Validation and Clinical Utility of the SVS WIfI Threatened Limb Classification

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DISCLOSURE SLIDE:
I have no COI related to this presentation

• Current research grant support (to BCM) from:

  • PCORI: P2P Award – “Improving Delivery of Diabetic Foot Care to Prevent Amputations: A Comparative Effectiveness Trial” - Tier III

  • Cesca Therapeutics (Steering Committee; BCM Site CO-PI)

  • Bayer (National CO-PI, Voyager Study, BCM)
For the first time in the history of humankind:

Non-communicable diseases (NCDs) have become the leading cause of global mortality (60%)  
BMJ 2009;339:b2857

Diabetes is now responsible for 4 million deaths each year, overtaking HIV/AIDS

Diabetesatlas.org  
BMJ 2009;339:b2857

Barsches et al.  
Diabetic Foot and Ankle 2013

Fig. 2. The estimated annual direct costs of diabetic limb complications in comparison to the annual direct costs of the five most costly cancers in the United States.
• Diabetes is diagnosed once every 17 seconds!

• Up to **70% of the lower extremity amputations** in the world are associated with diabetes

• **Every 20 seconds**, somewhere in the world, a lower extremity is amputated in a patient with diabetes
Editorial

The definition of critical ischaemia of a limb

Working Party of the International Vascular Symposium

“CRITICAL LIMB ISCHEMIA”

- Ischemic rest pain and absolute systolic ankle pressure of less than 40 mm Hg
- Ankle pressure < 60 mm Hg systolic in the presence of superficial necrosis of the foot or digital gangrene involving the base of the phalanx
- “It was generally agreed that diabetic patients who have a varied clinical picture of neuropathy, ischaemia and sepsis make a definition even more difficult . . . and these patients should be excluded.”
- “Diabetic patients should not be included, or should be clearly defined as a separate category to allow analysis of the results in non-diabetic . . .”
CLTI

Chronic Limb-Threatening Ischemia is a broad spectrum
Chronic Limb-threatenning Ischemia is a SPECTRUM

Especially in Patients with diabetes

Hemodynamics and Probability of Healing of a Diabetic Foot Ulcer

Healing unlikely if toe pressure < 55 mmHg
When to use WIfI

What is the target population?
Which patients are included in WIfI?

• The intent of the WIfI classification system is for it to be applied to patients across a **broad spectrum of lower extremity atherosclerotic occlusive disease of varying severity and distribution.** It includes patients with ischemic rest pain in addition to tissue loss with coexisting chronic PAD.

• **The following conditions are excluded:** patients with pure venous ulcers; acute limb ischemia; acute “trash” foot; or ischemia due to emboli, acute trauma/mangled extremity; and those with wounds related to nonatherosclerotic conditions such as vasculitis, collagen vascular disease, Buerger’s disease, neoplasm, dermatoses, and radiation.
The target population for SVS WlfI includes any patient with:

• Ischemic rest pain, typically in the forefoot with confirmatory, objective hemodynamic studies (ABI < 0.40, AP < 50, TP < 30, TcPO2 < 20)

• A diabetic foot ulcer

• Non-healing lower limb or foot ulceration of at least 2 weeks duration

• Gangrene involving any portion of the foot or lower limb.
DEMOGRAPHY IS DESTINY

• Fontaine and Rutherford are pure ischemia models; the concept of CLI was never intended to be applied to diabetics

• Global epidemic of diabetes; emerging evidence that etiology of foot ulcers in these patients has changed over the last 2 decades from primarily neuropathic to neuroischemic and purely ischemic

• Neuropathy, wound characteristics and infection complicate management
  • Eurodiale: PAD + infection TRIPLES amputation risk

• Our patients have changed but our classification system has not
PAD + Infection TRIPLES amputation risk

Fig. 1 ORs of healing per PAD and infection (Inf) status.

