

# Clinical Outcomes and Practice Guidelines for Lower Limb Amputees

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# The Case for Outcomes in O&P

- Historically lacking across orthotics and prosthetics
- Payer scrutiny of prosthetics leads to increased barriers and restrictions to appropriate care for your patients
- As the O&P leader, Hanger Clinic has begun to develop a number of outcomes protocols



# Outcomes and Quality of Care

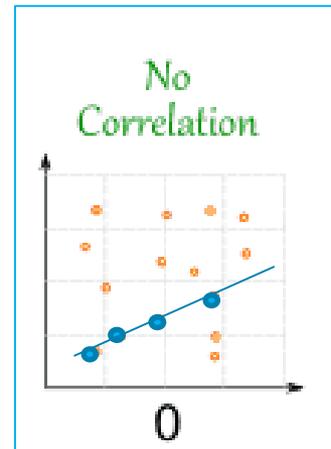
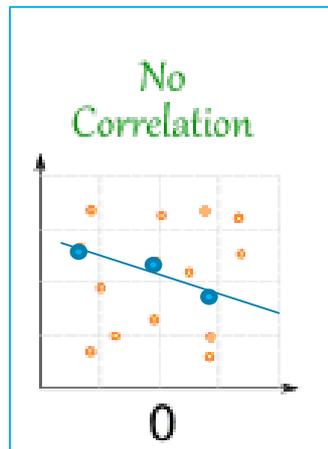
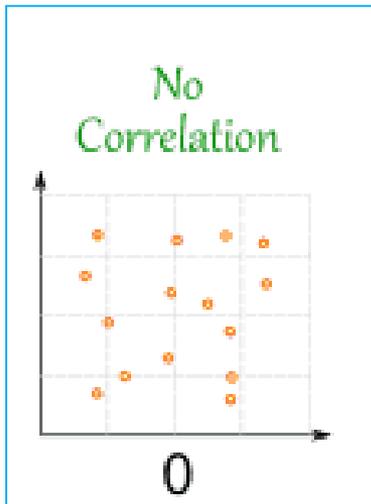
Important questions need to be answered...

- Is prosthetic mobility associated with quality of life and general satisfaction?
- Do comorbid health conditions preclude meaningful prosthetic mobility?
- Do assistive devices enable enhanced prosthetic mobility or act as a marker of limited mobility potential?

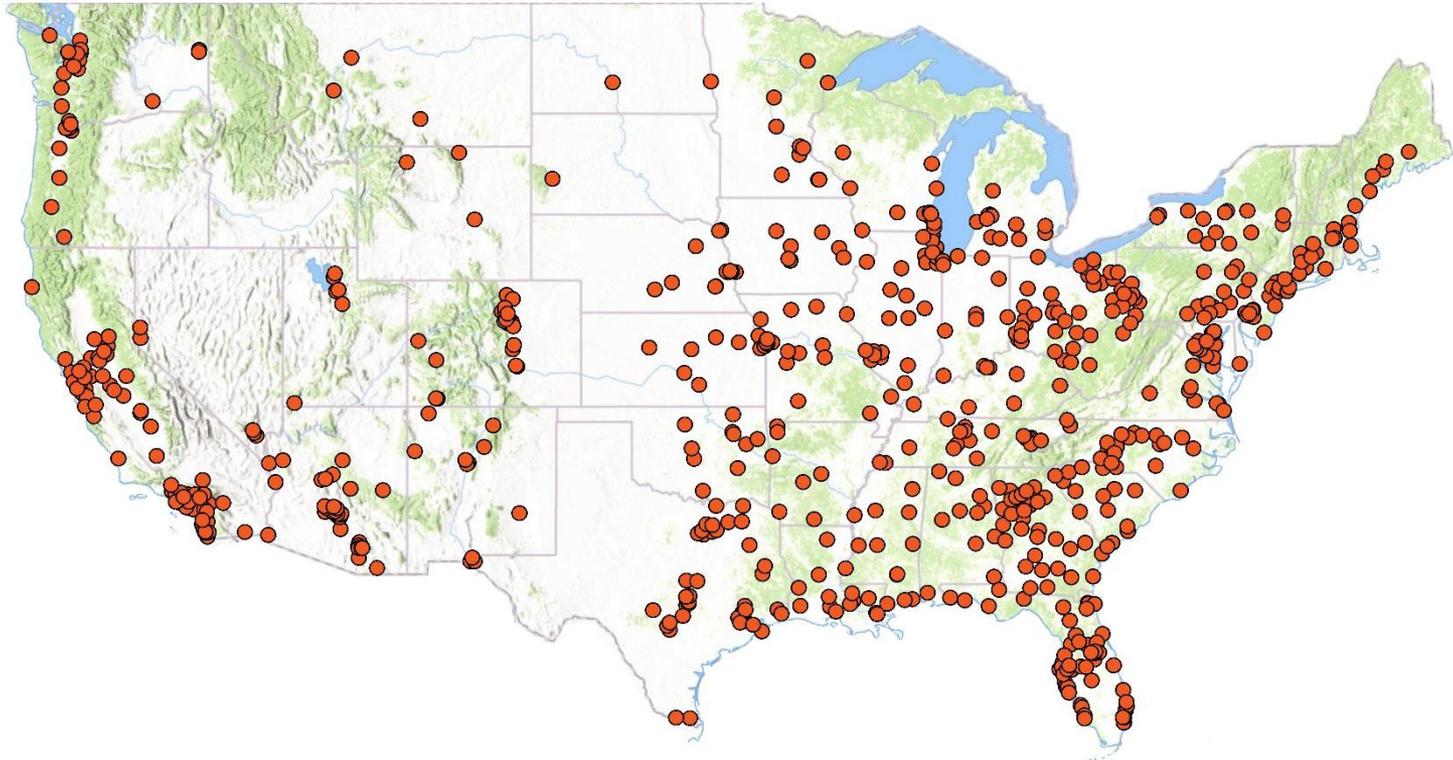
# Outcomes and Quality of Care

Large data sets are required to accurately answer these questions

- Smaller data sets (personal experience) can be misleading



# Our Resources



Over 2000 clinicians and 800 clinics, providing care across a spectrum of patient populations

# Outcomes and Quality of Care

We can collect 1000's of data points. However....

....each of those data points represent a patient/clinician interaction

- O&P has historically struggled with outcomes collection
- No reimbursement for clinician time
- Outcomes are a "value-added" service
- Compulsory outcomes may introduce bias
- How do we encourage collection of accurate outcomes data?

# Changing the Outcomes Culture

- Select measures that are meaningful
  - Clinicians
  - Patients
- Select measures that are indexed against peers
  - “How am I doing?”
- Select measures that are sensitive to change
  - Allow tracking of progress and setbacks

# PLUS-M

- Survey of prosthetic mobility
- Rate the difficulty encountered during 12 items
- Progressive degree of difficulty (Item response theory)



Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Please respond to all questions as if you were wearing the prosthetic leg(s) you use most days. If you would normally use a cane, crutch, or walker to perform the task, please answer the questions as if you were using that device.

Please choose "unable to do" if you:

- Would need help from another person to complete the task,
- Would need a wheelchair or scooter to complete the task, or
- Feel the task may be unsafe for you

Please mark one box per row.

