THE GLOBAL VIEW ON DF AND INNOVATIONS IN DEVELOPING COUNTRIES

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Italy
Highlights:

- 10 million more adults with diabetes than 2015
- 34 million more adults are at risk of developing diabetes than 2015
- 8 million more adults above 65 years old with diabetes than 2015
- USD 54 billion more is spent on diabetes than 2015
- 19 million more adults with diabetes are undiagnosed than 2015
- 1 in 6 live births is affected by hyperglycaemia in pregnancy
- Over a million children and adolescents have type 1 diabetes
Total number of adults with diabetes (20-79 years)
Diabetes occurs when there are raised levels of glucose in the blood because the body cannot produce any or enough of the hormone insulin or use insulin effectively.
Diabetes around the world

Estimated total number of adults (20-79 years) living with diabetes, 2017
Diabetes: A global emergency

Number of people with diabetes worldwide and per region in 2017 and 2045 (20-79 years)
Prevalence (%) estimates of diabetes (20-79 years) by income group and age

“4 out of 5 people with diabetes live in low- and middle-income countries”
Diabetes around the world

Diabetes by age (20-79 years)

- 2017:
  - 98 million 65-79 years
  - 327 million 20-64 years

- 2045:
  - 191 million 65-79 years
  - 438 million 20-64 years
“Two-thirds of people with diabetes live in urban areas and number will increase to three fourths by 2045”
Number of deaths due to diabetes (20-79 years) in 2017 in millions
Deaths attributable to diabetes by age (20-79 years)

“Half of the 4 million people who die from diabetes are under the age of 60”
There are cost-effective and evidence-based solutions to reverse the global type 2 diabetes epidemic
Total healthcare expenditure by people with diabetes (20-79 years)

“USD 54 billion more is spent on diabetes than 2015”
Diabetes-related healthcare expenditure in adults (20-79 years) in 2017 per IDF region

Big differences in healthcare spent for diabetes across IDF regions
Diabetes Complications

People with diabetes are at **higher risk** of developing periodontal disease.

Diabetic retinopathy affects over **one-third** of all people with diabetes and is the leading cause of vision loss in working-age adults.

Pregnant woman with diabetes or at high risk for GDM should manage their glycaemia throughout their pregnancy to avoid long-term consequences for themselves and their children, and **transgenerational effects** (higher risk of obesity, diabetes, hypertension and kidney disease in the offspring).

People with diabetes are **2 to 3 times** more likely to have cardiovascular disease (CVD).

The prevalence of end-stage renal disease (ESRD) is up to **10 times higher** in people with diabetes.

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Every **30 seconds** a lower limb or part of a lower limb is lost to amputation somewhere in the world as a consequence of diabetes.
Deaths from DFU or DFU related amputation equal or exceed deaths from prostate cancer, breast cancer, and Hodgkin lymphoma combined.14

5-year Mortality Rates

Every 30 seconds a leg is lost to diabetes somewhere in the world.35
Worldwide 2015 415 million people with diabetes 2040 642 million people with diabetes

North America and Caribbean 2015 44.3 million 2040 60.5 million

Europe 2015 59.8 million 2040 71.1 million

Middle East and North Africa 2015 55.4 million 2040 72.1 million

South and Central America 2015 29.6 million 2040 48.8 million

Africa 2015 14.2 million 2040 34.2 million

South East Asia 2015 78.3 million 2040 140.2 million

Western Pacific 2015 153.2 million 2040 214.8 million


Diabetic Foot Prevalence

Developed Countries

One in every six people with diabetes will have an ulcer during their lifetime

Developing Countries

Foot problems estimated to account for 40% of available resources

https://www.ebi.org/web/databases/background_info_AFP.pdf
Prevention and Management of Foot Problems in Diabetes
Guidance Documents and Recommendations

GUIDANCE ON THE DIABETIC FOOT

The 2015 challenge of the International Working Group on the Diabetic Foot

This information is linked with the International Consensus on the Diabetic Foot 2015 on the website www.iwgdf.org. This is an interactive programme. You can choose how to access and read this information: front to back, topic by topic, on screen and on paper.

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As many as ... 80% of people with diabetes live in LMI countries

But as few as ... 9% of countries have recognised podiatry care
A Guideline is like a map showing where to go.

Implementation is a journey and involves the real work of people with diabetes and providers.
CRITICAL ISSUES

• Unawareness
• Undestimation
• Lack of resources
• Gap of knowledge
• Lack of skills
• Poor organization
Train-the-Foot-Trainer projects in SACA, NAC, EUR region, WP
Later: Africa
The ‘Step by Step’ Diabetic Foot Project in Tanzania: a model for improving patient outcomes in less-developed countries

Zulfiqarali G Abbas, Janet K Lutale, Karel Bakker, Neil Baker, Lennox K Archibald
Step by Step Program

Amputation rate (%)

*SD: standard deviation

HEALTH IN ACTION

The Guyana Diabetes and Foot Care Project: A Complex Quality Improvement Intervention to Decrease Diabetes-Related Major Lower Extremity Amputations and Improve Diabetes Care in a Lower-Middle-Income Country

Julia Lowe1*, R. Gary Sibbald2, Nashwah Y. Taha1, Gerald Lebovic3, Carlos Martin4, Indira Bhoj4, Rolinda Kirton5, Brian Ostrow6, the Guyana Diabetes and Foot Care Project Team

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* Membership of the Guyana Diabetes and Foot Care Project Team is provided in the Acknowledgments.