SVS LOWER EXTREMITY THREATENED LIMB CLASSIFICATION

**WlfI Index**

- **Wound:**
  - extent and depth

- **Ischemia:**
  - perfusion/flow

- **Foot Infection:**
  - presence and extent
The Society for Vascular Surgery Lower Extremity Threatened Limb Classification System: Risk stratification based on Wound, Ischemia, and foot Infection (WIfI)

Joseph L. Mills, Sr, MD, a Michael S. Conte, MD, b David G. Armstrong, DPM, MD, PhD, a Frank B. Pomposelli, MD, c Andres Schanzer, MD, d Anton N. Sidawy, MD, MPH, c and George Andros, MD, f on behalf of the Society for Vascular Surgery Lower Extremity Guidelines Committee, Tucson, Ariz; San Francisco and Van Nuys, Calif; Brighton and Worcester, Mass; and Washington, D.C.

Critical limb ischemia, first defined in 1982, was intended to delineate a subgroup of patients with a threatened lower extremity primarily because of chronic ischemia. It was the intent of the original authors that patients with diabetes be excluded or analyzed separately. The Fontaine and Rutherford Systems have been used to classify risk of amputation and likelihood of benefit from revascularization by subcategorizing patients into two groups: ischemic rest pain and tissue loss. Due to demographic shifts over the last 40 years, especially a dramatic rise in the incidence of diabetes mellitus and rapidly expanding techniques of revascularization, it has become increasingly difficult to perform meaningful outcomes analysis for patients with threatened limbs using these existing classification systems. Particularly in patients with diabetes, limb threat is part of a broad disease spectrum. Perfusion is only one determinant of outcome; wound extent and the presence and severity of infection also greatly impact the threat to a limb. Therefore, the Society for Vascular Surgery Lower Extremity Guidelines Committee undertook the task of creating a new classification of the threatened lower extremity that reflects these important considerations. We term this new framework, the Society for Vascular Surgery Lower Extremity Threatened Limb Classification System. Risk stratification is based on three major factors that impact amputation risk and clinical management: Wound, Ischemia, and foot Infection (WIfI). The implementation of this classification system is intended to permit more meaningful analysis of outcomes for various forms of therapy in this challenging, but heterogeneous population. (J Vasc Surg 2014;59:220-34.)
• Based upon existing validated systems or best available data with 4 point scales where
  • 0 = none
  • 1 = mild-moderate
  • 2 = moderate-severe
  • 3 = severe
<table>
<thead>
<tr>
<th>Grade</th>
<th>Clinical Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ischemic rest pain; Pre-gangrenous skin change, without frank ulcer or gangrene (Pedis or UT Class 0)</td>
</tr>
<tr>
<td>1</td>
<td>Minor tissue loss: small shallow ulceration) &lt; 5 cm² on foot or distal leg (Pedis or UT Class 1); no exposed bone unless limited to distal phalanx</td>
</tr>
<tr>
<td>2</td>
<td>Major tissue loss: deeper ulceration(s) with exposed bone, joint or tendon, ulcer 5-10 cm² not involving calcaneus – (Pedis or UT Classes 2 and 3); gangrenous changes limited to digits. <em>Salvageable with multiple digital amps or standard TMA + skin coverage</em></td>
</tr>
<tr>
<td>3</td>
<td>Extensive ulcer/gangrene &gt; 10 cm² involving forefoot or midfoot; full thickness heel ulcer &gt; 5 cm² + calcaneal involvement. <em>Salvageable only with complex foot reconstruction, nontraditional TMA (Chopart/Lisfranc); flap coverage or complex wound management needed</em></td>
</tr>
</tbody>
</table>
# ISCHEMIA

<table>
<thead>
<tr>
<th>Grade</th>
<th>ABI</th>
<th>Ankle SP</th>
<th>TP, TcPO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>≥ 0.80</td>
<td>≥ 100 mm Hg</td>
<td>≥ 60 mm Hg</td>
</tr>
<tr>
<td>1</td>
<td>0.60-0.79</td>
<td>70-99 mmHg</td>
<td>40-59 mm Hg</td>
</tr>
<tr>
<td>2</td>
<td>0.40-0.59</td>
<td>50-69 mm Hg</td>
<td>30-39 mm Hg</td>
</tr>
<tr>
<td>3</td>
<td>&lt; 0.40</td>
<td>&lt; 50 mm Hg</td>
<td>&lt; 30 mm Hg</td>
</tr>
</tbody>
</table>