Question	Without any difficulty	With a little difficulty	With some difficulty	With much difficulty	Unable to do
1. Are you able to walk a short distance in your home?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
2. Are you able to step up and down curbs?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
3. Are you able to walk across a parking lot?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
4. Are you able to walk over gravel surfaces?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
5. Are you able to move a chair from one room to another?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
6. Are you able to walk while carrying a shopping basket in one hand?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
7. Are you able to keep walking when people bump into you?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
8. Are you able to walk on an unlit street or sidewalk?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
9. Are you able to keep up with others when walking?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
10. Are you able to walk across a slippery floor?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
11. Are you able to walk down a steep gravel driveway?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)
12. Are you able to hike about 2 miles on uneven surfaces, including hills?	<input type="checkbox"/> (5)	<input type="checkbox"/> (4)	<input type="checkbox"/> (3)	<input type="checkbox"/> (2)	<input type="checkbox"/> (1)

# PLUS-M



## Scoring the PLUS-M™ 12-Item Short Form

PLUS-M™ short forms are scored with a **T-score**. To find the T-score, sum scores for all responses on the short form. This is the **raw score**. Do not use the raw score for any purpose other than to look up the T-score using the conversion table below. If any questions on the short form are **unanswered**, refer to the PLUS-M™ Short Form Users Guide for instructions on scoring *incomplete* short forms.

### PLUS-M™ 12-item Short Form (v1.2) T-score Conversion Table

Raw Score	T-score	SE	Percentile
12	21.8	4.4	0.2%
13	25.2	3.4	0.7%
14	27.2	3.1	1.1%
15	28.7	2.9	1.6%
16	30.0	2.7	2.3%
17	31.2	2.5	3.0%
18	32.2	2.3	3.8%
19	33.2	2.2	4.6%
20	34.1	2.1	5.5%
21	34.9	2.1	6.5%
22	35.6	2.0	7.6%
23	36.4	2.0	8.6%
24	37.1	1.9	9.8%
25	37.7	1.9	11.0%
26	38.4	1.9	12.3%
27	39.0	1.9	13.6%
28	39.7	1.9	15.1%
29	40.3	1.9	16.6%
30	40.9	1.9	18.1%
31	41.5	1.9	19.8%
32	42.1	1.9	21.5%
33	42.7	1.9	23.3%
34	43.3	1.9	25.2%
35	43.9	1.9	27.2%
36	44.5	1.9	29.3%

Raw Score	T-score	SE	Percentile
37	45.2	1.9	31.5%
38	45.8	1.9	33.7%
39	46.4	1.9	36.1%
40	47.1	1.9	38.5%
41	47.7	1.9	41.1%
42	48.4	1.9	43.7%
43	49.1	2.0	46.4%
44	49.8	2.0	49.1%
45	50.5	2.0	51.9%
46	51.2	2.0	54.8%
47	52.0	2.1	57.8%
48	52.7	2.1	60.8%
49	53.6	2.1	63.9%
50	54.4	2.2	67.0%
51	55.3	2.3	70.2%
52	56.3	2.4	73.4%
53	57.3	2.5	76.7%
54	58.4	2.6	79.9%
55	59.6	2.8	83.2%
56	61.0	2.9	86.4%
57	62.5	3.1	89.5%
58	64.5	3.3	92.6%
59	67.1	3.8	95.6%
60	71.4	4.9	98.4%

Record the PLUS-M™ T-score here.

↓↓↓↓

PLUS-M™  
T-score

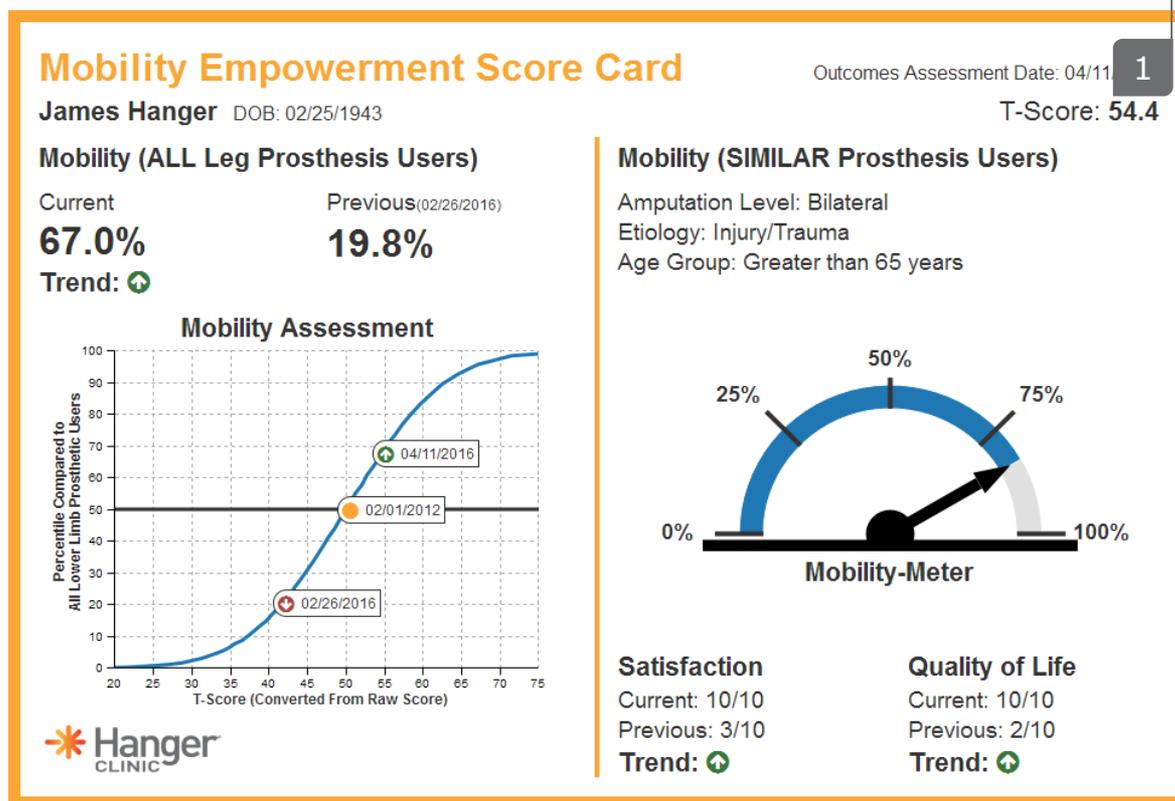
For T-scores with standard error (SE) greater than 3.0, use of the PLUS-M™ CAT ([www.plus-m.org](http://www.plus-m.org)) is recommended to obtain better measurement precision. Percentile indicates the percent of the PLUS-M™ development sample that reported lower mobility than is reflected by the corresponding T-Score. For more information on interpretation of PLUS-M™ T-scores, please refer to the PLUS-M™ Short Form Users Guide.

