



International Diabetes Federation



International Diabetes Federation (IDF) Studies on the Economic and Social Impact of Diabetes in Low- and Middle-Income Countries

Dr Jonathan Betz Brown, Dr JJ Gagliardino
and Dr Kaushik Ramaiya

IDF Impact Studies
Wednesday, October 21
1:00 – 2:00 p.m
IDF World Diabetes Congress 2009
Montréal, Canada



International Diabetes Federation

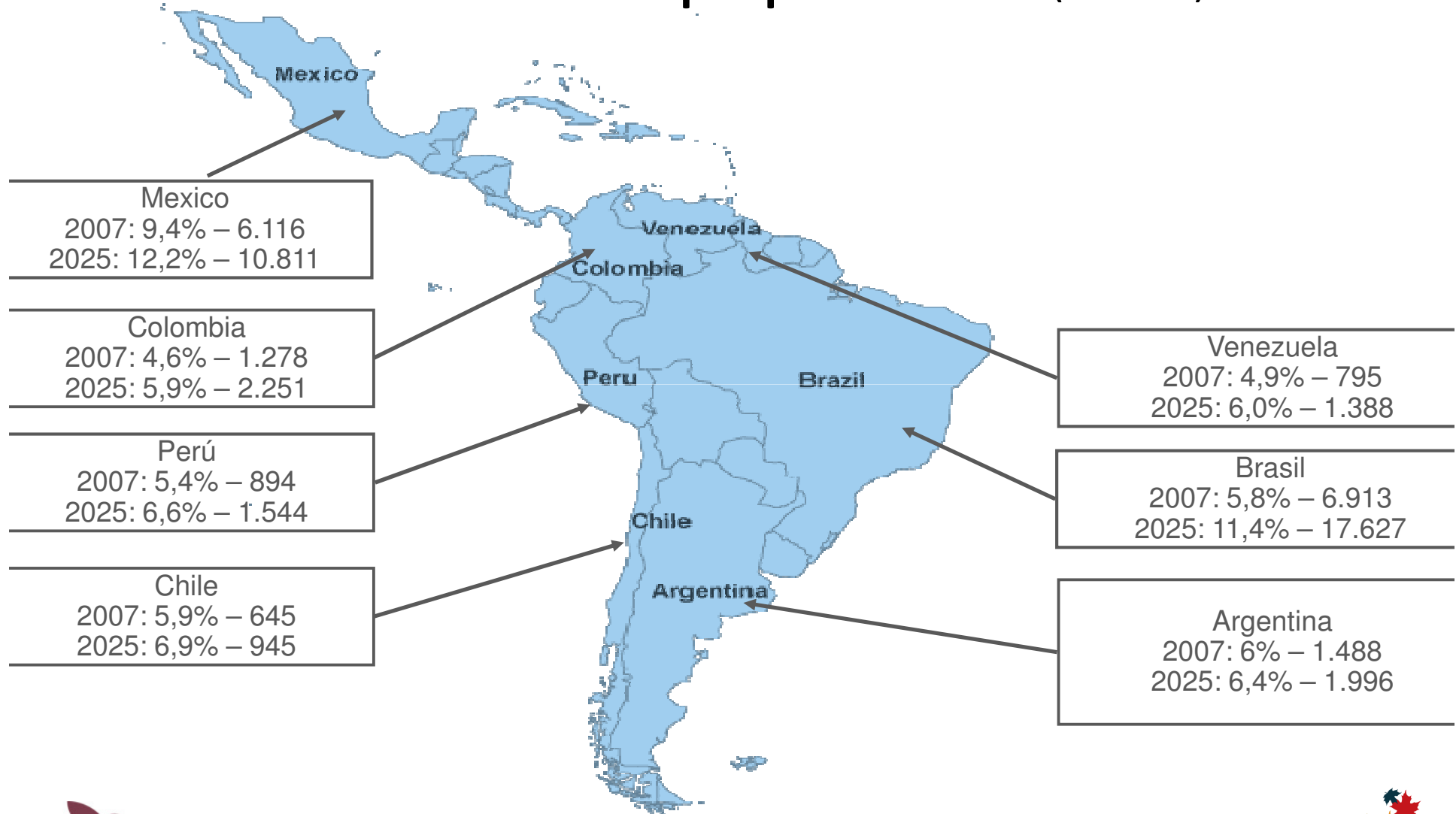


The Impact of Diabetes in Argentina

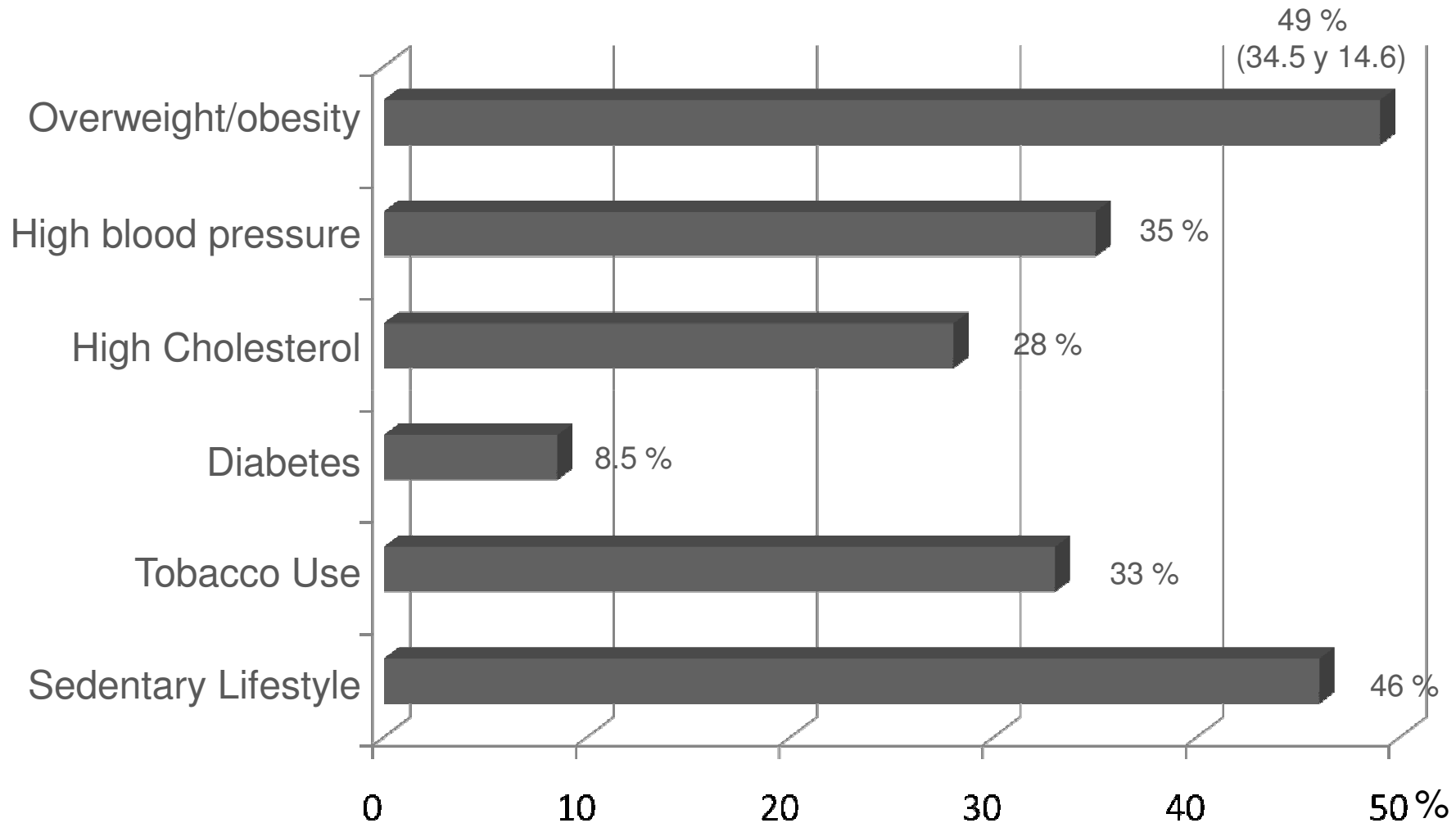
Dr JJ Gagliardino

Member of the IDF Task Force on Health Economics
Lead Investigator, Argentinian Impact Studies

DM prevalence and number of people with DM in adult population (x 1000)