ABI=ankle brachial index; SP= systolic pressure; TP=toe pressure; TcPO2=transcutaneous oximetry
Fig 2. Correlation at the regional level is shown between intensity of vascular care and amputation rate. Intensity of vascular care is measured as a function of (A) all inpatient revascularizations, (B) all inpatient open surgical revascularizations, (C) inpatient therapeutic endovascular procedures, and (D) inpatient and outpatient diagnostic and therapeutic, open and endovascular revascularization procedures. *Amputation rates specifies major (above or below) knee amputation rate per 10,000 Medicare beneficiaries. †Intensity of care measured as a function of the number of procedures performed in the year prior to amputation.
<table>
<thead>
<tr>
<th>Grade</th>
<th>Clinical Description</th>
<th>IDSA</th>
<th>IWGDF Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>wound without purulence or manifestations of infection</td>
<td>uninfected</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>&gt;2 manifestations of infection (erythema or purulence, pain tenderness, warmth or induration) any cellulitis or erythema extends &lt; 2cm around ulcer; infection is limited to skin or subcutaneous tissues; no local complications or systemic illness</td>
<td>mild</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Infection in patient who is systemically and metabolically stable but has &gt;1 of the following: cellulitis extending 2cm, lymphangitis; spread beneath fascia; deep tissue abscess; gangrene; muscle, tendon, joint or bone involvement</td>
<td>moderate</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Infection in patient with systemic or metabolic toxicity</td>
<td>severe</td>
<td>4</td>
</tr>
</tbody>
</table>
WIFI INDEX IS INTENDED TO BE ANALOGOUS TO THE TNM STAGING SYSTEM FOR CANCER

• Utilization of this proposed system would produce a grid of 64 possible combinations of Wound, Ischemia and Infection

• Members of the SVS LE Guidelines Committee and selected experts were asked to classify each possible presentation into one of four classes based on two considerations:
  
  • What is the one-year risk of amputation if this limb status were treated with medical therapy alone (i.e., natural history of the condition)?
  
  • What is the likelihood the patient would benefit from or require revascularization in order to heal?
GRID DELPHI CONSENSUS PROCESS

- Stage 1 - Very Low
- Stage 2 – Low
- Stage 3 – Moderate
- Stage 4 - High

Very Low = VL = Class or Clinical Stage 1
Low = L = Class or Clinical Stage 2
Moderate = M = Class or Clinical Stage 3
High = H = Class or Clinical Stage 4
SVS WiFi Clinical Limb Stage
Based on estimated risk of amputation at one year

<table>
<thead>
<tr>
<th></th>
<th>Ischemia – 0</th>
<th>Ischemia – 1</th>
<th>Ischemia – 2</th>
<th>Ischemia – 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-0</td>
<td>1 1 2 3</td>
<td>1 2 3 4</td>
<td>2 2 3 4</td>
<td>2 3 3 4</td>
</tr>
<tr>
<td>W-1</td>
<td>1 1 2 3</td>
<td>1 2 3 4</td>
<td>2 3 4 4</td>
<td>3 3 4 4</td>
</tr>
<tr>
<td>W-2</td>
<td>2 2 3 4</td>
<td>3 3 4 4</td>
<td>3 4 4 4</td>
<td>4 4 4 4</td>
</tr>
<tr>
<td>W-3</td>
<td>3 3 4 4</td>
<td>4 4 4 4</td>
<td>4 4 4 4</td>
<td>4 4 4 4</td>
</tr>
</tbody>
</table>

KEY:  
I = Ischemia  
W = Wound  
fI = foot Infection

Clinical Stage 1 or Very low risk  
Clinical Stage 2 or Low risk  
Clinical Stage 3 or Moderate risk  
Clinical Stage 4 or High Risk  
Clinical Stage 5 = Unsalvageable limb

Premises:

a. Increase in wound class increases risk of amputation (based on WiFi, PEDIS, UT and other wound classification systems)

b. PAD and infection are synergistic (Eurodiale); infected wound + PAD increases likelihood revascularization will be needed to heal wound

c. Infection 3 category (systemic/metabolic instability): moderate to high-risk of amputation regardless of other factors (validated IDSA infection guidelines)
Benefit of Revascularization

