The Problem Solving Begins!

We’ve gathered a lot of information and now it’s time to make sense of it all. With clinical reasoning the problem solving really begins! During Clinical Reasoning we need to identify and prioritize key problem areas. We determine the source of each problem based on our observations and interpretations, in order to develop the most effective treatment program.

Identifying the Key Problem Areas

To treat hemiplegia most effectively, it is essential to first identify key problem areas so that the treatment is specific to the primary underlying problem. Evaluating a patient and identifying key problem areas are the equivalent of doing good detective work. Treating a person recovering from a stroke is complex and many problem areas are associated with adult hemiplegia.

Key problem areas are determined through interview, specific observations, handling and moving the patient. I make sure that I compare and contrast the patient’s movement with normal movement. As a therapist, your ability to analyze normal movement and the components of normal movement within a functional context are essential to good evaluation and effective treatment. Be specific in your analysis and description of problem areas.

Prioritizing Key Problem Areas

Next, prioritize the identified problem areas. Select two or three key problems that, if remedied, would have the greatest overall impact on your patient’s functional status. Determine which key problem areas can be realistically treated in your setting. Keep in mind time constraints such as the patient’s tolerance to activity, length of stay and financial considerations.

Do not assume that the loss of motor control will always have the greatest impact. Sensory loss, fear, neglect or cognitive impairment also could be key problem areas. The two most important prognostic indicators in determining my patient’s ability to function are cognition and sensation. If my patient has good cognition and good sensation, they have a much better chance at becoming independent. If my patient has good motor recovery but poor cognition and sensation, they are less likely to be safe and independent.

With the following patients we’ll combine what we see, what we hear and what we feel and begin the clinical reasoning process.
**Interpretation: Determining Underlying Factors (Impairments)**

It’s important to separate interpretation from observation. All of us should have seen basically the same things when we observed Clint and Alice. However, how we interpret what we have seen can be very different. How we interpret the information we’ve gathered is based largely on our knowledge and experience. If you have one year of experience in the acute care hospital and seldom see a stroke patient more than one week post stroke, your interpretations will be very different from a therapist who has ten years of experience working with a stroke patient over a period of several months in inpatient, outpatient and home health.

Look at movement patterns that are deviations from normal and begin to ask yourself “Why?” The same holds true for asymmetries noted. Asymmetry tells us there’s a problem but doesn’t tell us the cause. We need to determine the source or the cause of each problem before we can plan an effective treatment program. The source of the problem can also be described as the underlying factor or impairment. Once underlying factors are identified it is much easier to plan our treatment strategies.

**Underlying factors or impairments related to stroke**

- motor control
- sensation
- perception
- cognition
- communication
- environmental factors

Impairments that occurred prior to the stroke may include:

- surgical procedures
- previous injuries
- secondary diagnosis

**Examples of Observation and Interpretation**

We noticed in the Evaluation segment that Tom’s head was not in midline and that Clint had a winged scapula. I take these observations and think “why?” What could be some possible reasons? What are the underlying factors? We should all see the same problems but we may each think of different reasons why the problems exist. The answers to “Why?” help me to interpret my observations and form the basis of my clinical reasoning.

The following could be reasons why a stroke survivor’s head would not be in midline:

- tightness of the upper trapezius
- compensation for visual field deficit
- neglect or disregard
- midline orientation deficit
- uneven weight bearing and the head ‘rights’ to one side as a result
Let’s take another example of a problem that is not uncommon in hemiplegia; winging of the scapula. We’ve all learned in school that the most common reason for a winged scapula is weakness of the serratus anterior. This may be true of a patient with orthopedic involvement, however, in hemiplegia, winging of the scapula is often be caused by increased tone of the internal rotators of the humerus. Abnormal tone of the subscapularis is a likely cause of internal rotation of the humerus resulting in winging of the scapula.

Why is it important to know the cause? It’s important because how we interpret or determine the underlying factor as the source of the problem will affect the kind of therapy we do in treatment. If the patient has weakness of the serratus anterior, then we need to facilitate and strengthen that muscle. However, if the underlying factor is related more to high tone of the subscapularis, then, in therapy, we need to work on reducing tone of the subscapularis in order to be the most effective.

**Observations and interpretations During Function**

Some observations of problem areas are seen within a functional context. A patient might have difficulty standing up. The problem has already been identified, but the source of the problem hasn’t. So, I begin the problem solving process again. I think “why”? If I can identify the source of the problem or the ‘underlying factor’, then I will have a much better idea of specifically what to do in therapy.

What are some factors which could contribute to the difficulty in coming from sit to stand?

- Is it the patient’s inability to come forward?
- Are they limited in hip or trunk flexion?
- Is the patient fearful?
- Is it the position of their feet?
- Do they have limited ankle dorsiflexion? If so, what is the cause of that limitation?
- Do they have a shortened Achilles tendon? Why?
- Are they wearing an orthotic device? Is it limited to 90°, which would limit dorsiflexion?
## Structured Observations (Examples)

<table>
<thead>
<tr>
<th>Areas Observed</th>
<th>Observation</th>
<th>Possible Causes of Problem*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Lateral flexion to affected side</td>
<td>Shortened upper trapezius</td>
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<tr>
<td></td>
<td></td>
<td>Poor head righting</td>
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<tr>
<td></td>
<td></td>
<td>Midline orientation deficit</td>
</tr>
<tr>
<td>Shoulder</td>
<td>Hemiplegic shoulder lower</td>
<td>Weak trunk with lateral flexion to the hemiplegic side</td>
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<tr>
<td></td>
<td></td>
<td>Low tone in shoulder girdle with arm hanging to the side</td>
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<td></td>
<td>Unaffected shoulder higher</td>
<td>Increased tone in depression and downward rotation of the scapula</td>
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<td></td>
<td></td>
<td>Bracing or holding with strong side caused by poor sitting balance, weak trunk control, or fear</td>
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<tr>
<td>Scapular position</td>
<td>Downward rotation of scapula</td>
<td>Increased tone of muscles acting on scapular downward rotation (rhomboids, levator scapulae, serratus anterior)</td>
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<tr>
<td></td>
<td>Winging of the scapula</td>
<td>Decreased tone of stabilizing muscles of the scapula allowing it to fall into downward rotation</td>
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<td></td>
<td></td>
<td>Weakness of serratus anterior</td>
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<tr>
<td></td>
<td></td>
<td>Increased tone of the subscapularis pulling the scapula and causing it to wing</td>
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<tr>
<td>Trunk</td>
<td>Unilateral crease on affected side</td>
<td>Lateral flexion of trunk caused by weak abdominals or increased tone in scapular retraction and depression with pelvic retraction and elevation causing shortening on the hemiplegic side</td>
</tr>
</tbody>
</table>

*These are some examples. A problem may have one or more causes.