Prevalence of diabetes and other cardiovascular risk factors



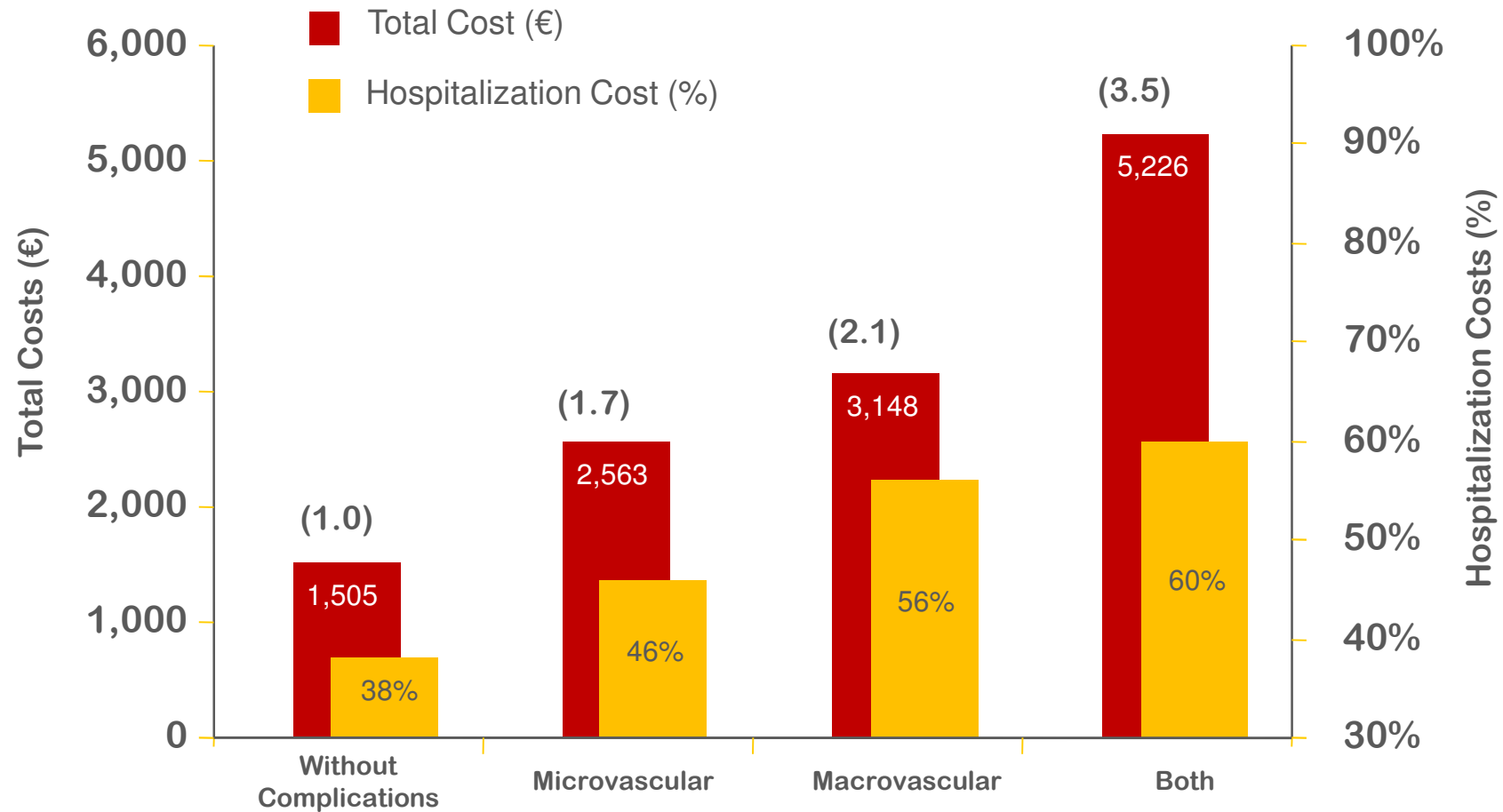
The magnitude of the problem could be greater!

	2008
Prevalence of DM in adult population	8,5%
Adult Population (millions)	25,6
Number of people with DM (millions)	2.18
World prevalencia of IGT (%)	8,2
Number of people with IGT (millions)	2,09

Annual cost *per capita*: people with/without DM

ITEM	DM / No DM
Medical Practices	3.7
Drugs	11.5
Laboratory	1.9
Hospitalizations	1.6
MEAN	4.7

Code-2: economic impact of complications



CHRONIC COMPLICATIONS ACCORDING TO DM DURATION

COMPLICATION	Years			
	0-5	6-10	11-20	>20
Retinopathy (prolif. - non prolif.)	10.0	20.0	38.0	48.0
Blindness	1.7	2.8	3.2	6.7
Peripheral Neuropathy	21.0	29.0	37.0	42.0
ESRD	0.2	0.4	0.7	1.5
AMI (previous + last year)	1.5	1.8	4.3	6.7
CVA (previous + last year)	2.1	3.5	2.9	3.3
Amputations (previous + last year)	1.0	1.4	3.6	7.3

Values represent percentage mean

Association of Obesity, HBP, DM, high cholesterol, tobacco use

CVRF	%	n
0	35	-
1	39	8.205.776
2	18	3.850.741
3	7	1.373.261
4	1	290.412
5	0.1	25.370