<table>
<thead>
<tr>
<th>Ischemia – 0</th>
<th>Ischemia – 1</th>
<th>Ischemia – 2</th>
<th>Ischemia – 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-0</td>
<td>VL</td>
<td>VL</td>
<td>L</td>
</tr>
<tr>
<td>W-1</td>
<td>VL</td>
<td>VL</td>
<td>L</td>
</tr>
<tr>
<td>W-2</td>
<td>VL</td>
<td>VL</td>
<td>M</td>
</tr>
<tr>
<td>W-3</td>
<td>VL</td>
<td>VL</td>
<td>M</td>
</tr>
</tbody>
</table>

Legend:
- F1-0 to F1-3: Different time points or stages of ischemia severity.
- VL, L, M, H: Levels of ischemia severity.
One-Year Amputation Risk (%) by SVS WIfI Stage

- Class 1: Low risk
- Class 2: Moderate risk
- Class 3: High risk
- Class 4: Very high risk
There is a free app for that: https://itunes.apple.com/app/id1014644425
Using WIfI Clinically

Let’s walk through an example

• You can either refer to manuscript Table 2 or download the app (hint – the app makes it pretty simple)

• Grade each component: Wound, Ischemia, foot Infection
  • Result is displayed: W / I / fI

• Amputation risk is based on Delphi Consensus and placed into one of four classes or clinical stages ranging from very low Stage 1 to high Stage 4 (see manuscript, Table 6)

• Clinical Stage 5 is an unsalvageable limb
How would you classify the following patient using WIfI?

A 55-year-old man with diabetes, dry gangrene of two toes, and a <2 cm rim of cellulitis at the base of the toes, but without systemic or metabolic toxicity has absent pedal pulses. The ABI is 1.5. The toe pressure is 35 mm Hg.
• dry gangrene of two toes
• Wound 2 (gangrenous changes limited to digits)

• absent pedal pulses. ABI = 1.5. Toe pressure = 35 mm Hg
  Ischemia 2 (ABI unreliable due to medial calcinosis; toe pressure 30-39 mm Hg is Grade 2 Ischemia)

• <2 cm rim of cellulitis at the base of the toes, but without systemic or metabolic toxicity
  • foot Infection 1 (erythema with < 2 mm rim and no systemic signs is Grade 1 foot infection)
What is the clinical stage of this patient?

You can use this table to look up Clinical Stage

W 2 / I 2 / fl 1 is clinical stage 4, high risk of amputation

BUT IT’S EASIER TO USE THE CALCULATOR APP
Enter grades on calculator app and click: 

CALCULATE
WIFI BECOMES EASY WITH ROUTINE USE

• As clinicians, you already have experience in assessing wounds, assessing hemodynamics/perfusion status, and determining presence and severity of infection. **WIFI is just a systematic way to assess these three factors**

• Wound grading is the most difficult. Remember, if you are unsure, the default grade is the **clinical description** at the bottom of each grade based on what you think will be necessary from a surgical standpoint to close or heal the wound
### W: Wound/clinical category

SVS grades for rest pain and wounds/tissue loss (ulcers and gangrene):
0 (ischemic rest pain, ischemia grade 3; no ulcer)  1 (mild)  2 (moderate)  3 (severe)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Ulcer</th>
<th>Gangrene</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No ulcer</td>
<td>No gangrene</td>
</tr>
<tr>
<td></td>
<td>Clinical description: ischemic rest pain (requires typical symptoms + ischemia grade 3); no wound.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Small, shallow ulcer(s) on distal leg or foot; no exposed bone, unless limited to distal phalanx</td>
<td>No gangrene</td>
</tr>
<tr>
<td></td>
<td>Clinical description: minor tissue loss. Salvageable with simple digital amputation (1 or 2 digits) or skin coverage.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Deeper ulcer with exposed bone, joint or tendon; generally not involving the heel; shallow heel ulcer, without calcaneal involvement</td>
<td>Gangrenous changes limited to digits</td>
</tr>
<tr>
<td></td>
<td>Clinical description: major tissue loss salvageable with multiple (≥3) digital amputations or standard TMA ± skin coverage.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Extensive, deep ulcer involving forefoot and/or midfoot; deep, full thickness heel ulcer ± calcaneal involvement</td>
<td>Extensive gangrene involving forefoot and/or midfoot; full thickness heel necrosis ± calcaneal involvement</td>
</tr>
<tr>
<td></td>
<td>Clinical description: extensive tissue loss salvageable only with a complex foot reconstruction or nontraditional TMA (Chopart or Lisfranc); flap coverage or complex wound management needed for large soft tissue defect</td>
<td></td>
</tr>
</tbody>
</table>

