested Cautions and Contraindications for Reflex and Mechanical Massage Techniques[10–23,25,26]

Local Conditions

Contraindications

- Acute flare-up of inflammatory arthritis: rheumatoid arthritis, systemic lupus, Reiter's syndrome, etc.
- Acute neuritis
- Aneurysms
- Areas of altered or impaired sensation
- Baker's cyst
- Ectopic pregnancy
- Esophageal varicosities
- Frostbite
- Local contagious skin condition
- Local infection
- Local irritable skin condition
- Malignancy
- Open wound or sore
- Peripheral neuropathy
- Phlebitis, thrombophlebitis, arteritis
- Post anti-inflammatory injection (24–48 hours)
- Recent burns
- Undiagnosed lump

Cautions

- Acute disk herniation
- Acute inflammatory condition
- Allergies to lubricants and cleansers
- Anti-inflammatory injection site
- Buerger's disease
- Chronic abdominal or digestive disease
- Chronic arthritic conditions
- Chronic diarrhea
- Chronic or longstanding superficial thrombosis
- Contusion
- Endometriosis
- Flaccid paralysis
- Fracture—while casted and immediately after cast removal
- Hernia
- Joint instability or hypermobility
- Kidney infection or stones
- Mastitis
- Minor surgery
- Pelvic inflammatory disease
- Pitting edema
- Portal hypertension
- Presence of pins, staples
- Prolonged constipation
- Recent abortion or vaginal birth
- Trigeminal neuralgia

General Conditions

Contraindications

- Acute conditions requiring first aid: anaphylaxis, epileptic seizure, pneumothorax, myocardial infarction, syncope, status asthmaticus, cerebrovascular accident, diabetic coma, insulin shock, appendicitis
- Advanced kidney failure*
- Advanced respiratory failure*
- Anemia (depending on the cause)*
- Diabetes with complications*
- Eclampsia
- Hemophilia*
- Hemorrhage
- Highly metastatic cancers
- Intoxication
- Liver failure*
- Sepsis
- Severe atherosclerosis*
- Shock
- Significant fever (> 101.5°F or 38.3°C)
- Systemic contagious/infectious condition
- Unstabilized cerebrovascular accident
- Unstable hypertension
- Unstable myocardial infarction

Cautions

- Asthma
- Atherosclerosis
- Cancer
- Chronic congestive heart failure
- Chronic kidney disease
- Client taking medications that alter neurological, cardiovascular, psychological, or kidney function
- Coma
- Drug withdrawal
- Emphysema
- Epilepsy
- Hypertension
- Hypotension
- Immunosuppression
- Inflammatory arthritis
- Major or abdominal surgery
- Multiple sclerosis
- Osteoporosis
- Post cerebrovascular accident
- Post myocardial infarction
- Pregnancy and labor
- Psychiatric conditions
- Recent head injury
- Spasticity or rigidity

*Skilled clinicians with advanced training may consider these to be cautions, rather than contraindications.

ongoing management by another health care professional, then it is appropriate for the therapist to consult that health care professional for guidelines regarding cautions and contraindications to treatment.

The therapist also needs to consider whether there are any anatomical structures that can be damaged during the application of massage techniques.[10–24] For example, the application of friction or specific compression over a peripheral nerve in a location where it is close to the skin may produce a neuropraxia.[25] While some sources describe "**endangerment sites**" (Table 3-3) as areas of the human body over which the use of direct or sustained pressure is contraindicated,[10,26] the therapist may also use her judgment in determining whether these areas are contraindicated for other massage techniques. Students and novice therapists who are not experienced in applying treatment techniques should take a conservative approach to applying massage techniques to endangerment sites and in situations in which there are specific cautions or contraindications to the use of a technique.

Generate the Plan of Care (Step 11)

It is unlikely that a plan of care will consist only of massage techniques. The therapist must also select other treatment techniques, such as therapeutic exercise, electrotherapeutic modalities, and education and training on functional activity, that she will need to use in order to achieve the identified outcomes. These treatment techniques will vary depending on the scope of practice of the health care professionals.

A list of treatment techniques does not constitute a plan of care; the therapist also needs to specify and document the treatment parameters within the client's written plan of care. The duration of the episode of care (the current treatment period) and the frequency of interventions should be consistent with the severity, stability, complexity, and acuity of the client's clinical condition; the client's treatment tolerance; the client's prognosis; and the identified outcomes. Other factors that can influence the duration of care and frequency of treatment sessions include: the client's cognitive status, pre-existing conditions, potential discharge destination, overall health status, and probability of prolonged impairment.[7] The therapist must also determine the scope, frequency, and duration of the massage techniques in the intervention. The Using Massage to Achieve Clinical Outcomes chapter provides further information about these issues. Finally, the therapist also needs to consider the client's home or work environment, social context, and personal goals for treatment to ensure that the intervention adequately addresses these factors. Failure to do so may have a negative impact on the level of the client's adherence with self-care and participation in the plan of care.

Critical Thinking Question

Your client is a 16-year-old boy who is nonverbal and fully dependent for all care following a severe head injury. In your examination, you identify multiple impairments, including decreased muscle extensibility, decreased joint range of motion, and decreased skin integrity. On the other hand, you are finding it difficult to identify functional outcomes and compensatory strategies for this client. What process could you use to develop a balanced plan of care for this client, and what might this plan include?