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Summary Points

- Type 2 diabetes is the fourth leading cause of death and affects 15.5% of the adult population in Guyana, South America.

- Preintervention, 41.4% of individuals with diabetic foot complications experienced major lower extremity amputation at the national referral hospital.

- A complex, interprofessional quality improvement intervention to improve diabetes and foot care was rolled out in two phases between 2008–2013.

- We report the experience from this unique nationwide intervention, with a national referral hospital prototype (phase 1) regionalized to six administrative regions in Guyana comprising 89% of the population (phase 2).
<table>
<thead>
<tr>
<th>Brief Description</th>
<th>Step by Step¹</th>
<th>Guyana Diabetes and Foot Care Project</th>
<th>The Samadhan System²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporates longitudinal training of HCP with follow-up sessions and hands-on practical training.</td>
<td>Similar educational approach to Step by Step using a formal key opinion leader team (“train the trainer model”). Builds capacity in the public-funded health system through facility development and provision of new clinical tools.</td>
<td>Encourages one specialist to gain knowledge in all areas of diabetes care, including nutritional and podiatric education, in order to provide adequate care in a resource-limited setting.</td>
<td></td>
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<tr>
<td>Encourages provider and patient education for knowledge dissemination</td>
<td>Integrated into Ministry of Health Strategic Plan.</td>
<td></td>
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<tr>
<td>Location</td>
<td>Tanzania, India, Sri Lanka, Nepal, and Bangladesh</td>
<td>Guyana</td>
<td>India</td>
</tr>
<tr>
<td>Sustainability and Capacity Building</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Education</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Main Differences</td>
<td>• Restricted to diabetic foot management</td>
<td>• Integrates diabetic foot care into CNCD care in public-funded health system</td>
<td>A cheap (US$1), effective, and simple to use offloading tool was designed and used by author</td>
</tr>
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<td></td>
<td>• Spans multiple countries</td>
<td>• Facilitates capacity building through infrastructure (clinic) development and introduction of new clinical tools (e.g., HbA1c testing and plantar pressure redistribution devices)</td>
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## RESULTS

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<tr>
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<th>Before</th>
<th>After</th>
<th>Significance</th>
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<tbody>
<tr>
<td>LEA per month</td>
<td>7.95±4.05</td>
<td>3.89±2.30</td>
<td>p&lt;0.05</td>
</tr>
</tbody>
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Overall reduction of LEA of 68% after the intervention

[Lowe et al. Plos Medicine, 2015]
- 60 M inhabitants
- 3 M DM
- 300,000 DF
- 3,75 M inhabitants
- 225,000 DM
- 2,600 DF
FROM 12 TO 3 LOCAL HEALTH AUTHORITIES

31/XII/2013

1/I/2014
1° Level
Screening
Education
Follow-up

2° Level
Neuropathic DFUs
Mild Infection
Non-critical PAD

3° Level
Revascolarization
DF surgery

LEVELS BY FUNCTIONS
## PRO-ACTIVE SCREENING OF DF

<table>
<thead>
<tr>
<th>Year</th>
<th>N. Diabetic Patients (%)</th>
<th>N. Screening (%)</th>
<th>N. High Risk (%)</th>
<th>N. DFU (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>6767 (1.6%)</td>
<td>2442 (36.1%)</td>
<td>21 (0.8%)</td>
<td>5 (0.2%)</td>
</tr>
<tr>
<td>2015</td>
<td>7016 (1.7%)</td>
<td>3856 (54.9%)</td>
<td>52 (1.3%)</td>
<td>8 (0.3%)</td>
</tr>
<tr>
<td>2016</td>
<td>9435 (2.2%)</td>
<td>6817 (72.2%)</td>
<td>144 (2.1%)</td>
<td>31 (0.5%)</td>
</tr>
</tbody>
</table>

International Diabetes Federation
RESEARCH AND THEORY

Bridging the Gap between Theory and Practice in Integrated Care: The Case of the Diabetic Foot Pathway in Tuscany

Sabina Nuti*, Barbara Bini*, Tommaso Grillo Ruggieri*, Alberto Piagggesi* and Lucia Ricci*

Introduction and Background: As diabetic foot (DF) care benefits from integration, monitoring geographic variations in lower limb Major Amputation rate enables to highlight potential lack of Integrated Care. In Tuscany (Italy), these DF outcomes were good on average but they varied within the region. In order to stimulate an improvement process towards integration, the project aimed to shift health professionals’ focus on the geographic variation issue, promote the Population Medicine approach, and engage professionals in a community of practice.

Method: Three strategies were thus carried out: the use of a transparent performance evaluation system based on benchmarking; the use of patient stories and benchmarking analyses on outcomes, service utilization and costs that cross-checked delivery- and population-based perspectives; the establishment of a stable community of professionals to discuss data and practices.

Results: The project enabled professionals to shift their focus on geographic variation and to a joint accountability on outcomes and costs for the entire patient pathways. Organizational best practices and gaps in integration were identified and improvement actions towards Integrated Care were implemented.

Conclusion and Discussion: For the specific category of care pathways whose geographic variation is related to a lack of Integrated Care, a comprehensive strategy to improve outcomes and reduce equity gaps by diffusing integration should be carried out.

Keywords: diabetes; diabetic foot; geographic variation; performance evaluation; benchmarking; sentinel events; engagement
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