*TMA, Transmetatarsal amputation.*
Key Points and Underlying Principles of WIfI

• All patients undergoing treatment for the spectrum of limb threatening ischemia should be staged at presentation, but staging shouldn’t delay therapy (e.g. if foot obviously needs drainage, DON’T WAIT for ABI and Toe pressure) Ischemia stage initially = U (unknown)

• Patients undergoing therapy should be restaged periodically, but always after interventions (debridements, angioplasties, bypasses, etc)

• WIfI is a systematic means of ensuring that Ischemia and residual or recurrent foot Infection are not overlooked

• Wound class reminds the practitioner to think about what will be necessary and the potential complexity of efforts that will be required to achieve functional foot healing and complete closure
WIFI has been applied to patients:

- Undergoing both open and endovascular revascularization (Cull; Causey; Darling; Leithead; Okazaki; Ricco)

- All comers with wounds severe enough to require operative debridement in primarily diabetic populations (Zhan; Causey; Ward; Mathioudakis; Robinson; Ramanan; Molina)

- Patients undergoing infrapopliteal angioplasty and bypass for “CLI” (Darling; Hoshina; Kobayashi; Tokuda)

- Non-diabetic patients undergoing endovascular therapy (Beropoulis)
## RESULTS

<table>
<thead>
<tr>
<th>Wtfl Clinical Stage</th>
<th>Predicted Amputation</th>
<th>Observed Amputation</th>
<th>Observed Non-Healing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1 (n= 40)</td>
<td>3%</td>
<td>3%</td>
<td>8%</td>
</tr>
<tr>
<td>Stage 2 (n= 64)</td>
<td>8%</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td>Stage 3 (n= 46)</td>
<td>25%</td>
<td>23%</td>
<td>30%</td>
</tr>
<tr>
<td>Stage 4 (n= 8)</td>
<td>50%</td>
<td>40%</td>
<td>63%</td>
</tr>
</tbody>
</table>

Cull et al. JVS 2014;60:1535-42
## RESULTS

<table>
<thead>
<tr>
<th>WfI Stage</th>
<th>Hazard Ratio (95% CI)</th>
<th>Hazard Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00 (Referent)</td>
<td>1.00 (Referent)</td>
</tr>
<tr>
<td>2</td>
<td>0.29 (0.08 - 1.08)</td>
<td>4.8 (0.6 - 40.5)</td>
</tr>
<tr>
<td>3</td>
<td>0.15 (0.04 - 0.57)</td>
<td>10.8 (1.3 - 88.8)</td>
</tr>
<tr>
<td>4</td>
<td>0.05 (0.01 - 0.31)</td>
<td>23.4 (2.0 - 270.2)</td>
</tr>
</tbody>
</table>

Cull et al. JVS 2014;60:1535-42
### Risk of amputation versus SVS WIfI Stage: Compilation of published data

