Setting up a Diabetic Foot Center

• Karel Bakker
  • Chair IDF Consultative Section DF / IWGDF

• DF Con, LA, 18 March 2010
Organisation of footcare

• There is strong evidence that the institution of a multidisciplinary foot-care team reduces amputation rate
“Improved survival of the Diabetic Foot: The role of a specialized foot clinic”

ME Edmonds, et all
King’s College Hospital, London

Q J Med. 1986 Aug;60(232):763-71
First Multidisciplinaire Diabetic Foot Clinic
King’s College London, UK
Multidisciplinary Diabetic Foot Team

… Dependent upon motivated members …
Levels of foot care management

In all countries at least three levels of foot care management are needed:

Level 1 Minimal model: general practitioner, diabetic nurse and podiatrist

Level 2 Intermediate model: diabetologist, surgeon (general and/or vascular and/or orthopedic), diabetic nurse and podiatrist

Level 3 Centre of excellence
Level of Management 1

• Personnel
  – GP
  – Diabetic Nurse
  – Podiatrist
Minimal model (1)

<table>
<thead>
<tr>
<th>Aim</th>
<th>Prevention and basic curative care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>Own population</td>
</tr>
<tr>
<td>Setting</td>
<td>General practitioners’ office, health centre or small regional hospital</td>
</tr>
<tr>
<td>Facilitating elements</td>
<td>Close collaboration with a referral centre</td>
</tr>
</tbody>
</table>
Level of Management 2

• Personnel
  – Diabetologist
  – Surgeon (general and/or vascular and/or orthopedic)
  – Diabetic nurse
  – Podiatrist
# Intermediate model (2)

<table>
<thead>
<tr>
<th>Aim</th>
<th>Prevention and curative care for all types of patients and more advanced assessment and diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>From the regional catchment area of the hospital with possibly some referrals from outside the region</td>
</tr>
<tr>
<td>Setting</td>
<td>Hospital</td>
</tr>
</tbody>
</table>
| Facilitating elements | Motivated coordinator to inspire team  
Exchange experience with other centres  
Staff meetings to discuss diabetic foot patients  
Active collaboration with other departments within the hospital  
Active collaboration with extra-mural facilities (GP’s, nursing homes, etc) |
Level of Management 3

• Personnel
  – Diabetologist
  – Surgeon (vascular, orthopedic)
  – Podiatrist
  – Orthotist
  – Educator
  – Plaster technician
  – Rehabilitation specialist
  – Diabetic Nurse
  – Psychiatrist
"A specialized wound-healing center concept: importance of a multidisciplinary department structure and surgical treatment facilities in the treatment of chronic wounds"

F Gottrup
Copenhagen Wound Healing Center, Bispebjerg
University Hospital

Organisation of footcare

• Make each patient a respected member of the team - you cannot succeed without their help
Education for “relatives”
Evaluation of outcomes
Realistic time-dependent targets should be set. Several outcomes can be measured:

- Amputation rates
- Foot-related deaths
- Numbers of ulcers
- Healing times of ulcers
- Prevalence (a reduction in projected increase, rather than an overall reduction may be a more realistic target)
- Hospital stays related to the diabetic foot
- Cost of providing diabetic foot care

A monitoring system is essential for assessing the impact on foot clinic’s outcomes.
Diabetic Foot Clinics: Implementation in Brazil - 1992
Brazilian Foot Clinic Implementation 92/04
Outpatient = 58
Foot Centre = 01

Trends towards reduction = 77%

Sustained decrease of major amputations in diabetic patients

J. Larsson\textsuperscript{1}, M. Eneroth\textsuperscript{1*}, J. Apelqvist\textsuperscript{2}

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\item \textsuperscript{2}Dep of Endocrinology, Malmö University Hospital, Sweden
\end{itemize}

\* Presenting author
Incidence of diabetes-related amputations in the total population in Lund/Orup, Sweden 1982-2001

Diabetes prevalence increase by 87% 1982-2001
### Incidence, 4-year periods of diabetes-related amputations per 100,000 inhabitants

<table>
<thead>
<tr>
<th>Period</th>
<th>Major</th>
<th>Minor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982-1985</td>
<td>15.7</td>
<td>4.7</td>
<td>20.4</td>
</tr>
<tr>
<td>1986-1989</td>
<td>10.6</td>
<td>4.7</td>
<td>15.3</td>
</tr>
<tr>
<td>1990-1993</td>
<td>5.7</td>
<td>5.5</td>
<td>11.2</td>
</tr>
<tr>
<td>1994-1997</td>
<td>6.8</td>
<td>6.0</td>
<td>12.8</td>
</tr>
<tr>
<td>1998-2001</td>
<td>6.6</td>
<td>6.5</td>
<td>13.1</td>
</tr>
</tbody>
</table>
Patients treated by foot care team prior to amputation