Cost of lack of prevention, based on data from the NCVRFS 2006

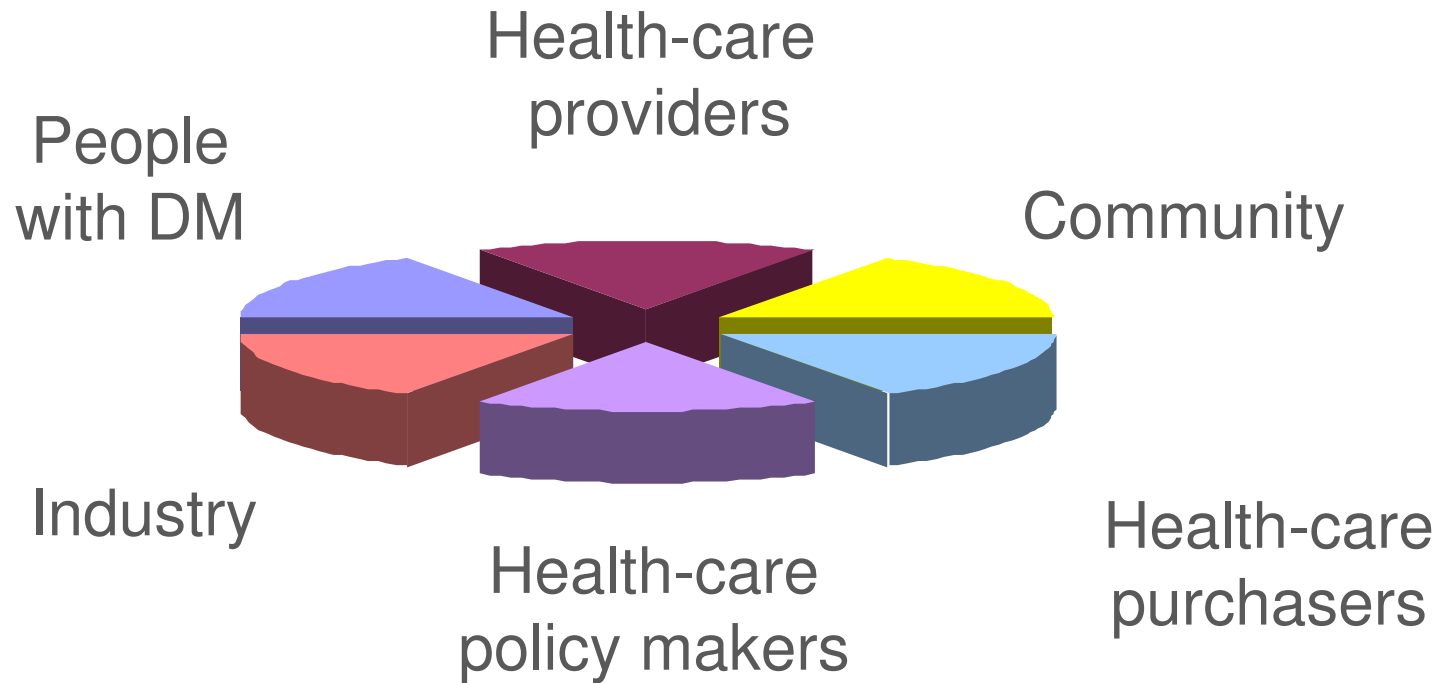
- Argentina has around 1.700.000 persons with 3 or more CVRF
- In the next 10 years around 40% of them will suffer a coronary event (680.000 events)
- That figure represents 186 coronary events/day
- The mean care cost of one event is around US\$ 1.700
- Therefore, if we do not do something somebody will have to pay around US\$ 316.000/day!!

ANNUAL HOSPITALIZATION RATE

	CONTROL	PROPAT
Patients	36 %	27 %
Hospitalizations (n)	315	72
T. Hospitalization days	1238	257
X hospitalization days	9,3	3,6
Total Costs	\$ 250.281,00	\$ 73.683,00
Cost <i>per capita</i>	\$ 1.523,34	\$ 1.230,25

ANNUAL COSTS *PER CAPITA*

	Costs <i>per capita</i> (US\$)	
ITEM	CONTROL	PROPAT
Medical practices	440.34	178.72
Drugs	390.98	281.22
Laboratory	73.98	43.15
Hospitalizations	1523.34	1230.25
TOTAL	2428.64	1733.34



NEVER EVER
EVER
GIVE UP!