<table>
<thead>
<tr>
<th>Study (year): # limbs at risk</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cull (2014): 151</td>
<td>37 (3%)</td>
<td>63 (10%)</td>
<td>43 (23%)</td>
<td>8 (40%)</td>
</tr>
<tr>
<td>Zhan (2015): 201</td>
<td>39 (0%)</td>
<td>50 (0%)</td>
<td>53 (8%)</td>
<td>59 (37%)</td>
</tr>
<tr>
<td>Darling (2015): 551</td>
<td>5 (0%)</td>
<td>111 (10%)</td>
<td>222 (11%)</td>
<td>213 (24%)</td>
</tr>
<tr>
<td>Causey (2016): 160</td>
<td>21 (0%)</td>
<td>48 (25%)</td>
<td>42 (21%)</td>
<td>49 (31%)</td>
</tr>
<tr>
<td>Beropoulis (2016): 126</td>
<td>29 (13%)</td>
<td>42 (19%)</td>
<td>29 (19%)</td>
<td>26 (38%)</td>
</tr>
<tr>
<td>Ward (2016): 98</td>
<td>5 (0%)</td>
<td>21 (14%)</td>
<td>14 (21%)</td>
<td>58 (34%)</td>
</tr>
<tr>
<td>Darling (2016): 992</td>
<td>12 (0%)</td>
<td>293 (4%)</td>
<td>249 (4%)</td>
<td>438 (21%)</td>
</tr>
<tr>
<td>N = 2279 (weighted mean)</td>
<td>148 (3.4%)</td>
<td>628 (8.3%)</td>
<td>652 (10.3%)</td>
<td>851 (25%)</td>
</tr>
</tbody>
</table>

Means in totals (in parentheses) are weighted

Number of limbs at risk in each WIfI Stage with % amputation at 1 year in parentheses
Amputation rates by WIfI stage: synergism of Wound, INFECTION and ischemia

Table III. One-year institutional amputation rate based on Clinical Stage as per the SVS WIfI Classification System¹¹

<table>
<thead>
<tr>
<th>Ischemia-0</th>
<th>Ischemia-1, %</th>
<th>Ischemia-2, %</th>
<th>Ischemia-3, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>W-1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>W-2</td>
<td>1</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>W-3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>f1-0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>f1-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>f1-2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>f1-3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

W, wound grade; f1, foot infection grade.

Darling et al JVS; 2016
WIfI staging may help optimize revascularization strategy

Repetitive endovascular therapy versus WIfI stage

Bypass versus endovascular therapy for WIfI Stage 4
Ramanan et al. J Vasc Surg 2017
WIfI RE-STAGING

SVS WIfI: should be used to restage limbs after intervention (analogous to TNM)

One month scores correlate with amputation risk (better than baseline)

Leithead et al. J Vasc Surg
January 17 Vol. 65, Issue 1, e7–e8
On Remission:

Cumulative recurrence rates following initial healing

Comparison of study results (via S. Morbach)

* at least one recurring ulcer episode among those under risk (i.e., alive and with at least one on leg); 10-year data unpublished
Conclusions:

• Venn diagram rubric of Wound, Ischemia and foot Infection (WIfI) is a logical construct for evaluating and treating threatened limbs

• Accumulated data to date support the predictive ability of SVS WIfI Lower Extremity Threatened Limb Classification System

• Limb disease burden has a significant impact on outcome despite aggressive revascularization and needs to be considered up front when designing and comparing therapeutic approaches

• In good risk patient with vein, bypass may be preferred to endovascular approach for high (Stage 4 and some Stage 3) WIfI stages

• VQI Registry, BEST and BASIL 2/3 trials should allow us to modify and improve WIfI staging; it is meant to be an iterative system
DATA ELEMENTS AND DEFINITIONS

The RAPID clinical data elements are listed in the Supplementary Table (online only), and a few points warrant highlighting. In addition to deriving core data elements from existing sources, the clinical workgroup provided additional specificity and definition for several key variables. A modified Rutherford classification for PAD symptoms was developed to increase specificity regarding delineation of the activity limitations for patients with mild, moderate, and severe claudication. Whereas many registries and prior studies described patients with critical limb ischemia using a Rutherford classification, the clinical working group recommended use of the now validated Wound, Ischemia, and foot Infection classification system for grading the severity of critical limb ischemia in the RAPID core data elements. Definitions for lesion length, degree of lesion stenosis, and degree of vascular calcification were actively debated among stakeholders, as these data elements have been inconsistently documented across typical data sources. A consensus was reached as to how best to classify these in RAPID.
There is a free app for that: https://itunes.apple.com/app/id1014644425
Limb Salvage is a Team Sport.
Who needs a Team?
You do.
More importantly, our patients do!
It is a great honor and true privilege to participate in the Houston Aortic Symposium.