Table 3-3 Selected Endangerment Sites[10,11,13]

Head and Neck	Trunk	Extremities
■ Neck, including anterior and posterior triangle ■ Eye ■ Trachea ■ Styloid process of the temporal bone	■ Axilla ■ Xiphoid process ■ 12th (floating) rib ■ Kidneys in the area of the 12th rib ■ Umbilicus ■ Linea alba ■ Sciatic notch	■ Ulnar nerve at medial epicondyle ■ Femoral artery, nerve, and vein in the area of the inguinal triangle

Theory In Practice 3-11: Items to Chart

Generate the Plan of Care

Plan of Care

Subjective

History of Present Illness:

- Two months ago, the patient had insidious onset of localized neck and shoulder pain, right side greater than the left, with stiffness, decreased active cervical range of motion, neck muscle tightness, neck muscle spasm, and transient headaches.
- Seen by M.D. and given muscle relaxants with little effect
- Is right handed

Current Medication: Acetaminophen for pain

Current Functional Status: On reduced hours secondary to neck pain and difficulty performing job-related tasks

Past Medical History: Unremarkable; no prior history of neck or upper extremity injuries; no prior therapy

Pain: Neck pain at rest, at end of range of motion, and during functional activity; reported pain intensity of 8 on a visual analog scale; transient headaches (temporal region)

Muscle Tightness: Tightness of neck muscles on waking and with fatigue

Functional Limitations: Reported inability to drive or check out groceries at the cash register for > 10 minutes secondary to increased neck pain

Prior Functional Level: Full-time cashier at supermarket; able to perform all job-related tasks without difficulty

Objective

Posture: Forward head posture

Palpation:

- Palpable muscle spasm in the right trapezius
- Palpable taut bands in the right trapezius and levator scapulae
- Reported positive pattern of pain referral on palpation of the right trapezius trigger point
- Reported positive pattern of pain referral on palpation of the right levator scapulae trigger point
- Twitch response on palpation of trigger point locations in the right upper trapezius and the right levator scapulae muscles

Range of Motion:

- Decreased active cervical range of motion: flexion 50%, extension 75%, right rotation 75%, left lateral flexion 50% with pain at end of range of motion; other ranges full and painfree
- Full and painfree active range of motion of shoulder, elbow, wrist, and hand bilaterally

Muscle Extensibility: Tightness of trapezius and levator scapulae muscles

Strength:

- Decreased strength of the right levator scapulae—scapular elevation = grade 4–
- Decreased strength of the right trapezius—scapular elevation, scapular retraction = grade 4–
- Strength of other shoulder, wrist, and finger motions = grade 5

Functional Limitations:

- Inability to drive for > 10 minutes secondary to increased neck pain
- Inability to perform repetitive upper extremity movements in standing using the right arm for > 10 minutes (as required for checking out groceries at the cash register) secondary to neck pain
- Inability to reach objects placed 1 foot above head with the right arm (as required for retrieving items from overhead shelves) secondary to neck pain
- Inability to lift a 5-lb object above shoulder level using the right arm (as required for placing boxes of dried goods on overhead shelves) secondary to neck pain
- Inability to lift and transfer a 15-lb object using the right arm (as required for placing customers' purchases into shopping carts) secondary to neck pain
- Inability to perform > 3 repetitions of lifting and transferring a 3-lb object at waist level using the right arm (as required for checking out customers' groceries and placing them in shopping bags) secondary to neck pain

Analysis

Trigger points in right upper trapezius and levator scapulae muscles with associated muscle tenderness, muscle tightness, and decreased cervical spine range of motion

Impairments:

- Pain: Neck pain and temporal headaches
- Decreased muscle extensibility: Tightness of trapezius and levator scapulae muscles
- Postural malalignment: Forward head posture
- Muscle resting tension: Muscle spasm in the right trapezius
- Decreased active cervical range of motion
- Decreased muscular performance: Decreased right trapezius and right levator scapulae strength and endurance
- Decreased muscle integrity: Active trigger points in the right upper trapezius and levator scapulae

Functional Limitations:

- Inability to drive for > 10 minutes secondary to increased neck pain
- Inability to perform repetitive upper extremity movements in standing using the right arm for > 10 minutes secondary to neck pain
- Inability to reach objects placed 1 foot above head with the right arm secondary to neck pain
- Inability to lift a 5-lb object above shoulder level using the right arm secondary to neck pain
- Inability to lift and transfer a 5-lb object using the right arm secondary to neck pain
- Inability to perform > 3 repetitions of lifting and transferring a 3-lb object at waist level using the right arm secondary to neck pain

Outcomes (related to impairments):

- Pain reported is 0/10 on a visual analog scale
- Normalized cervical and head posture
- No palpable muscle spasm in the right trapezius muscle
- No signs of active trigger points on palpation of trapezius and levator scapulae muscles: palpable taut bands, positive pattern of pain referral, or twitch signs
- Active cervical range of motion: flexion 100%, extension 100%, right rotation 100%, left lateral flexion 100%
- Normal extensibility of the right trapezius and the right levator scapulae muscles
- Muscle strength: right levator scapulae – scapular elevation = grade 5; right trapezius – scapular elevation, scapular retraction = grade 5

Functional Outcomes

Short-Term Outcomes (2 weeks):

- Able to drive for ½ hour without complaints of pain
- Able to work checking out groceries at the cash register for ½ hour, with appropriate breaks, without complaints of pain
- Able to lift a 5-lb object and place it on shelf at shoulder level—1 repetition without complaints of neck pain
- Able to reach objects placed 1 foot above head with the right arm without complaints of neck pain
- Able to lift and transfer an 8-lb object at waist level with the right arm without complaints of pain
- Able to perform 5 repetitions of transferring a 5-lb object at waist level using the right arm without complaints of pain