- Raw Score
- Indexed to T-score
- Percentile
  - General Amputee
  - Peer specific

# Mobility Empowerment (ME) Score Card

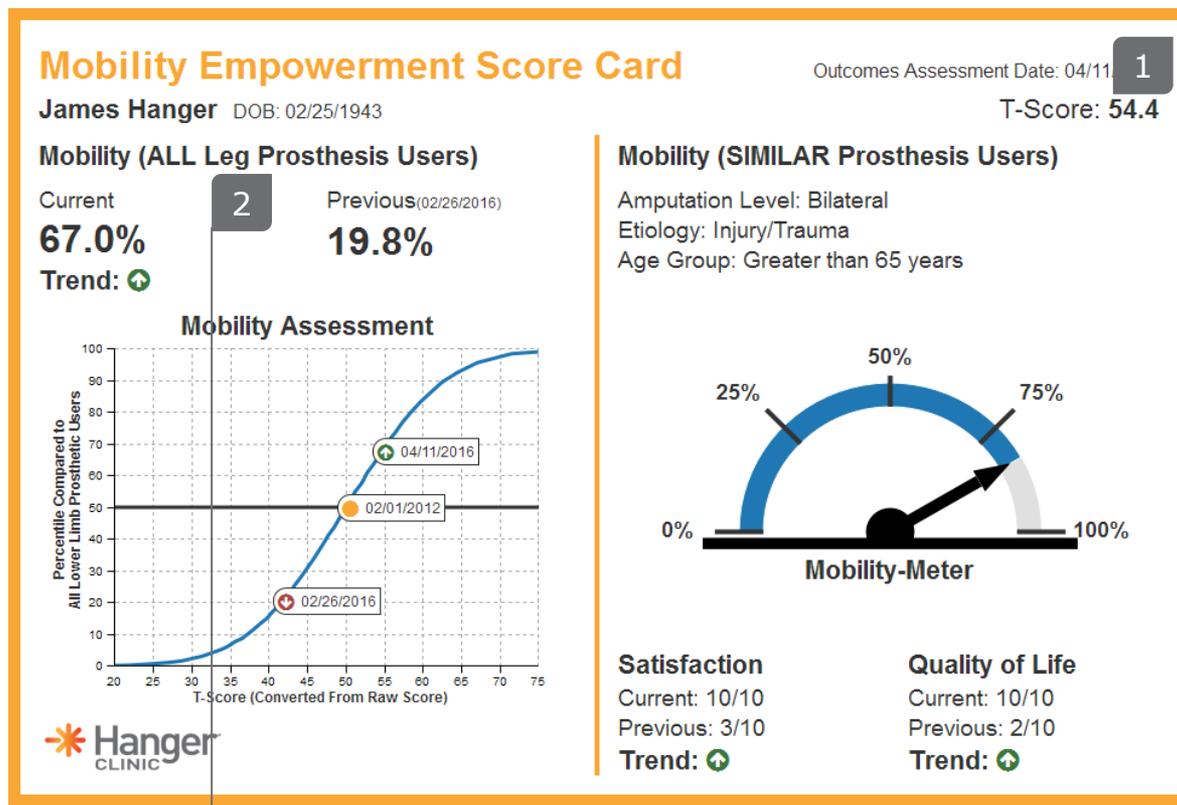
## T-Score

T-score of 50 = average lower limb prosthesis user's mobility level based on the University of Washington database of ~1,100 patients. STDEV of 10. Higher T-score = greater mobility. Valuable for documentation in the patient medical record.



# Mobility Empowerment (ME) Score Card

## Percentile



Relative percentile of all prosthetic leg users in the general population, trended over time for all assessment dates collected

# Hanger Clinic Outcomes Protocol

- Outcomes packet administered for each patient at:

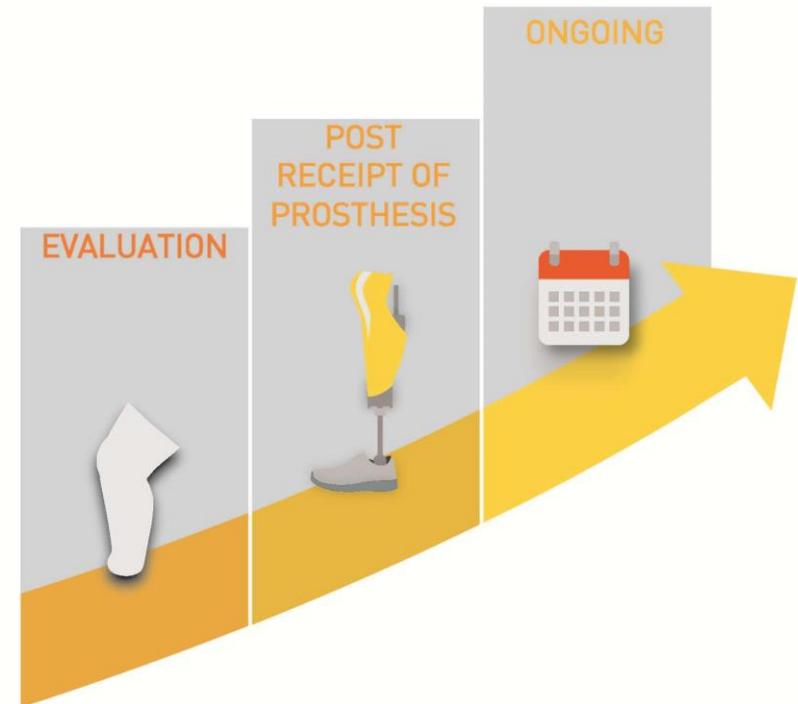


- Longitudinal tracking of self-reported mobility
  - Often goes up
  - May digress
  - Identify success/progress AS WELL AS setbacks/challenges

# Why Track Mobility Outcomes?

## More consistent care

- Trend mobility scores over time both during and across episodes of care



# ME Score Card Case Study

## Mobility Empowerment Score Card™

Michael Smith DOB: 09/08/1979

Outcomes Assessment Date: 09/22/2016

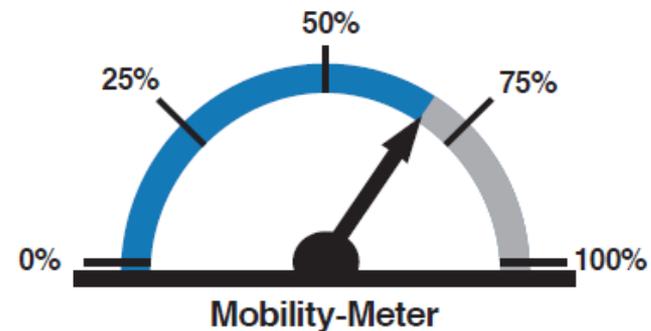
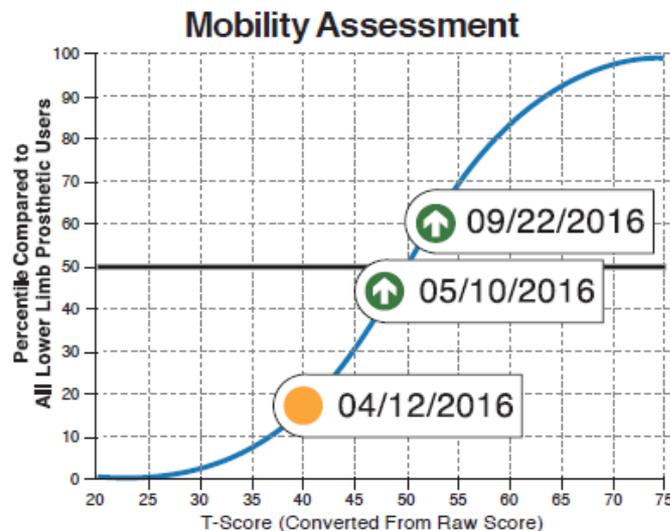
T-Score: 52.7

