Introduction

- Multiple diabetic foot ulcers and pressure ulcer scoring systems exist.
  - They uniformly lack objectivity
  - For the most part they do not take severity into consideration
  - Their merits are not confirmed by reliability & validity studies

- We have generated a simple to use Wound Score.
  - It integrates the essential features of the most commonly used wound grading systems
  - It grades with objective criteria the severity of each feature (assessment)

- This presentation demonstrates its adaptability to a variety of wounds regardless of location or wound etiology.

Materials and Methods

- 50 patients with lower extremity wounds were scored in both diabetic & non-diabetic patients with our 10 to 0 Wound Score using 5 assessments each graded from 2 (best) to 0 (worst).
- Wounds are labeled as "Healthy" if the score is 7.5 to 10 points; "Problem" if the score is 3.5 to 7 points and "Futile" if the score is 0 to 3 points.

Wagner Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Findings</th>
<th>Criteria for Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Deforacement, edema and/or undermined wound</td>
<td>Depth</td>
</tr>
<tr>
<td>I</td>
<td>Superficial ulcer</td>
<td>Appearance</td>
</tr>
<tr>
<td>II</td>
<td>Deep ulcer to bone, tissue, bone or joint</td>
<td>Deformity, edema and/or undermined</td>
</tr>
<tr>
<td>III</td>
<td>Deep ulcer with abscess or osteomyelitis</td>
<td>Infection</td>
</tr>
<tr>
<td>IV</td>
<td>Gangrene of some portion of the wound</td>
<td>Gangrene</td>
</tr>
<tr>
<td>V</td>
<td>Superficial ulcer</td>
<td>Gangrene</td>
</tr>
</tbody>
</table>

Deficiencies/Concerns of the WG System

- The AHRQ (American Hospital Research Council) determines whether a stage or complication; the AHRQ is used to manage 5 wounds per each with specific grading criteria that vary from stage to stage and severity.

- Grading is no longer applicable after wounds become infected. "Healthy" following debridement and/or amputation.

- The WG system initially applied only to diabetic foot ulcers (DFUs), but later modified to include non-DFUs.
- No objectivity or reliability studies exist in the WG system.

NPUAP Stage National Pressure Ulcer Advisory Panel

- The objectivity and versatility of the Wound Score made scoring of our initial series of 50 patients' foot, leg and ankle wounds, whether diabetic or not, easy. It provided objective criteria for justifying management and measuring improvement. In addition, we feel it is an especially valuable tool for comparative effectiveness research of wound care products and other management interventions.

The Wound Score

- Assessments such as perfusion, size or appearance of the wound base are not considered.
- Uses only a single criterion (i.e. depth) to determine the wound stage.
- Deficiencies of the NPUAP Stages
  - They uniformly lack objectivity
  - Their merits are not confirmed by reliability & validity studies
  - They uniformly lack objectivity
  - The majority (90%, p < 0.001) of ulcers that occur in the foot are in patients with DM.

NPUAP Stage National Pressure Ulcer Advisory Panel

<table>
<thead>
<tr>
<th>Stage</th>
<th>Findings</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Non-bacterial</td>
<td>Usually overly bony</td>
</tr>
<tr>
<td>II</td>
<td>Partial thickness (less than 50%)</td>
<td>Often contains sensation</td>
</tr>
<tr>
<td>III</td>
<td>Full thickness tissue</td>
<td>Often contains sensation</td>
</tr>
<tr>
<td>IV</td>
<td>Full thickness tissue</td>
<td>Usually contains sensation</td>
</tr>
<tr>
<td>Unstable</td>
<td>Full thickness tissue</td>
<td>Usually contains sensation</td>
</tr>
<tr>
<td>Suppurative Deep Tissue Injury</td>
<td>Necrosis of muscle</td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>Necrosis of muscle</td>
<td></td>
</tr>
</tbody>
</table>

Deficiencies/Concerns of the NPUAP Stages

- Uses only a single criterion (i.e. depth) to determine the wound stage.
- Deficiencies of the IDSA DFU Severity
  - Limited to DFUs as specified by the IDSA.
  - Gangrene not differentiated as "red" or "black" as in moderate DFU selection.
  - Discrimination of foot complications (i.e., < 2 cm radius = "minor" vs. > 2 cm radius = "severe" foot wound).
  - No objectivity or reliability studies; treatment is relative to the size & location of the wound.

Results with Interpretations

- Observations
  - Patients are divided into patients with diabetes mellitus (DM) versus non-DM
  - The "wound location" data set divides the patients into DFU/Foot ulcer and Ankle/Leg categories.

- Null Hypothesis: There is no association between the presence of DM and the wound location (p = 0.0011).

- The Chi Square Test shows there is a statistically significant association with the presence of DM and the wound location

- The majority (90%, p = 0.001) of ulcers that occur in the foot are in patients with DM.

- 82% (p < 0.001) of the wounds in our study group whether in the foot or in the leg occurred in patients with DM.

Conclusions

- The objectivity and versatility of the Wound Score made scoring of our initial series of 50 patients’ foot, leg and ankle wounds, whether diabetic or not, easy. It provided objective criteria for justifying management and measuring improvement.
- In addition, we feel it is an especially valuable tool for comparative effectiveness research of wound care products and other management interventions.

References