Long-Term Outcomes (Discharge: 4 weeks):

- Able to drive for 1.5–2 hours without complaints of neck pain
- Able to work checking out groceries at the cash register for 2 hours, with appropriate breaks, without complaints of pain
- Able to lift an 8-lb object and place it on shelf at shoulder level—5 repetitions without complaints of neck pain
- Able to reach objects placed 2 feet above head with the right arm without complaints of neck pain
- Able to lift and transfer a 15-lb object at waist level with the right arm without complaints of neck pain
- Able to perform 15 repetitions of transferring a 5-lb object at waist level using the right arm without complaints of neck pain
- Independent in self-care and therapeutic exercise program

Plan

Treatment: 2 × week for 4 weeks

Massage Techniques:

- Specific compression
- Superficial effleurage
- Superficial stroking
- Petrissage
- Broad-contact compression
- Stripping
- Self-care specific compression with a hand-held massage device

Therapeutic Exercise:

- Specific stretches for trapezius and levator scapulae muscles
- Postural re-education
- Active range of motion exercises for cervical spine
- Strengthening exercises for cervical and scapular muscles

Modalities:

- Moist heat in the location of the trigger points to reduce trigger point activity and pain
- Ice for acute muscle spasm

Functional Training:

- Functional training in lifting and transferring required for effective job performance as a cashier

Education:

- Self-care education in pain and trigger point management

TREATMENT PHASE

Select Treatment and Re-Examination Techniques (Steps 12a, 12b)

The therapist is ready to initiate treatment once she has completed the plan of care. First, she selects a subset of the prioritized massage and **complementary treatment techniques** from the plan of care as a starting point. The aims of the first stage of treatment are to gauge the client's treatment tolerance and to ascertain whether the treatment techniques can affect the client's impairments. It is, therefore, advisable for the therapist to select those techniques that are most likely to have a direct effect. At the outset of the episode of care, the therapist also identifies which subjective and objective examination techniques she can use to determine whether the client is having a positive response to treatment. In doing so, she includes questions that seek the client's perspective on her progress and the intervention. This information is invaluable because these factors can signal problems that the client is having with the intervention and can provide the therapist with guidance on how to improve client adherence to or participation in the plan of care.

Carry Out Initial Intervention (Step 13)

As mentioned earlier, during the first stage of treatment, the therapist is evaluating the appropriateness of the plan of care and gauging the client's treatment tolerance. She bases the intensity of the interventions on the level of acuity of the client's condition, using less intense treatments for a more acutely ill client and vice versa. In addition, she is cautious not to introduce too many treatment techniques at once because that will make it difficult for her to identify the techniques to which the client had a positive or adverse response. The therapist also conducts formal and informal client examinations to determine the client's response to treatment.

Conduct Client Re-Examination (Step 14)

The therapist can perform informal client examinations at any time during the interventions. Palpation and the massage techniques themselves can provide information on the client's response to the technique the therapist is applying and to the intervention as a whole (see Chapter 5, Client Examination for Massage). These informal