### Mobility (ALL Leg Prosthesis Users)

Current **60.8%** Previous (05/10/2016) **43.7%**  
Trend: 

### Mobility (SIMILAR Prosthesis Users)

Amputation Level: Above Knee  
Etiology: Injury/Trauma  
Age Group: 36 to 49 years



**Satisfaction**  
Current: 9/10  
Previous: 10/10  
Trend: 

**Quality of Life**  
Current: 9/10  
Previous: 9/10  
Trend: 

# ME Score Card Case Study

## Mobility Empowerment Score Card™

Carlos Rodriguez DOB: 01/29/1966

Outcomes Assessment Date: 10/26/2016

T-Score: 53.6

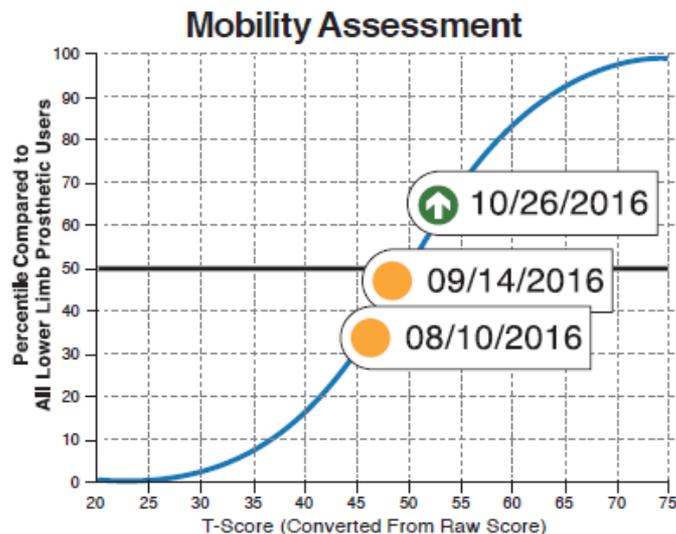
### Mobility (ALL Leg Prosthesis Users)

Current Previous (09/14/2016)

**63.9%**

**46.4%**

Trend: 

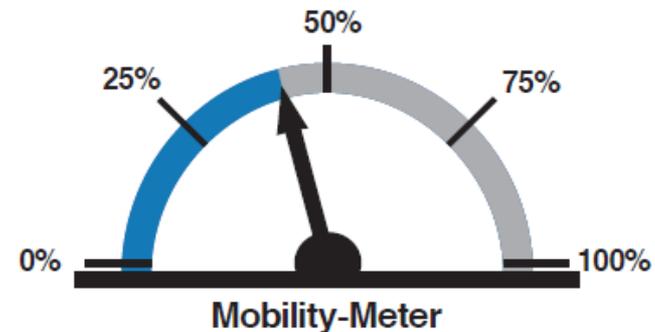


### Mobility (SIMILAR Prosthesis Users)

Amputation Level: Below Knee

Etiology: Injury/Trauma

Age Group: 50 to 64 years



### Satisfaction

Current: 7/10

Previous: 6/10

Trend: 

### Quality of Life

Current: 7/10

Previous: 7/10

Trend: 

# PLUS-M

- Peer specific Quartile indices
- Amputation level
- Amputation Etiology
- Age

Table 8 – PLUS-M™ T-scores and percentiles (persons under 35 years old)

PLUS-M T-Score	Transfemoral Dysvascular (n=4)	Transtibial Dysvascular (n=5)	Transfemoral Trauma (n=43)	Transtibial Trauma (n=55)	Total Sample (n=107)
Mean	-	-	52.8	59.4	56.1
25 <sup>th</sup> Percentile	-	-	47.4	52.6	48.1
50 <sup>th</sup> Percentile (median)	-	-	52.9	58.1	54.9
75 <sup>th</sup> Percentile	-	-	57.5	67.4	62.2
Standard Deviation (SD)	-	-	7.4	10.0	9.6
Range (min – max)	-	-	38.4 - 76.6	36.1 - 76.6	36.1 - 76.6

Table 9 – PLUS-M™ T-scores and percentiles (persons 36-49 years old)

PLUS-M T-Score	Transfemoral Dysvascular (n=12)	Transtibial Dysvascular (n=70)	Transfemoral Trauma (n=69)	Transtibial Trauma (n=92)	Total Sample (n=243)
Mean	48.1	49.6	51.1	55.9	52.3
25 <sup>th</sup> Percentile	40.8	42.9	44.4	50.0	45.6
50 <sup>th</sup> Percentile (median)	47.8	51.2	49.9	55.2	51.7
75 <sup>th</sup> Percentile	53.0	55.5	58.1	60.8	58.7
Standard Deviation (SD)	8.6	9.4	9.0	9.2	9.6
Range (min – max)	37.4 - 62.8	22.1 - 71.3	33.3 - 71.0	34.6 - 76.6	22.1 - 76.6

Table 10 – PLUS-M™ T-scores and percentiles (persons 50-64 years old)

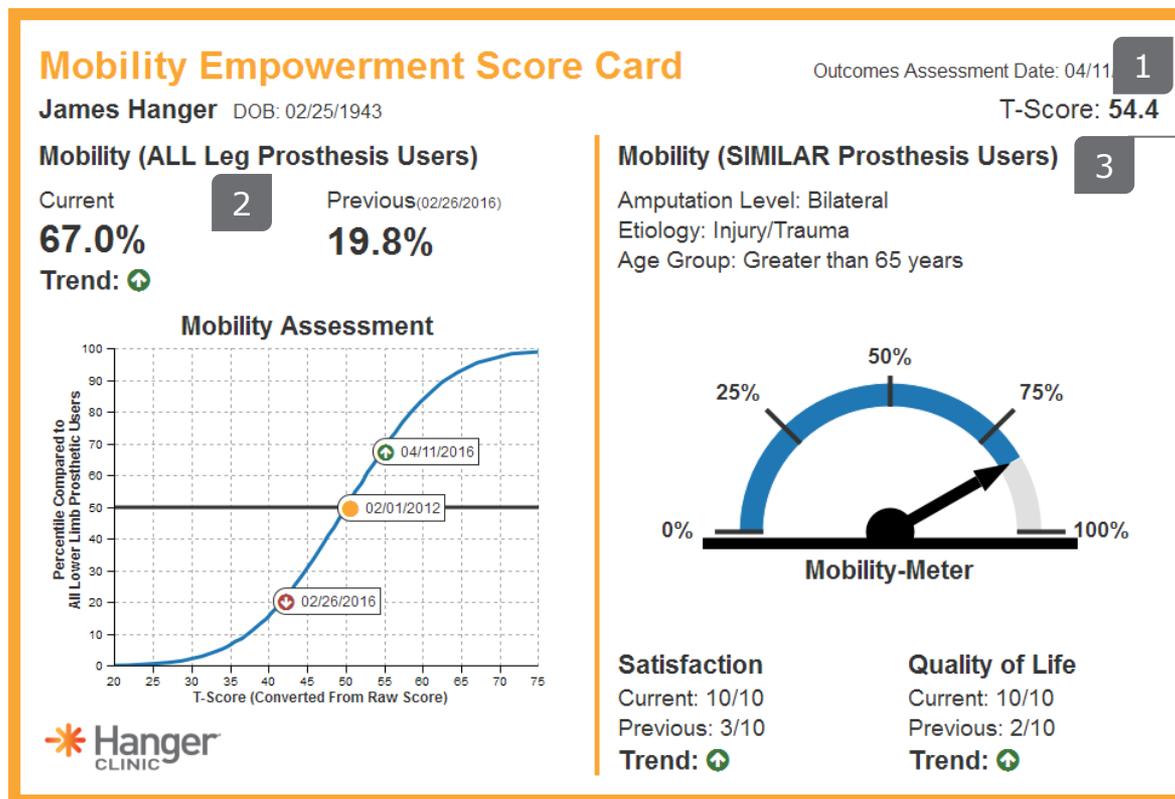
PLUS-M T-Score	Transfemoral Dysvascular (n=63)	Transtibial Dysvascular (n=179)	Transfemoral Trauma (n=113)	Transtibial Trauma (n=139)	Total Sample (n=484)
Mean	40.8	47.8	49.9	55.0	49.6
25 <sup>th</sup> Percentile	34.9	42.2	45.0	48.7	42.7
50 <sup>th</sup> Percentile (median)	40.2	47.8	50.0	55.1	49.6
75 <sup>th</sup> Percentile	47.4	53.6	55.7	61.3	55.7
Standard Deviation (SD)	8.2	8.8	8.2	8.8	9.6
Range (min – max)	17.5 - 60.3	25.4 - 73.6	25.7 - 68.5	31.8 - 76.6	17.5 - 76.6