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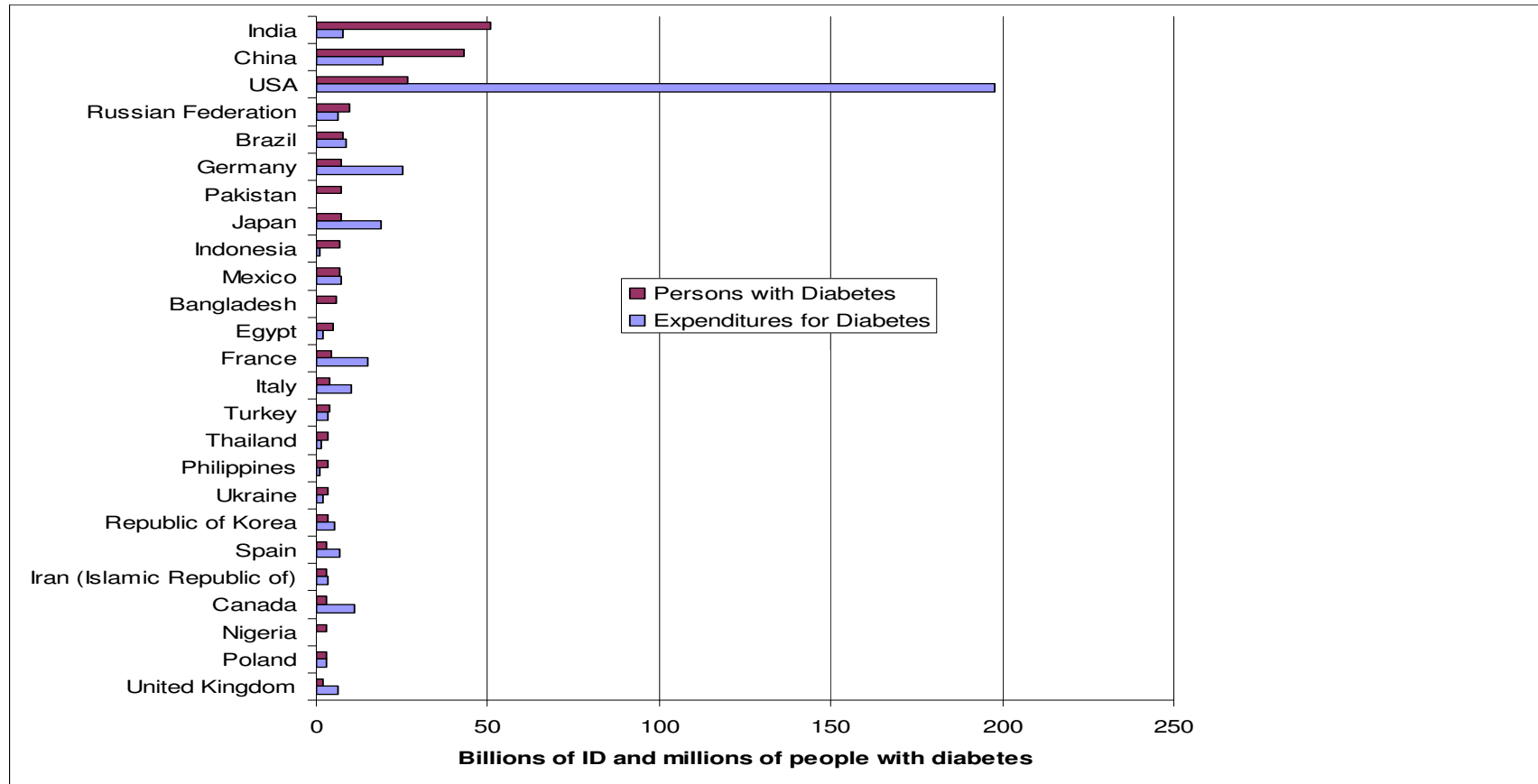
Jonathan Betz Brown, MPP, PhD,
Chair, IDF Task Force on Economics