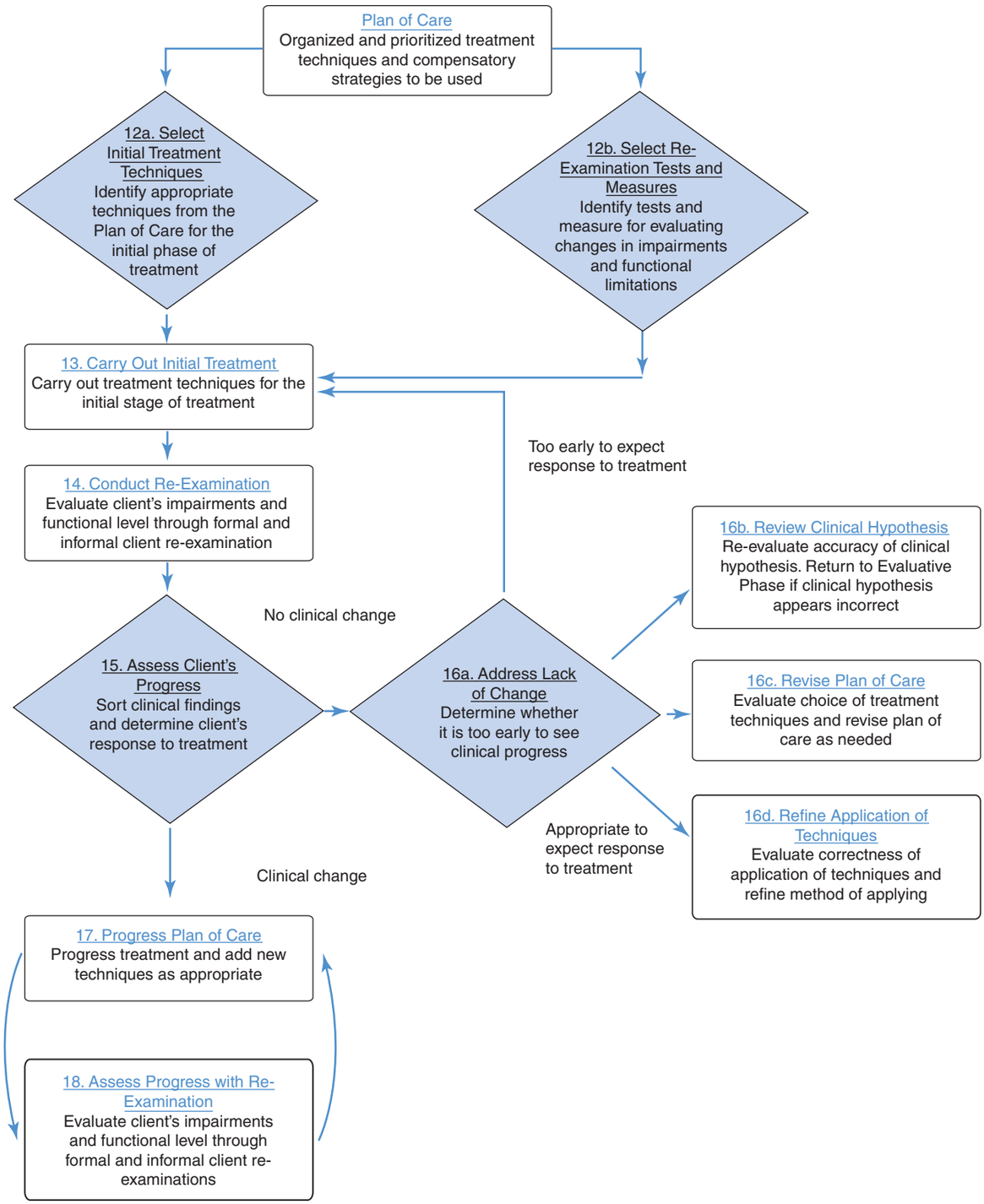

Figure 3-3 Clinical Decision-Making Model: The Treatment Phase.

Theory In Practice 3-12a, 3-12b

Select Treatment and Re-Examination Techniques

Massage Treatment Technique	Complementary Technique	Examination Techniques
■ Superficial stroking on the site of the acute spasm ■ Broad-contact compression	■ Specific stretches for trapezius and levator scapulae muscles ■ Ice for spasm ■ Self-care education for pain control	Subjective ■ Pain reports ■ Perceptions of treatment and progress made Objective ■ Muscle spasm ■ Trigger point pain referral pattern ■ Range of motion

Theory In Practice 3-13, 3-14, 3-15

Carry Out Initial Treatment, Conduct Client Re-Examination, and Assess Client Progress

	Patient's Response to Initial Interventions (1 week)
Treatment Technique	■ Superficial stroking on the site of the spasm ■ Broad-contact compression on the location of the trigger points and off the site of the spasm ■ Petrissage off the site of spasm ■ Specific stretches for trapezius and levator scapulae muscles ■ Ice on the location of the muscle spasm ■ Self-care education for pain control
Results of Informal Examination	■ Patient had negative response to use of ice for spasm; this exacerbated trigger point pain. Superficial stroking was used for spasm. ■ Moist heat applied to the trigger point location may be more effective for pain relief. ■ Patient's trigger points were initially too sensitive to tolerate specific compression; broad-contact compression was used. ■ Patient was able to perform specific stretches for trapezius and levator scapulae muscles appropriately.
Results of Formal Examination	■ Decreased reports of pain during functional activity—reported pain intensity of 6.5 on a visual analog scale ■ Decreased muscle spasm ■ Pattern of pain referral—unchanged
Practitioner's Conclusions	Patient is responding to treatment. Trigger point therapy is appropriate.

examinations can be interspersed throughout the interventions. Once the client has reached a point at which the therapist can reasonably expect a measurable clinical change, the therapist carries out a more formal re-examination using the tests and measures she selected for this purpose. This re-examination focuses on the identification and measurement of changes in the client's impairments and functional level from the baseline established at the initial examination.

Assess Client Progress (Step 15)

The therapist uses the re-examination as a means of determining the client's progress towards the achievement of the identified outcomes and the client's readiness for treatment progression. She can also use this information as the basis for her decision on whether to modify the plan of care or the identified outcomes.

Address Lack of Change (Steps 16a, 16b, 16c, 16d)

If the result of the client re-examination is that the client does not demonstrate any clinical change, the therapist must first determine whether it may be too early to observe a change. If this is the case, she reattempts treatment with the original set of techniques and may consider the addition of another treatment technique before the next formal re-examination. If, however, the therapist believes that the client has had ample time to demonstrate a clinical change, then the therapist must re-evaluate the appropriateness of the plan of care. Possible causes for the therapist to consider for the client's failure to respond to interventions are an

incorrect clinical hypothesis, an inappropriate treatment technique, or an incorrect application of a technique. If the therapist's clinical hypothesis was incorrect, she will need to revisit the Evaluative Phase and repeat the client examination to identify the client's clinical condition. The therapist can remedy the choice of inappropriate treatment techniques by selecting more appropriate techniques and modifying the plan of care. Finally, if the therapist's choice of clinical hypothesis and treatment techniques appears to be accurate, then she needs to refine her application of the treatment techniques.

Progress Plan of Care and Assess Progress Through Re-Examination (Steps 17, 18)

Once the therapist is confident that the direction of the plan of care is appropriate, then the cycle of treatment progression and informal or formal re-examination begins. Throughout this cycle, the therapist ensures that she assesses both the client's impairments and functional level at appropriate intervals. Ideally, each intervention should incorporate an element of informal examination and progression or modification of either the treatment techniques or client education. The Using Massage to Achieve Clinical Outcomes chapter discusses these issues in greater detail. During the application of each treatment technique, the therapist informally evaluates the client's response and uses this information to fine tune the intervention and her application of treatment techniques. The therapist can also use these informal examinations to identify when the client has a flare-up of her clinical condition that results in an increase in her impairments and functional limitations. The timing of formal examinations of the client's progress on functional outcomes will depend on the timeframes that the therapist has defined for those outcomes.