Table 11 – PLUS-M™ T-scores and percentiles (persons over 64 years old)

PLUS-M T-Score	Transfemoral Dysvascular (n=61)	Transtibial Dysvascular (n=112)	Transfemoral Trauma (n=41)	Transtibial Trauma (n=62)	Total Sample (n=256)
Mean	43.0	45.1	48.7	54.7	47.2
25 <sup>th</sup> Percentile	37.3	40.3	44.7	47.2	41.4
50 <sup>th</sup> Percentile (median)	42.8	44.6	49.5	54.9	47.0
75 <sup>th</sup> Percentile	49.8	49.6	52.2	60.0	52.7
Standard Deviation (SD)	8.9	8.0	5.9	9.6	9.2
Range (min – max)	24.1 - 63.7	21.9 - 66.4	33.0 - 62.8	33.9 - 76.6	21.9 - 76.6

# Mobility Empowerment (ME) Score Card

## Peer Indexing



Mobility Meter compares individual's T-score percentile to similar patients based on amputation level, etiology and age

# ME Score Card Case Study

## Mobility Empowerment Score Card™

Outcomes Assessment Date: 09/23/2016

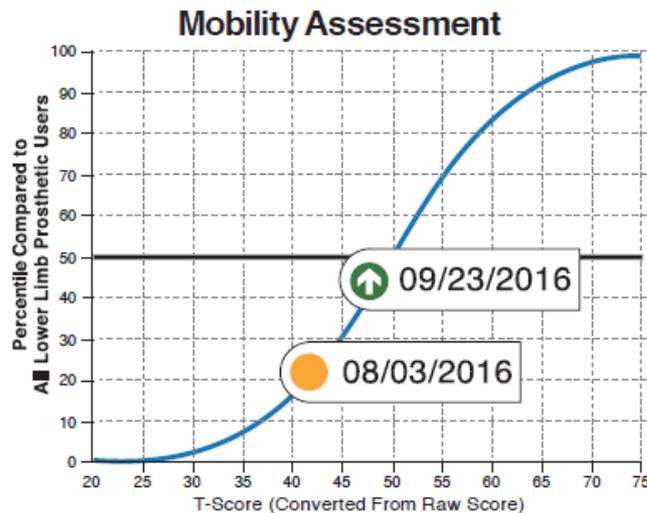
Mary Jones DOB: 03/22/1961

T-Score: 48.4

### Mobility (ALL Leg Prosthesis Users)

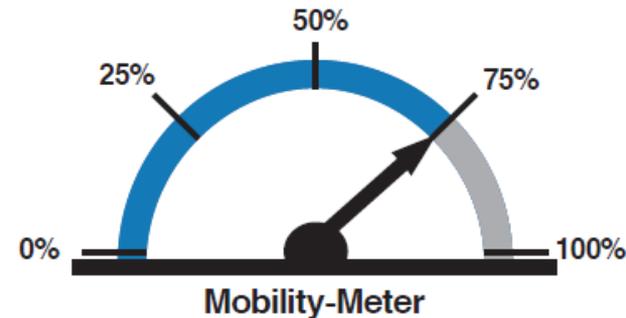
Current **43.7%** Previous (08/03/2016) **21.5%**

Trend: 



### Mobility (SIMILAR Prosthesis Users)

Amputation Level: Above Knee  
Etiology: Vascular Disease/Diabetes  
Age Group: 50 to 64 years



### Satisfaction

Current: 8/10  
Previous: 7/10  
Trend: 

### Quality of Life

Current: 7/10  
Previous: 7/10  
Trend: 

# Satisfaction and Quality of Life

- PEQ- Prosthesis Evaluation Questionnaire
  - Older survey instrument
  - Multiple subsections- using the well-being subsection

6. Over the past 4 weeks, rate how satisfied you have been with how things have worked out since your amputation.

1      2      3      4      5      6      7      8      9      10

Extremely Dissatisfied

Extremely Satisfied

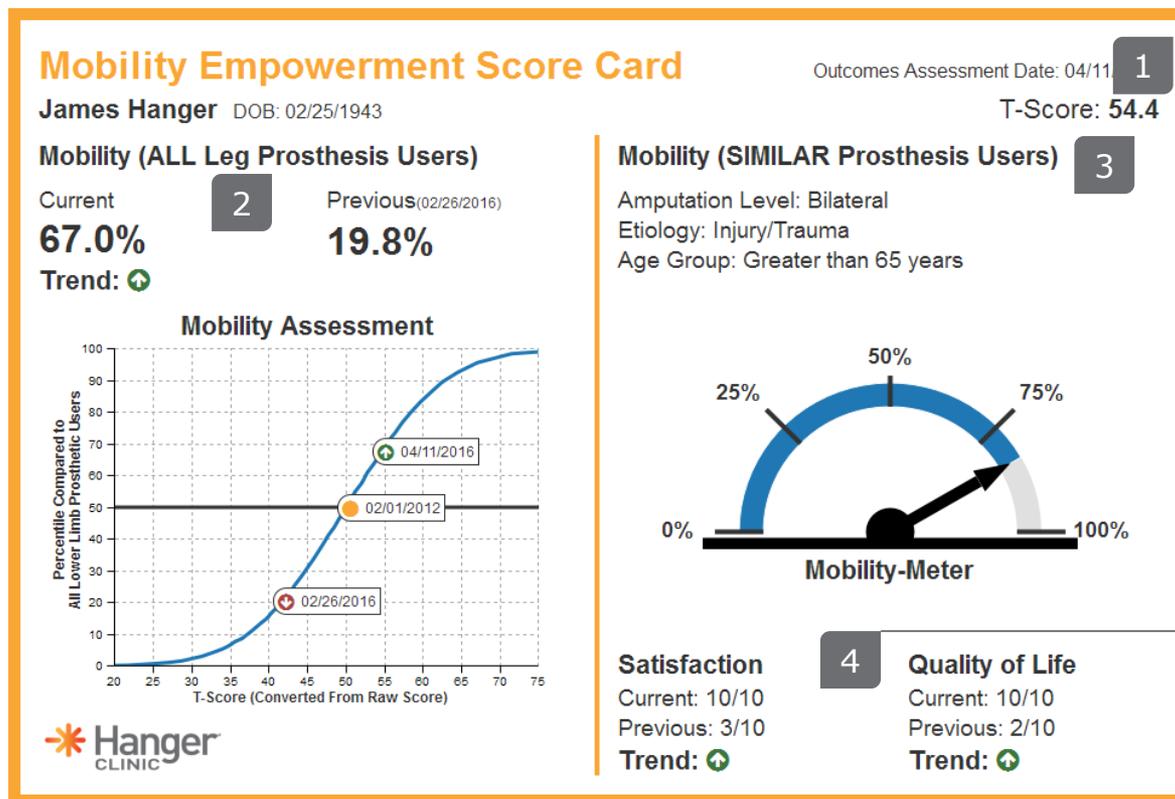
7. Over the past 4 weeks, how would you rate your quality of life?