<table>
<thead>
<tr>
<th>Period</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982-1985</td>
<td>51%</td>
</tr>
<tr>
<td>1986-1989</td>
<td>83%</td>
</tr>
<tr>
<td>1990-1993</td>
<td>86%</td>
</tr>
<tr>
<td>1994-1997</td>
<td>90%</td>
</tr>
<tr>
<td>1998-2001</td>
<td>90%</td>
</tr>
</tbody>
</table>
Conclusion

A substantial decrease in the incidence of major lower limb amputation can be achieved and maintained through a multidisciplinary team approach in diabetic patients with foot ulcer.

Magnus Eneroth
March 2006 Los Angeles
Clinical Results of a Prevention Model in a Podiatry Diabetic Foot Unit. A 5 years follow-up study.

8th Scientific Meeting Diabetic Foot Study Group
25-28 September 2009
Bled, Slovenia

Prof. José Luis Lázaro Martínez, DPM, Msc, PhD.

Universidad Complutense Madrid
## Reulceration rates in Diabetic Foot

<table>
<thead>
<tr>
<th>Author</th>
<th>Rate</th>
<th>Follow-up Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sinacore (1999)</td>
<td>32%</td>
<td>18 months</td>
</tr>
<tr>
<td>ADA (2000)</td>
<td>50%</td>
<td>2 years</td>
</tr>
<tr>
<td>Moulik (2003)</td>
<td>45%</td>
<td>5 years</td>
</tr>
<tr>
<td>Viswanathan (2004)</td>
<td>33%</td>
<td>9 months</td>
</tr>
<tr>
<td>Pound (2005)</td>
<td>40,3%</td>
<td>31 months</td>
</tr>
<tr>
<td>Winkley J (2007)</td>
<td>43,2%</td>
<td>18 months</td>
</tr>
<tr>
<td>Ghanassia E (2008)</td>
<td>40,6%</td>
<td>6,5 years</td>
</tr>
<tr>
<td>Lázaro el al (DFS 2009)</td>
<td>21%*</td>
<td>5 years</td>
</tr>
</tbody>
</table>

* In a Survival Analysis. Absolute Rate 11,5%
Realistic time-dependent targets should be set. Several outcomes can be measured:

- Amputation rates
- Foot-related deaths
- Numbers of ulcers
- Healing times of ulcers
- Prevalence (a reduction in projected increase, rather than an overall reduction may be a more realistic target)
- Hospital stays related to the diabetic foot
- Cost of providing diabetic foot care

A monitoring system is essential for assessing the impact on foot clinic’s outcomes.
“A specialized outpatient foot clinic for diabetic patients decreases the number of amputations and is cost saving”

K Bakker, J Dooren

Spaarne Hospital, Heemstede

Number of admission days per admission per year before (1983-1986) the start of foot clinic in the Spaarne Hospital Heemstede compared to the period after (1987-1990)
Realistic time-dependent targets should be set. Several outcomes can be measured:

- Amputation rates
- Foot-related deaths
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A monitoring system is essential for assessing the impact on foot clinic’s outcomes.
Spaarne Hospital Heemstede (The Netherlands)

Results of 4 year foot clinic (1987-1990)

• Amputation reduction by 44%
• Reduction of hospital costs of 600,000 USD dollar per year
The Netherlands

Almost 500,000 known patients with diabetes
Ulceration in 4% of diabetics in general practice

Lower extremity amputation
Incidence per 10,000 (amputees)
Hospitals in The Netherlands with a specialized foot clinic

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of hospitals</td>
<td>20 (16%)</td>
<td>43 (36%)</td>
</tr>
</tbody>
</table>
# Centre of excellence (3)

| Aim                          | Prevention and specialised curative care for complex cases  
<table>
<thead>
<tr>
<th></th>
<th>To teach other centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>National, regional or even international referral centre</td>
</tr>
<tr>
<td>Setting</td>
<td>Usually a teaching or university hospital</td>
</tr>
<tr>
<td>Facilitating elements</td>
<td>Organise regional, national or international meetings</td>
</tr>
<tr>
<td></td>
<td>Allow providers to visit to improve knowledge and practical skills</td>
</tr>
<tr>
<td></td>
<td>Active collaboration with other reference centres</td>
</tr>
<tr>
<td></td>
<td>Active participation in the development of guidelines</td>
</tr>
</tbody>
</table>
Just do it,...as simple as that...!!