Critical Thinking Question

Your objective examination shows that your client is making significant improvements on the outcomes for the key impairments that you selected. Nevertheless, she reports little progress with her functional outcomes. What steps could you use to identify what to correct in your intervention? How might you modify your intervention to improve her progress on her functional outcomes?

DISCHARGE PHASE

Identify Post-Discharge Needs (Step 19)

There is, unfortunately, no exact formula to use for determining when to initiate the discharge process. Consequently, the therapist can initiate discharge planning as early as the first session or much later in the treatment process. There are many factors that can influence the therapist's decision on when to begin the Discharge Phase. First of all, the therapist must also consider the client's characteristics, such as the client's progress with her functional outcomes, her psychological and educational readiness for discharge, and the resources needed and available to the client following discharge. In addition, the therapist cannot ignore the constraints to discharge planning imposed by the nature of the clinical setting and the predicted length of the episode of care. For example, in the Theory in Practice clinical scenario, the therapist can begin discharge planning in earlier sessions because of the relative brevity of the client's course of treatment. Although one can argue that every intervention is preparing the client for discharge, there are specific activities that are associated with facilitating an effective discharge.

Initiate Post-Discharge Education and Referrals (Steps 20, 21)

As the client approaches achievement of 75% of her functional outcomes, the therapist needs to initiate a discussion of the client's discharge concerns and needs. This may occur earlier if the client appears to have complex needs that will require more discharge planning or the clinical setting dictates shorter **episodes of care**. Although the therapist may not be able to address all of the client's discharge needs, a complete list of discharge needs is valuable for planning self-care education, referrals to other health care professionals, and other client resources.

By the time the client is close to achieving her functional outcomes, the therapist should have initiated referrals, identified equipment needs and initiated purchases, finalized the content of home programs, and begun discharge self-care education. The emphasis of the final sessions prior to discharge will shift to include a larger educational component. Chapter 4, Ethical and Interpersonal Issues in Massage, also discusses the psychological preparation of the client for discharge. If the therapist

Theory In Practice 3-17, 3-18

Progress Plan of Care and Assess Progress Through Re-Examination

	Week 2	Week 3
Treatment Techniques	Massage Techniques ■ Broad-contact compression ■ Petrissage ■ Specific compression Other Appropriate Treatment Techniques ■ Specific stretches for trapezius and levator scapulae muscles ■ Heat to location of trigger points for pain ■ Postural re-education ■ Active range of motion exercises ■ Functional activity ■ Self-care education—add home range of motion and stretching program	Massage Techniques ■ Broad-contact compression (decreased duration) ■ Petrissage (decreased duration) ■ Stripping (increased duration and depth) ■ Specific compression (increased duration and depth) Other Appropriate Treatment Techniques ■ Specific stretches for trapezius and levator scapulae muscles ■ Heat for preparation for stretching ■ Postural re-education ■ Functional activity ■ Strengthening exercises ■ Self-care education—add self-care specific compression with a hand-held massage device
Results of Patient Re-Examination	Functional Outcomes ■ Reports being able to drive for 0.5 hours without complaints of neck pain ■ Able to perform repetitive upper extremity movements while standing 0.75 hours without complaints of neck pain ■ Able to lift a 5-lb object and place it on shelf at shoulder level—5 repetitions without complaints of neck pain ■ Able to reach objects placed 1 foot above head with the right arm without complaints of neck pain ■ Able to lift and transfer a 5-lb object at waist level with the right arm without complaints of neck pain ■ Able to perform 10 repetitions of transferring a 5-lb object at waist level using the right arm without complaints of neck pain Other Examination Findings ■ Reported recent flare-up of pain following attempts to increase work time ■ Reported pain intensity of 5 on a visual analog scale by end of week ■ Pattern of pain referral—decreased intensity of pain on palpation of trigger points ■ Active cervical range of motion: flexion 75%, extension 90%, right rotation 90%, left lateral flexion 75% ■ Strength: right levator scapulae—scapular elevation = grade 4; right trapezius—scapular elevation, scapular retraction = grade 4	Functional Outcomes ■ Reports being able to drive for 1 hour without complaints of neck pain ■ Able to perform repetitive upper extremity movements while standing 1.25 hours without complaints of neck pain ■ Able to lift a 10-lb object and place it on shelf at shoulder level—1 repetition without complaints of neck pain ■ Able to reach objects placed 1.5 feet above head with right arm without complaints of neck pain ■ Able to lift and transfer a 10-lb object at waist level with the right arm without complaints of neck pain ■ Able to perform 15 repetitions of transferring a 5-lb object at waist level using the right arm without complaints of neck pain Other Examination Findings ■ Reported pain intensity of 3.5 on a visual analog scale ■ No pain referral on palpation of upper trapezius trigger point; minimal reports of pain for levator scapulae trigger point ■ Active cervical range of motion: flexion 90%, extension 100%, right rotation 100%, left lateral flexion 75% ■ Strength: right levator scapulae—scapular elevation = grade 4+; right trapezius—scapular elevation, scapular retraction = grade 4+