1      2      3      4      5      6      7      8      9      10

Worst Possible Life

Best Possible Life

# Mobility Empowerment (ME) Score Card

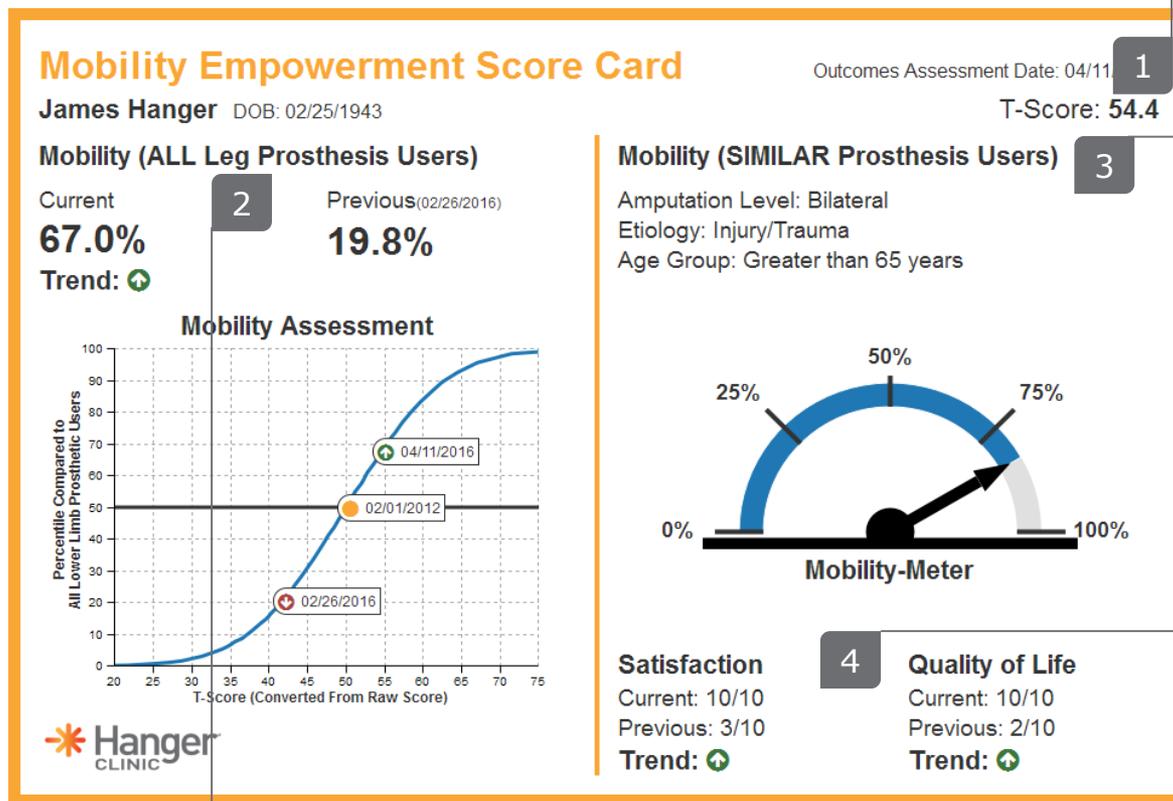


Well-Being

Current satisfaction and QoL scores as assessed by PEQ-WB and trend

# Mobility Empowerment (ME) Score Card

T-score of 50 = average lower limb prosthesis user's mobility level based on the University of Washington database of ~1,100 patients. STDEV of 10. Higher T-score = greater mobility. Valuable for documentation in the patient medical record.



Mobility Meter compares individual's T-score percentile to similar patients based on amputation level, etiology and age

Current satisfaction and QoL scores as assessed by PEQ-WB and trend

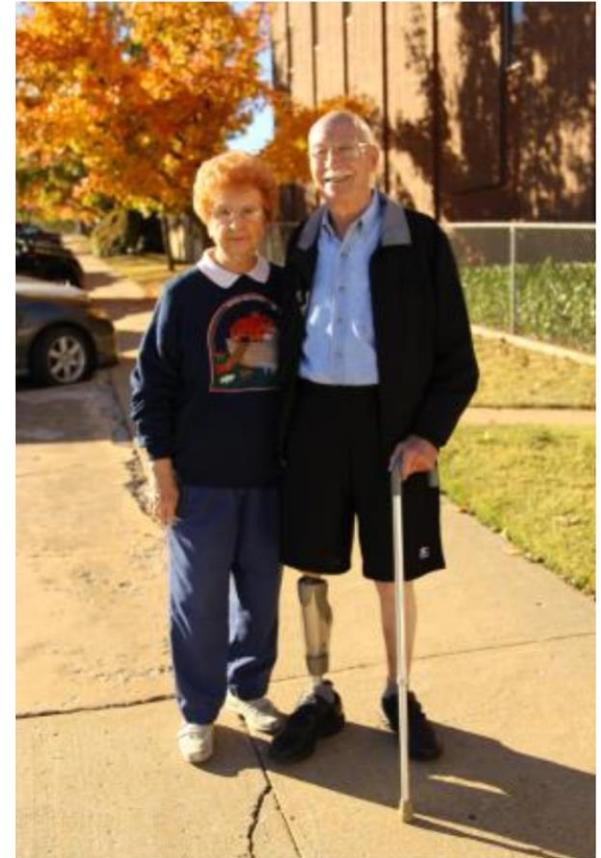
Relative percentile of all prosthetic leg users in the general population, trended over time for all assessment dates collected

# Outcomes that Engage the Patient

## More satisfied patients

- Empowered to understand and participate in their own care
- Improved mobility over time
- Better case to payers for prosthetic device approvals

## Enhanced Participation in Outcomes Collection



# Outcomes that Inform Clinical Considerations

## Improved patient care

- Benchmark patients' mobility scores relative to peers to set realistic goals
- Partner to intervene and modify care plans to reverse any negative trends
- Adjust patient care plan as needed