Harrison Kiambuthi Wanjiru, Consultant,
IDF Task Force on Economics

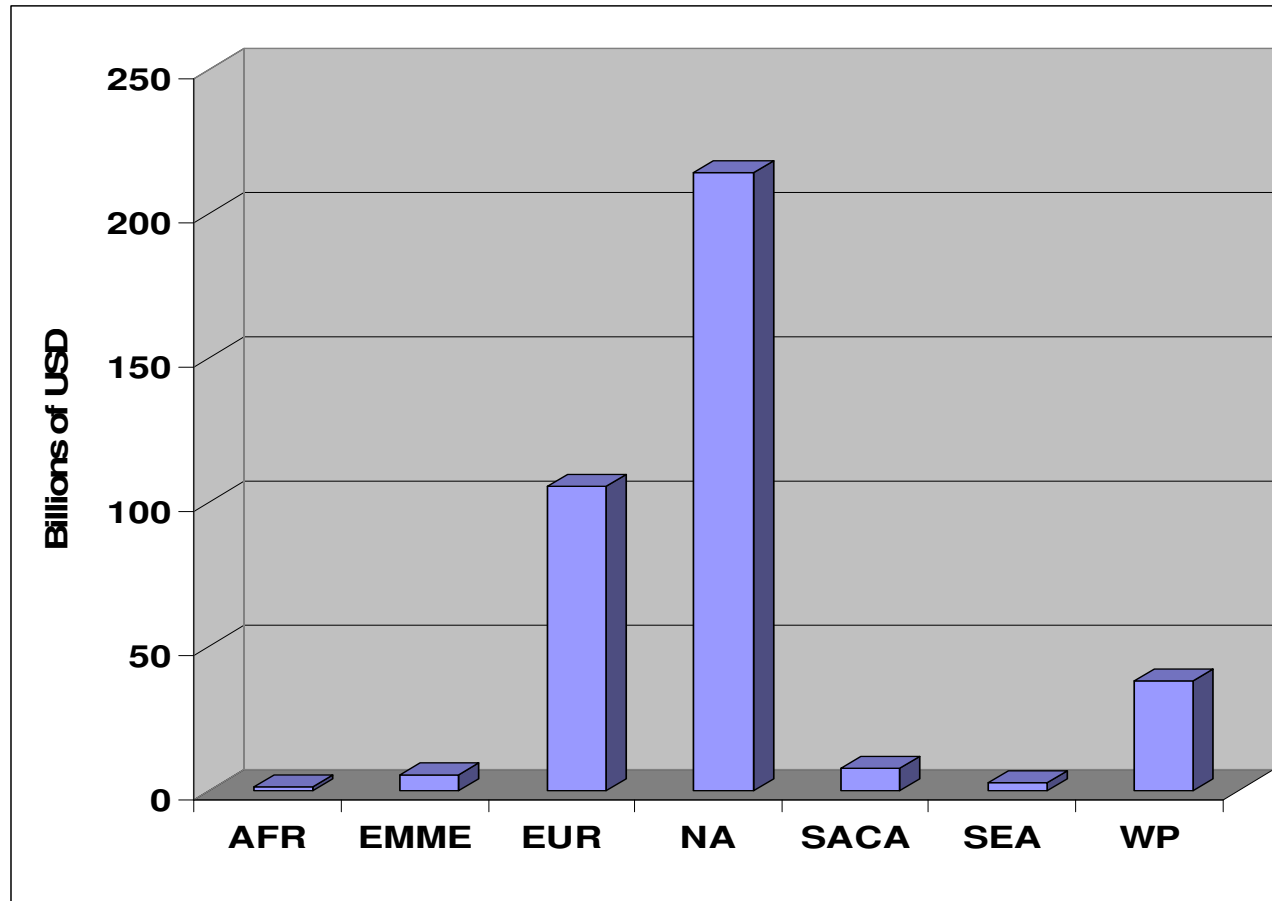
Background

- Economic data highly influential in USA, Europe, Australia...
- What is the economic impact of diabetes in Low-Income and Middle-Income Countries (LMICs)?

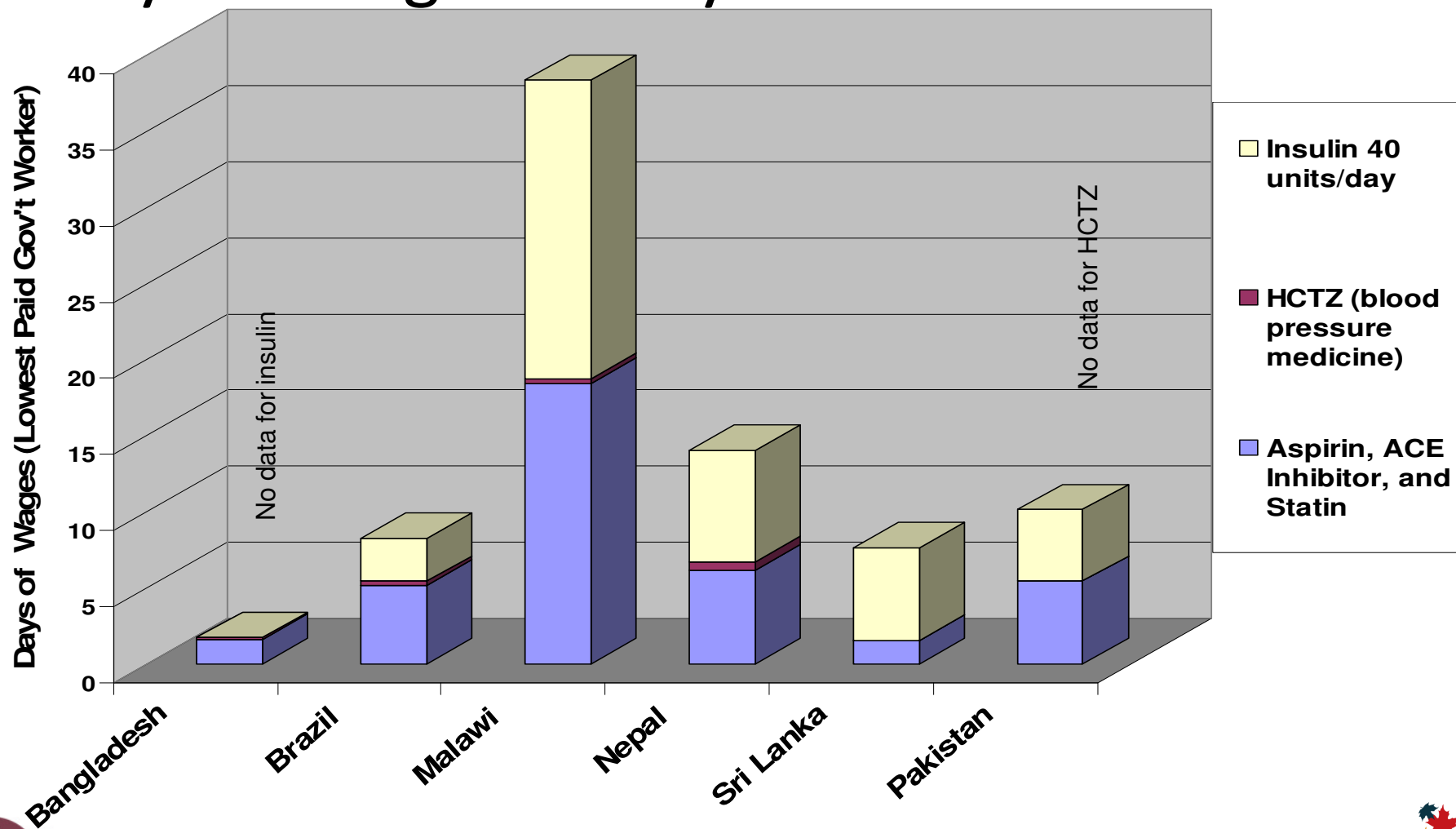
Persons with diabetes vs. Expenditures for medical care for diabetes