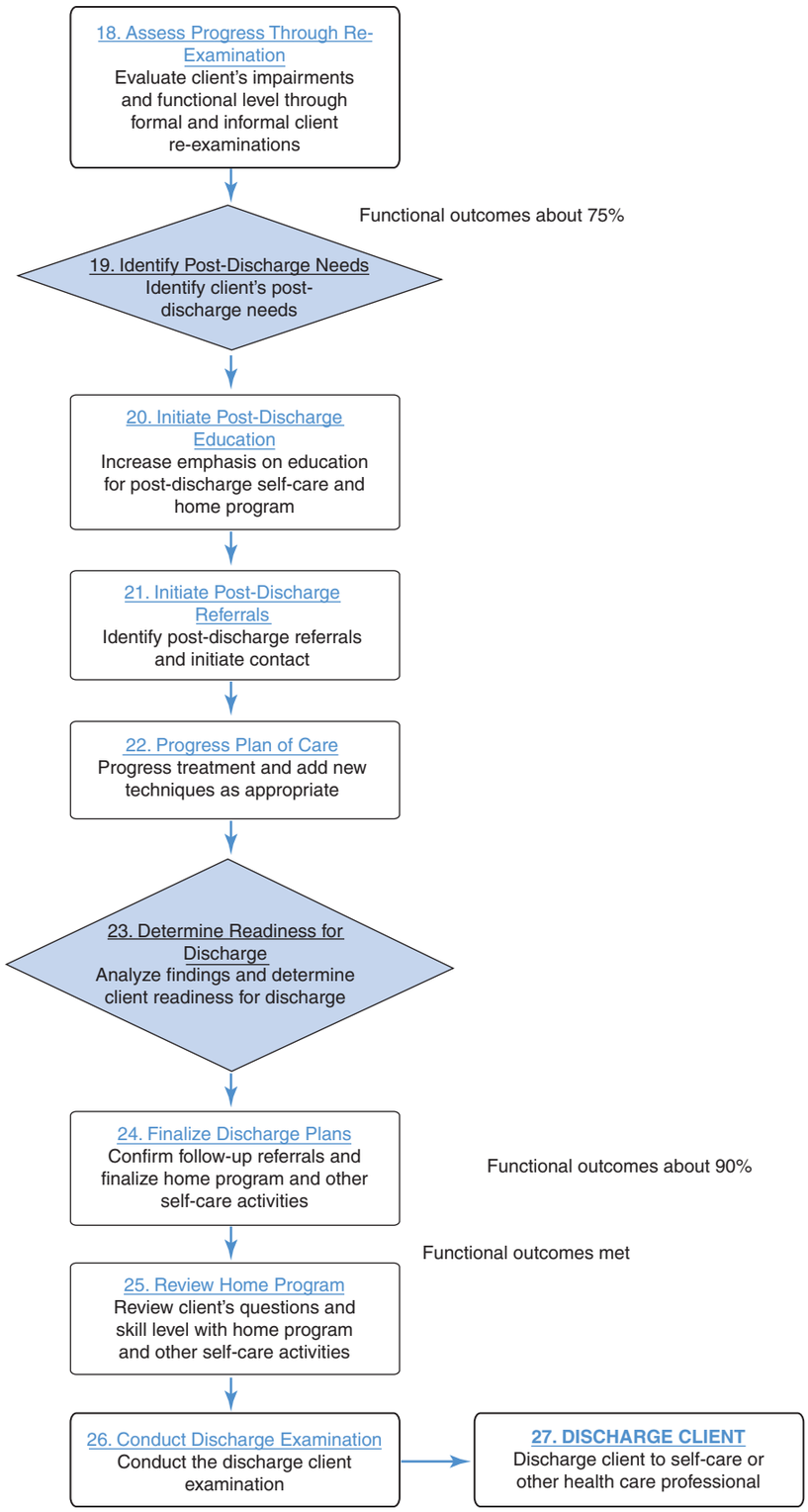

Figure 3-4 Clinical Decision-Making Model: The Discharge Phase.

refers the client to another health care professional, for example a subacute unit or home health care, the discharge process will also include written and verbal communication with the other therapists.

Progress Plan of Care and Determine Readiness for Discharge (Steps 22, 23)

As the client approaches the final stages of treatment, the therapist ensures that she has appropriately completed the progression of the various components of the plan of care. She uses the results of her ongoing client re-examinations to guide the rate at which she progresses interventions. These clinical findings also indicate when the client has achieved 90% of her functional outcomes.

Finalize Discharge Plans and Review Home Program (Steps 24, 25)

As the client nears completion of her course of treatment, the therapist ensures that the client is competent in her post-discharge self-care program. She also confirms that she has finalized all post-discharge arrangements.

Theory In Practice 3-19, 3-20, 3-21

Identify Post-Discharge Needs and Initiate Post-Discharge Education and Referrals

Impairment/Functional Limitation	Post-Discharge Need
■ Pain	■ Pain management self-care education ■ Self-care specific compression with a hand-held massage device
■ Difficulty performing job-related activities	■ Ergonomic education and work site assessment
■ Decreased muscle extensibility	■ Home stretching program
■ Decreased range of motion	■ Home range of motion program

Theory In Practice 3-22, 3-23

Progress Plan of Care and Assess Progress Through Re-Examination

Week 4

Treatment Techniques	Massage Techniques ■ Petrissage (decreased duration) ■ Broad-contact compression (decreased duration) ■ Specific compression (increased duration) ■ Stripping (increased duration and depth) Other Appropriate Treatment Techniques ■ Postural re-education ■ Functional activity ■ Strengthening exercises ■ Self-care education—add ergonomics education, review education on identifying and managing flare-ups
Results of Patient Re-Examination	Re-Examination Findings Discharge concerns: ■ Cashier station is not ergonomically correct, and this aggravates pain. Patient is concerned about how to manage flare-ups. ■ Patient is able to demonstrate all self-care activities correctly. ■ Reported pain intensity is 1 on a visual analog scale. ■ There is no pain referral on palpation of upper trapezius or levator scapulae trigger points.