# Outcomes and Quality of Care

We can begin to answer these original questions in a meaningful, supported way

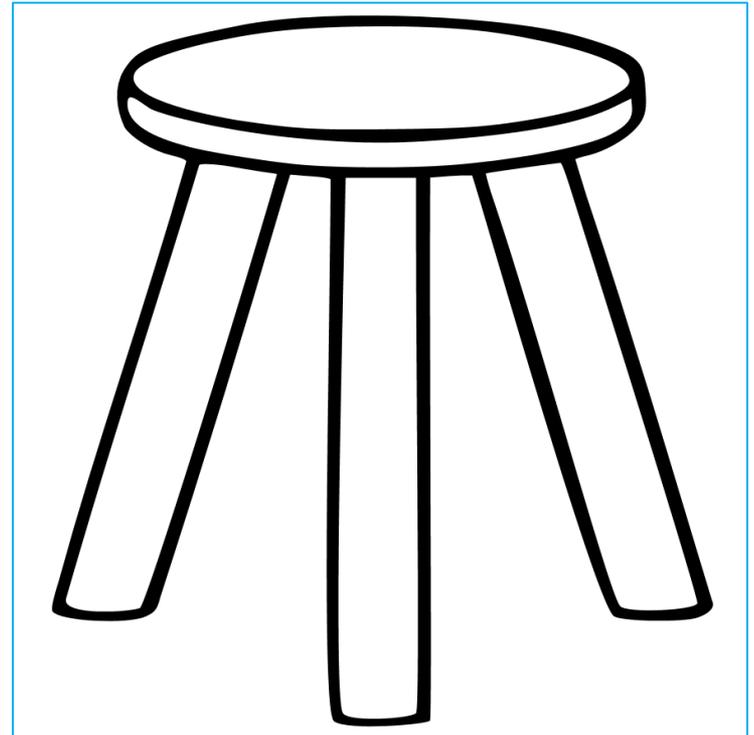
- Is prosthetic mobility associated with quality of life and general satisfaction?
- Do comorbid health conditions preclude meaningful prosthetic mobility?
- Do assistive devices enable enhanced prosthetic mobility or act as a marker of limited mobility potential?

# Clinical Practice Guidelines

## Evidence Based Medicine

1. Clinical Experience
2. Patient Values
3. Best available research information

**-nih.gov**



# Clinical Practice Guidelines

You can only play the cards that you have in your hand...

## 1. Clinical Experience

- Its with clinicians every where they go

## 2. Patient Values

- Comes in with the patient

## 3. Best available research information

- Here's where they might need help

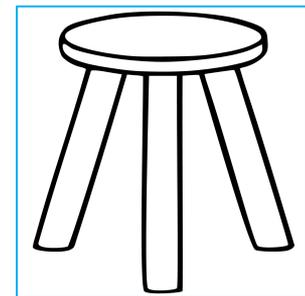


# Clinical Practice Guidelines

You can only play the cards that you have in your hand...

## 3. Best available research information

- Clinicians don't have
  - Time...
  - Access...
  - Training...
- CPG's package that information for them



# Clinical Practice Guidelines

## Model CPG

- **When there is a strong enough literature base...**

### CLINICAL GUIDELINE



## Treatment of Pressure Ulcers: A Clinical Practice Guideline From the American College of Physicians

Amir Qaseem, MD, PhD, MHA; Linda L. Humphrey, MD, MPH; Mary Ann Forciea, MD; Melissa Starkey, PhD; and Thomas D. Denberg, MD, PhD, for the Clinical Guidelines Committee of the American College of Physicians\*

**Description:** The American College of Physicians (ACP) developed this guideline to present the evidence and provide clinical recommendations based on the comparative effectiveness of treatments of pressure ulcers.

**Methods:** This guideline is based on published literature on this topic that was identified by using MEDLINE, EMBASE, CINAHL, EBM Reviews, the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects, and the Health Technology Assessment database through February 2014. Searches were limited to English-language publications. The outcomes evaluated for this guideline include complete wound healing, wound size (surface area, volume, and depth) reduction, pain, prevention of sepsis, prevention of osteomyelitis, recurrence rate, and harms of treatment (including but not limited to pain, dermatologic complications, bleeding, and infection). This guideline grades the quality of evidence and strength of recommendations by using ACP's clinical practice guidelines grading system. The target

audience for this guideline includes all clinicians, and the target patient population is patients with pressure ulcers.

**Recommendation 1:** ACP recommends that clinicians use protein or amino acid supplementation in patients with pressure ulcers to reduce wound size. (Grade: weak recommendation, low-quality evidence)

**Recommendation 2:** ACP recommends that clinicians use hydrocolloid or foam dressings in patients with pressure ulcers to reduce wound size. (Grade: weak recommendation, low-quality evidence)

**Recommendation 3:** ACP recommends that clinicians use electrical stimulation as adjunctive therapy in patients with pressure ulcers to accelerate wound healing. (Grade: weak recommendation, moderate-quality evidence)

*Ann Intern Med.* 2015;162:370-379. doi:10.7326/M14-1568 [www.annals.org](http://www.annals.org)  
For author affiliations, see end of text.

# Clinical Practice Guidelines

## Postoperative Limb Management

- When there is a strong enough literature base...

- Defined Search Methods

- Key Questions

- Comparative Efficacy
- Potential Benefits
- Potential Harms

- Concise Recommendations

### CLINICAL GUIDELINE



### Treatment of Pressure Ulcers: A Clinical Practice Guideline From the American College of Physicians

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For author affiliations, see end of text.

# Clinical Practice Guidelines



- The depth and structure of the CPG will vary with the source documents
  - Post-op dressing: Multiple meta-analyses
  - Perioperative Education: Systematic Review; Structured interviews, Share holder needs assessment
  - Peer Mentoring: Narrative literature (ie, expert opinion)

# Transtibial Perioperative CPGs

## Clinical Practice Guidelines Summary

**Purpose:** Hanger Clinic's Department of Clinical & Scientific Affairs developed this guideline to present the most current evidence and provide clinical recommendations for perioperative care associated with transtibial amputation. The intent of this guideline is to improve perioperative prosthetic rehabilitation by providing the clinical prosthetist with the findings and recommendations of published evidence with respect to perioperative education, peer-mentoring and post-operative limb management.

**Methods:** The guideline is based upon the best available evidence related to this episode of care. Recommendations are drawn from a systematic review and meta-analysis, supplemented by subject matter experts (SME) and patients. Where this standard is unavailable, alternate academic literature is used to identify where additional research remains indicated.

**Clinical Practice Guidelines:** Perioperative Management Associated with Transtibial Amputation

For the individual undergoing transtibial amputation, effective intervention during the perioperative period can provide significant benefits. The perioperative stage begins with the decision to undergo amputation and concludes when the patient is either physiologically ready for prosthetic fitting or a decision is made not to pursue prosthetic rehabilitation. Appropriate management includes patient education, peer-mentoring and post-operative limb management to reduce swelling and prepare for prosthetic fitting.