Medical Expenditures for DM, 2010



Days of Wages to Buy Diabetes Medicines



Cost-effectiveness of Prevention

in LOW AND MIDDLE INCOME COUNTRIES

	USD per DALY averted
Preventing HIV/AIDS	\$50-\$100
Vaccinating children for TB	\$55-\$82
Preventing Malaria	\$5-\$25
Preventing complications of diabetes	Cost saving



Source: International Diabetes Federation, *Disease Control Priorities in Developing Countries*, second edition, 2006, World Bank



Cost-effectiveness of Treatment

in LOW AND MIDDLE INCOME COUNTRIES

	USD per DALY averted
Treating HIV/AIDS using antiretroviral therapy that achieves high adherence for a large percentage of patients	\$350-\$500
Treating Endemic TB	\$55-16K
Treating Epidemic TB	\$15-\$189
Treating Diabetes	Cost saving

Major Investors in Health

- Global Fund to fight AIDS, TB, Malaria
 - \$9 billion received, \$7.2 billion granted, \$4.6 billion disbursed, 1.9 million lives saved
- Gates Foundation
 - \$34.6 billion, \$800 million/year for health
- World Health Organization
 - \$4.2 billion 2008-2009, 3.8% to chronic disease (a 44% increase), almost all to HIV/AIDS

IDF Economic Studies Fund

- USD 600,000 raised
- Countries selected for opportunity and value.
- All investigators and task force members are volunteers
- Sponsors: Eli Lilly, Inc., Merck and Co., Takeda Pharmaceuticals North America, GlaxoSmithKline, Novo Nordisk.

Study Countries

- **Cameroon, Kenya, Mali, Tanzania, South Africa** – Kaushik Ramaiya, PI for Africa; Jean-Claude Mbanya, Eva Njengo, Stéphane Besançon, Paul Rheeder
- **Guatemala, Honduras, Nicaragua, El Salvador** – Alberto Barceló (*Pan American Health Organization*)
- **China (17 regions)** – Wenying Yang, Jianzhong Xiao (*Chinese Diabetes Society*); Rui Li, Ping Zhang (*US Centers for Disease Control*)

Study Countries, continued...

- **Kazakhstan** — Tuleutaev Muhtar Esenjanovich, Nataliya Tukalevskaya, Katarzyna Kissimova-Skarbek, Anna Bazarova, Rita Kasimalieva, Ilyasova Kulyasch Orynvasarovna, Erzhan Utealiev
- **Argentina** — JJ Gagliardino

Study Design

- “Cases” with diabetes *compared to* matched “Controls” without diabetes.
- Face-to-face personal interviews
- Recruitment varied by country

Study Design, continued

- All studies approved by local ethics committees
- Preliminary analyses done by Task Force volunteers (Dr. Gregory A. Nichols)
- De-identified micro-data will be posted on internet

These are PARTIAL, PRELIMINARY results.