Conduct Discharge Examination and Discharge Client (Steps 26, 27)

The final, or discharge, client examination provides the therapist with a confirmation of the client's readiness for

Theory In Practice 3-24, 3-25

Finalize Discharge Plans and Review Home Program

The practitioner outlines a self-care program that addresses the patient's discharge needs. It contains components that reflect the patient's presenting impairments and functional limitations.

Week 4: Self-Care Program

- Pain management
- Ergonomics
- Home stretching
- Home range of motion
- Self-care specific compression with a hand-held massage device

discharge. It also is a record of the status of the client's impairments and functional level at the time of discharge.

Critical Thinking Question

Your client has met all of the functional outcomes and outcomes for impairments that you established for her intervention. She has, however, made little progress with her self-care education and home program. What process can you use to facilitate a timely discharge for this client?

ONGOING CARE

Therapists must modify the four-phase clinical decision-making process for clients who require ongoing episodes of care because of their clinical condition or the nature of their clinical care. Clients who require ongoing episodes of care include:

- Pediatric clients with developmental disabilities
- Clients with chronic or terminal conditions who are at risk for deterioration of health status
- Geriatric clients who are at risk for falls or deterioration of health status
- Clients who have ongoing disability and health care needs as a result of spinal cord injury, head injury, amputation, or other traumatic injury
- Clients who are receiving wellness interventions

Theory In Practice 3-26, 3-27

Conduct Discharge Examination and Discharge Client

The practitioner documents the clinical findings on the discharge examination. These findings indicate that the patient has achieved her outcomes and is ready for discharge.

Discharge Examination Findings: Functional Outcomes

- Able to drive for 2.5 hours without complaints of neck pain using stretches and postural checks
- Able to work checking out groceries at the cash register for 2 hours without complaints of neck pain; takes appropriate breaks and uses stretches and postural checks; has had ergonomic adjustments to cashier station; occasional complaints of neck tightness with fatigue
- Able to perform lifting tasks required for work as a cashier:
  1. Able to lift an 8-lb object and place it on shelf at shoulder level—5 repetitions without complaints of neck pain
  2. Able to reach objects placed 2 feet above head with the right arm without complaints of neck pain
  3. Able to lift and transfer a 15-lb object at waist level with the right arm without complaints of neck pain
  4. Able to perform 20 repetitions of lifting and transferring a 5-lb object at waist level using the right arm without complaints of neck pain

Other Examination Findings

- Reported pain intensity of 0.5 on a visual analog scale
- Normalized cervical and head posture
- No palpable muscle spasm in the right trapezius muscle
- No signs of active trigger points on palpation of trapezius and levator scapulae muscles: palpable taut bands, positive pattern of pain referral, or twitch signs
- Active cervical range of motion: flexion 100%, extension 100%, right rotation 100%, left lateral flexion 100%
- Normal extensibility of the right trapezius and the right levator scapulae muscles
- Muscle strength: right levator scapulae—scapular elevation = grade 5; right trapezius—scapular elevation, scapular retraction = grade 5

The clinical decision-making process does not end at the Discharge Phase when a client requires ongoing episodes of care. First, the therapist's discharge planning must include organization, or at the very least a discussion, of the follow-up care. Second, the therapist must plan and implement a follow-up client examination and thus initiate the Evaluative Phase once more.

The follow-up examination (see Table 3-1) is a focused client examination in which the therapist determines whether the client has demonstrated a deterioration of impairments or functional level since the prior examination. Based on the clinical findings she obtains from this examination, the therapist identifies whether the client has new treatment needs. If the client does not require ongoing care, the therapist documents this finding and organizes further follow-up if warranted. However, if the client does demonstrate a deterioration in status, the therapist initiates the Treatment Planning Phase of the clinical decision-making process and then moves onto the Treatment and Discharge Phases. In the case of wellness interventions, the therapist does not base the need for ongoing care on a deterioration of health status but on the identification of the client's need for interventions to maintain or improve his or her current level of wellness.

Critical Thinking Question

How would you modify the steps in the four-phase clinical decision-making process if your client presented with wellness goals, rather than a medical condition?

REVIEWING THE BASICS

Therapists can use the clinical decision-making process proposed for Outcome-Based Massage as a guide through the Evaluative, Treatment Planning, Treatment, and Discharge Phases of clinical care. The aim of this process is to enable the therapist to integrate massage techniques effectively into clinical care as the primary or complementary treatment technique. Although the steps in this process are presented in a linear sequence, the process is an iterative one in which the therapist may perform several steps concurrently. The decision-making model proposed in this chapter provides guidelines for enhancing the appropriateness and adequacy of the examinations, plans of care, and interventions provided by therapists.

Clinical Decision-Making for Massage: Further Study and Practice

This section introduces some additional issues that a clinician can consider during the clinical decision-making process.