### **Perioperative Education**

**Recommendation #1:** During the perioperative period, written and/or verbal patient education should be provided and may consist of the following topics:

- Care of the residual limb
- Phantom limb sensation
- The rehabilitation process
- Expectations and range of possible outcomes
- General prosthetic information
- Relevant financial information
- Availability of support groups and peer-mentors

**Recommendation #2:** Perioperative education must account for the following considerations:

- Age and associated comorbidities, e.g. hearing or vision loss, cognitive or memory deficits
- Current pain level and its impact on the patient's ability to absorb and retain information
- Medication and its effect on a patient's ability to absorb and retain information
- The current emotional state of the patient
- An environment conducive to information exchange
- The use of non-specialist terms
- The patient's purpose in receiving information: planning versus coping

### **Peer Mentoring**

**Recommendation #3:** During the perioperative period, patients undergoing lower limb amputation should be given access to peer mentors who are appropriately trained.

### **Postoperative Limb Management:**

**Recommendation #4:** Removable rigid dressings should be used to reduce both the healing time of the residual limb and time to prosthetic fitting following transtibial amputation.

**Recommendation #5:** Removable rigid dressings should be used as the preferred means of reducing postoperative edema following transtibial amputation.

**Recommendation #6:** Given the comparable wound infection rates observed with the two treatment options, removable rigid dressings are preferred over soft dressings for postoperative lower limb management following amputations due to their additional benefits described above.

## Perioperative Care

- Create a culture of a uniform patient experience within Hanger Clinics

# Perioperative CPGs

## Perioperative Education

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# Perioperative CPGs

## Perioperative Education

“There was no, no education, but you know what would be useful for a person like myself, is to show more or less even a pamphlet, **something to read**, or **someone to sit down** and give a little bit of counseling, or if it was a video, **so you have more of an idea what to get into**, but basically you’re, you feel kind of, **you’re blinded**, you walk into something over your head and **you don’t know what to expect**, so basically you’re in the hands of the, the surgeon, you understand me, and then whatever happens after. You understand, so, you don’t know what’s going to take place.”

Pedlow et al, 2014

# Perioperative CPGs

## Perioperative Education

**“Prosthetic users clamored for more information on the recovery path following amputation. They recommended amputees be given comprehensive information about the entire process to understand their treatment, rehabilitation, and the range of possible outcomes.”**

Klute et al, 2009

# Perioperative CPGs

## Perioperative Education

**Recommendation #2:** Perioperative education must account for the following considerations:

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# Perioperative CPGs

## Perioperative Education

- Age and associated comorbidities, e.g. hearing or vision loss, cognitive or memory deficits

“My mom has macular degeneration...I would ask her what it [website] said and she would have no idea because with macular degeneration, she loses her sight”

Pedlow et al, 2014

# Perioperative CPGs

## Perioperative Education

- Current pain level and its impact on the patient's ability to absorb and retain information

“A number of participants explained that they experienced significant pain...and therefore were unable to absorb information that was provided to them.”

Pedlow et al, 2014

# Perioperative CPGs

## Peer Mentoring

- **Recommendation #3:** During the perioperative period, patients undergoing lower limb amputation should be given access to peer mentors who are appropriately trained.
  - THERE ARE MANY LOSSES BEYOND THE LIMB
    - CONTROL, SELF-ESTEEM, INCOME, PERCEIVED ATTRACTIVENESS
    - CLINICIANS CAN'T USUALLY SAY, "I KNOW HOW YOU FEEL."
    - PEERS CAN SPEAK TO SORROW, ANGER, DENIAL, DEPRESSION AND FEAR
- -FITZGERALD DM, 2000

# Perioperative CPGs

## Peer Mentoring

- **Recommendation #3:**
- AN INDIVIDUAL'S PERCEIVED SOCIAL SUPPORT 1 MONTH POST AMPUTATION IS A PREDICTOR OF....
  - PAIN INTERFERENCE, LIFE SATISFACTION AND MOBILITY
- THIS IS THE TIME PERIOD THAT MANY INDIVIDUALS FEEL MARGINALIZED BY HEALTHY PEERS, AS WELL AS, A REDUCTION IN GENUINE, EMOTIONALLY-CONNECTED CONVERSATION (PERHAPS FAMILY DOESN'T KNOW WHAT TO SAY)

WILLIAMS ET AL, 2004

# Perioperative CPGs

## Recommendation #4-#6

- Postoperative Limb Management



### Archives of Physical Medicine and Rehabilitation

journal homepage: [www.archives-pmr.org](http://www.archives-pmr.org)

Archives of Physical Medicine and Rehabilitation 2016;97:e21-2



#### Oral Systematic/Meta-Analytic Review Presentations

**Oral Presentation 330**  
**Acute Postoperative Care of the Residual Limb**  
**Following Transtibial Amputation: A Clinical**  
**Practice Guideline**



**Phillip Stevens (University of Utah School of Medicine),**  
**John Rheinstein, James Campbell**

**Objectives:** To create succinct, evidence-based clinical practice guidelines for the acute postoperative care of the residual limb following transtibial amputation.

# Perioperative CPGs

## Postoperative Limb Management

- **It's not just what we said....**

**....its the strength behind it**

Oral Presentation 330  
Acute Postoperative Care of the Residual Limb  
Following Transtibial Amputation: A Clinical  
Practice Guideline



CrossMark

Phillip Stevens (University of Utah School of Medicine),  
John Rheinstein, James Campbell

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# Perioperative CPGs

## Postoperative Limb Management

### Defined Methods

- **Medline Search**

- "amputation" AND...
- "postoperative management," "rigid dressing" OR "soft dressing" AND...
- "systematic review" OR "meta-analysis"

- 24 abstracts
- 4 publications



# Perioperative CPGs

1. Highsmith JM et al. Prosthetic interventions for people with transtibial amputation: **Systematic review and meta-analysis** of high-quality prospective literature and systematic review: J Rehabil Res Dev. **2016**;52(2):157-84.
2. Geertzen J et al. Dutch **evidence-based guidelines** for amputation and prosthetics for the lower extremity: Amputation surgery and postoperative management. Part 1. Prosthet Orthot Int. **2015** Oct;39(5):351-60.
3. Churilov I, Churilov L, Murphy. Do rigid dressing reduce the time from amputation to prosthetic fitting? A **systematic review and meta-analysis**. Ann Vasc Surg. **2014** Oct;28(7):1801-8.
4. Nawijn SE, H van der Linde, CH Emmelot and CJ Hofstad. Stump management after transtibial amputation: A **systematic review**. Prosthet Orthot Int. **2005**;29(1):13-26.

# Perioperative CPGs

## Postoperative Limb Management

### **Potential Benefits:**

- Reducing the time required for complete healing of the limb
- Reducing the number of days from amputation to discharge
- Reducing the number of days from amputation to the casting or fitting of the first limb prosthesis
- Increasing the rate of edema reduction

### **Potential Harms:**

- The risk of increased wound infection rates experienced post-amputation.

# Perioperative CPGs

## Data Extraction and Synthesis:

- Evidence statements from published meta-analyses and systematic reviews were extracted for subsequent synthesis.
  - Recent publications had explicit statements
  - Older publications required extrapolations

# Perioperative CPGs

## Postoperative Limb Management

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# Clinical Practice Guidelines

## Perioperative Care

- Education
  - Right Content
  - Right Time
- Peer Mentoring
- Rigid Dressings

### Clinical Practice Guidelines Summary

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# Questions?





# Thank you!

To learn more, contact:

Hanger Clinic

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1-887-4Hanger

(1-877-442-6437)

[www.hanger.com](http://www.hanger.com)

