Rehabilitation in Amputees

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A limb lost every 3 hours: can Australia reduce amputations in people with diabetes?


• 30% Increase in diabetes in the last decade

• 8% of diabetic related deaths are due to foot disease
Indigenous people aged 25–49 years with diabetes

- Minor amputations were 27 times more likely
- Major amputations 38 times more likely

Paul E Norman, Deborah E Schoen, Joel M Gurr and Marlene L Kolybaba
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### Age-standardised amputation rate* (crude number) by age group, 2000–2008

<table>
<thead>
<tr>
<th></th>
<th>Minor amputations†</th>
<th>Major amputations‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25–49 years</td>
<td>≥ 50 years</td>
</tr>
<tr>
<td>Indigenous with diabetes</td>
<td>46.4 (93)</td>
<td>185.0 (118)</td>
</tr>
<tr>
<td>Non-Indigenous with diabetes</td>
<td>1.7 (108)</td>
<td>28.9 (1408)</td>
</tr>
<tr>
<td>Indigenous without diabetes</td>
<td>0.0 (0)</td>
<td>4.7 (3)</td>
</tr>
<tr>
<td>Non-Indigenous without diabetes</td>
<td>0.3 (21)</td>
<td>6.5 (317)</td>
</tr>
</tbody>
</table>

* Per 100 000 Indigenous and non-Indigenous people (irrespective of diabetic status) using the 2001 Census as the standard population. † Toe or foot amputations. ‡ Amputations below or above the knee.
**Standardised hospitalisation ratio**

<table>
<thead>
<tr>
<th>Type of complication</th>
<th>Major Cities</th>
<th>Inner Regional</th>
<th>Outer Regional</th>
<th>Remote</th>
<th>Very Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHD</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Stroke</td>
<td></td>
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<tr>
<td>PVD</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Kidney</td>
<td></td>
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<tr>
<td>Eye</td>
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<tr>
<td>Nervous system</td>
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<tr>
<td>Oral</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limb ulcers</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Notes**
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. 2004–05 Major Cities males, females and persons used as the standard population in the calculation of the rates.

*Source:* AIHW National Hospital Morbidity Database.

**Figure 5.13: Hospitalisations for diabetes complications by geographic location, 2004–05**
Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
Source: AIHW National Mortality Database.

Figure 5.14: Deaths from diabetes complications by geographic location, 2003–2005
Diabetic Complications

• Wound healing
• Renal dysfunction
• Autonomic neuropathy
• Hypoglycaemia with exercise
Level Choosing Factors

- Treat underlying disease
- Consider functional potential
- Preserve length
- Fast healing
- Avoid further surgery
## Energy Consumption in Amputees

<table>
<thead>
<tr>
<th>Level of amputation</th>
<th>Increased energy above normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Traumatic)</td>
<td></td>
</tr>
<tr>
<td>• BKA</td>
<td>20-25% (Short-40%)</td>
</tr>
<tr>
<td></td>
<td>(Long-10%)</td>
</tr>
<tr>
<td>• BKA + BKA</td>
<td>41% (Gonzalez-1974)</td>
</tr>
<tr>
<td>• AKA</td>
<td>60-70%</td>
</tr>
<tr>
<td>• AKA + BKA</td>
<td>118% (Traugh-1975)</td>
</tr>
<tr>
<td>• AKA + AKA</td>
<td>260% (Huang 1979)</td>
</tr>
</tbody>
</table>
Rigid Dressings

• Immediate oedema control
• Possible weight-bearing
• Need appropriate personnel
• Application immediately post-operatively
Range of Motion

• Pain control pre and post op
• Avoid propping on pillows, prolonged sitting in flexion
• Prone lying daily
Phantom Pain

- Anticonvulsants (gabapentin / pregabalin)
- Adjuvants antidepressants, antiarhythmic, SSRI?
  topical modalities
- Total contact shrinkers
Early Patient Involvement

- Pre-op counselling if possible
- Realistic goal setting
- Learn to touch, massage and wrap stump
- Managing prosthesis
- Risk factor modification
Falling and Fear of Falling
(lower extremity amputees)

• Arch Phys Med Rehabil 2001
  Aug;82(8):1031-7, Miler et al
• 52% fell past year
• 49% fear of falling
References


11. NYU School of Medicine, Rusk Rehabilitation Department. 40th Annual Comprehensive Review of Physical Medicine and Rehabilitation [text book]. 2015.