LEGAL RIGHT TO TREAT

Legal right to treat refers to whether the clinician's professional scope of practice includes the treatment of the client's clinical problem, the examination techniques, and the treatment techniques that the clinician wishes to use. Professional scope of practice is dictated by the laws of the jurisdiction in which the clinician practices. Health care professions have practice acts that protect public health and safety by regulating the qualifications, registration, and discipline of members of the profession. For each profession, these practice acts outline the qualifications; licensing or registration requirements; treatments that can be applied by the professional; grounds for discipline; and sanctions that will be applied to violators of the practice act. Legal right to treat can be a gray area where the practice of massage is concerned. Clinicians from a range of health care professions can use some massage techniques within their scope of practice without advanced training or certification, while others cannot. Athletic Trainers, Massage Therapists, Nurses, Occupational Therapists, Physical Therapists, Chiropractors, and other bodyworkers can incorporate superficial reflex techniques, such as stroking applied to facilitate relaxation, into the interventions for clients with a variety of clinical conditions. By contrast, the application of manual lymph drainage techniques for the management of lymphedema may be outside the scope of practice of several of these health care professionals. In addition, the clinician needs to determine whether the client has other therapeutic needs that a clinician from a different health care profession could address more appropriately. This situation would warrant a referral to that health care professional for treatment of those clinical problems that are outside of the clinician's scope of practice. In light of the complexity

of issues related to scope of practice, clinicians need to consult the practice acts for their professions to determine their legal right to use massage techniques for the different clinical conditions they encounter in clinical practice.

COMMON ERRORS IN HYPOTHESIS GENERATION

The research on clinical decision-making can provide some guidance on how to avoid some common errors in hypothesis generation and verification. Comparisons of master and novice clinicians have shown that master clinicians included in their data gathering both objective data and information on their clients' perceptions of their medical condition and functional limitations.[2] This integration of findings from different sources assisted the master clinicians in confirming the clinical hypotheses. Unlike novice clinicians, master clinicians were selective in the data that they gathered and were able to depart from a standard examination framework to seek clarification on issues that arose during the examination. This strategy prevented the problem of becoming overwhelmed by a large amount of irrelevant data, which novice clinicians frequently encountered. Generating a few hypotheses about the client's clinical problem early in the examination appeared to give the clinician more opportunities for refining the hypothesis and arriving at a hypothesis that the clinical findings supported.[3,4] This research also highlights several common errors made by clinicians during an examination. Having too many hypotheses made it difficult for the clinician to use a focused set of tests and measures and resulted in them gathering divergent information. In addition, making hypotheses very general, so that they would fit inconsistent findings, led the clinicians to arrive at incorrect conclusions about the client's clinical condition. Finally, incorrect conclusions also occurred when the clinicians made the error of exaggerating findings to justify an existing hypothesis rather than acknowledging that the existing hypothesis was incorrect and seeking a new hypothesis.

IDENTIFICATION OF IMPAIRMENTS APPROPRIATE FOR MASSAGE TECHNIQUES

Since the decision regarding the relevance of impairments for massage is a critical one, here are further examples of how clinicians can make this decision. Consider the case of a client who presents with the impairments of pain, adhesions, and decreased muscle extensibility in the later stages of therapy after surgical repair of the Achilles tendon. The clinician can use connective tissue techniques to increase muscle extensibility and promote remodeling of dense connective tissue. Consequently, massage techniques are appropriate as primary treatment techniques for adhesions and decreased muscle extensibility. In this situation, the massage technique will have a direct effect on the impairment, and the clinician can use other techniques in a complementary manner.

There are also circumstances in which massage techniques can have a secondary or indirect effect on an impairment. For example, a client presents with decreased muscle performance secondary to pain, guarding, and muscle spasm following the reduction of a glenohumeral dislocation. In this situation, the clinician can use superficial reflex techniques to reduce pain, guarding, and muscle spasm and thus facilitate improvements in muscle performance. If a massage technique has a secondary effect on the impairment, the clinician may choose to use that technique in a complementary manner within the intervention. In this case, the primary treatment techniques would be therapeutic exercise. Finally, if the client presented with the impairment of muscle weakness secondary to a peripheral neuropathy, then the impairment would not be appropriate for massage because massage techniques do not have a documented effect on neurologically based muscle weakness.

DISCHARGE ISSUES

Can you discharge a client if he has not met the outcomes defined for his intervention? There is much discussion and controversy about whether clinicians can terminate treatment for reasons other than the clients' achievement of their clinical outcomes, such as the end of reimbursement or the client's request. Ideally, the clinician will use the extent to which the client achieves his clinical outcomes as the guide for discharge. There are circumstances, however, in which the client need not meet the established functional outcomes before discharge. These situations include:

- When the clinician recognizes that the outcomes are not achievable given the client's condition and health status
- When the client's functional level reaches a plateau before achieving the outcomes, but he carries out his daily activities sufficiently to justify discharge

- When the client is unable to progress towards the outcomes because of medical or psychological complications
- When the client refuses ongoing treatment
- When the clinician believes that the client cannot benefit from further treatment[7]

Ultimately, the clinician must use her clinical judgment, input from the client, and examination findings to guide her decisions about the timing of discharge. In all situations, appropriate documentation of the rationale for discharge is necessary.

Another concern is whether you can justifiably continue to treat a client after he has met his identified outcomes. If the client's clinical outcomes were consistent with the severity, complexity, stability, and acuity of his medical condition, then the clinician cannot ethically justify ongoing treatment. If a clinician is uncertain whether treatment should end, she should re-evaluate the client's clinical outcomes within the context of her scope of practice. This will assist her in determining whether the client has ongoing therapeutic needs that she can address or whether she needs to refer the client to another health care professional for care.

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