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IDF Studies on the Economic and Social Impact of Diabetes in Sub-Saharan Africa

Dr Kaushik Ramaiya
IDF Vice-President and
Lead Investigator, Africa Impact Studies

IDF African Economic Impact Study Principal Investigators

- Stéphane Besançon, Mali
- Jean Claude Mbanya, Cameroon
- Eva Njenga, Kenya
- Kaushik Ramaiya, Tanzania
- Paul Rheeder, South Africa
- Jonathan Brown, Global PI
- Harrison Wanjiru, Consultant

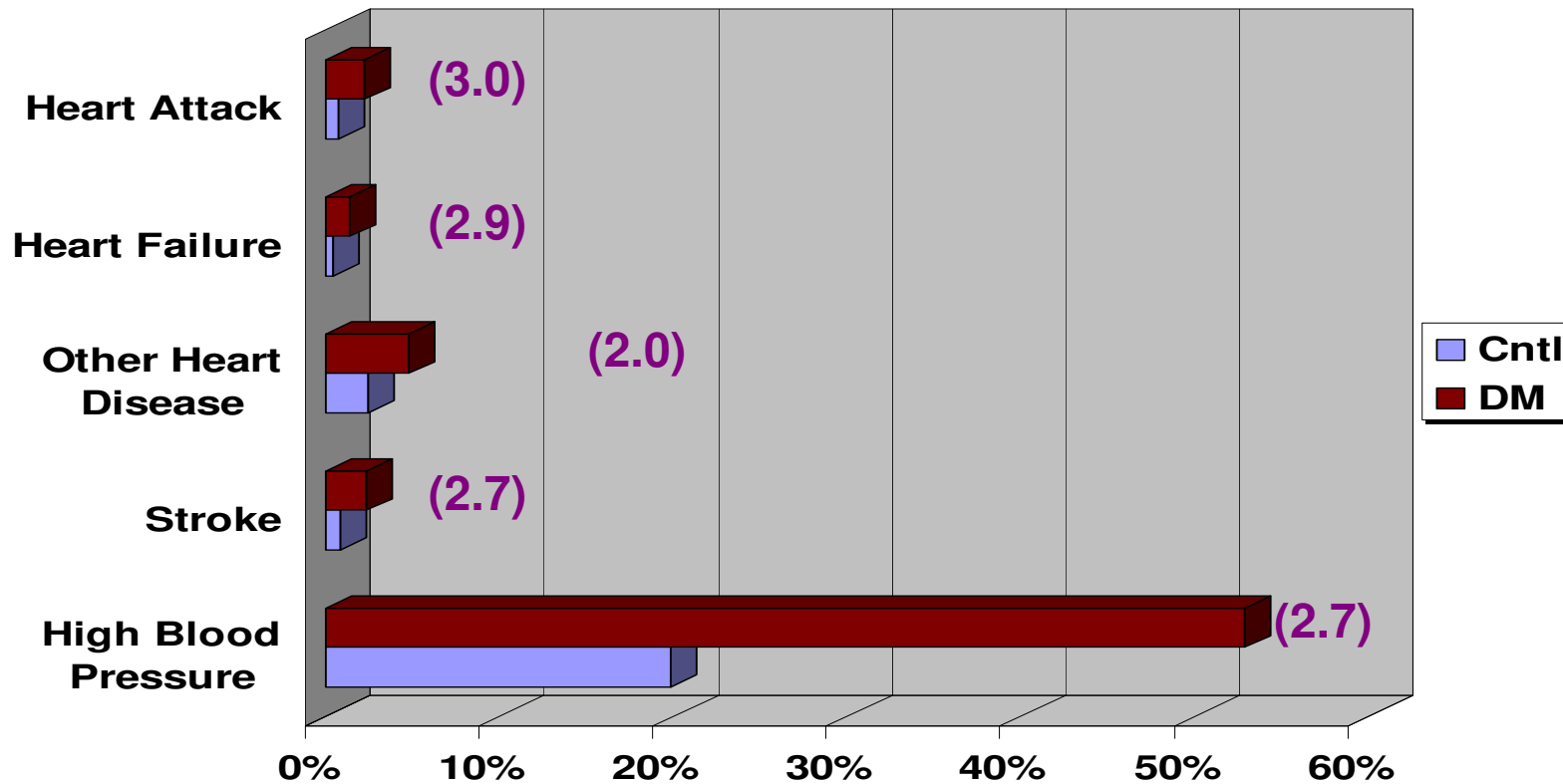
Study Subjects

	N	Mean Age	Female	Married	Urban	Monthly Income (USD)	Family Size
Kenya	958	55.5	54.3%	80.5%	51.9%	\$110	4.5
Cameroon	982	55.8	51.2%	61.4%	99.8%	\$298	6.3
Mali	1004	51.1	76.2%	76.9%	99.2%	\$78	14.9
South Africa	609	60.8	79.6%	42.5%	99.7%	\$198	4.9
Tanzania	826	50.9	57.7%	77.3%	96.5%	\$118	5.3

Persons living with diabetes
in Africa have
MORE HEALTH PROBLEMS
than neighbors of the
same age and sex

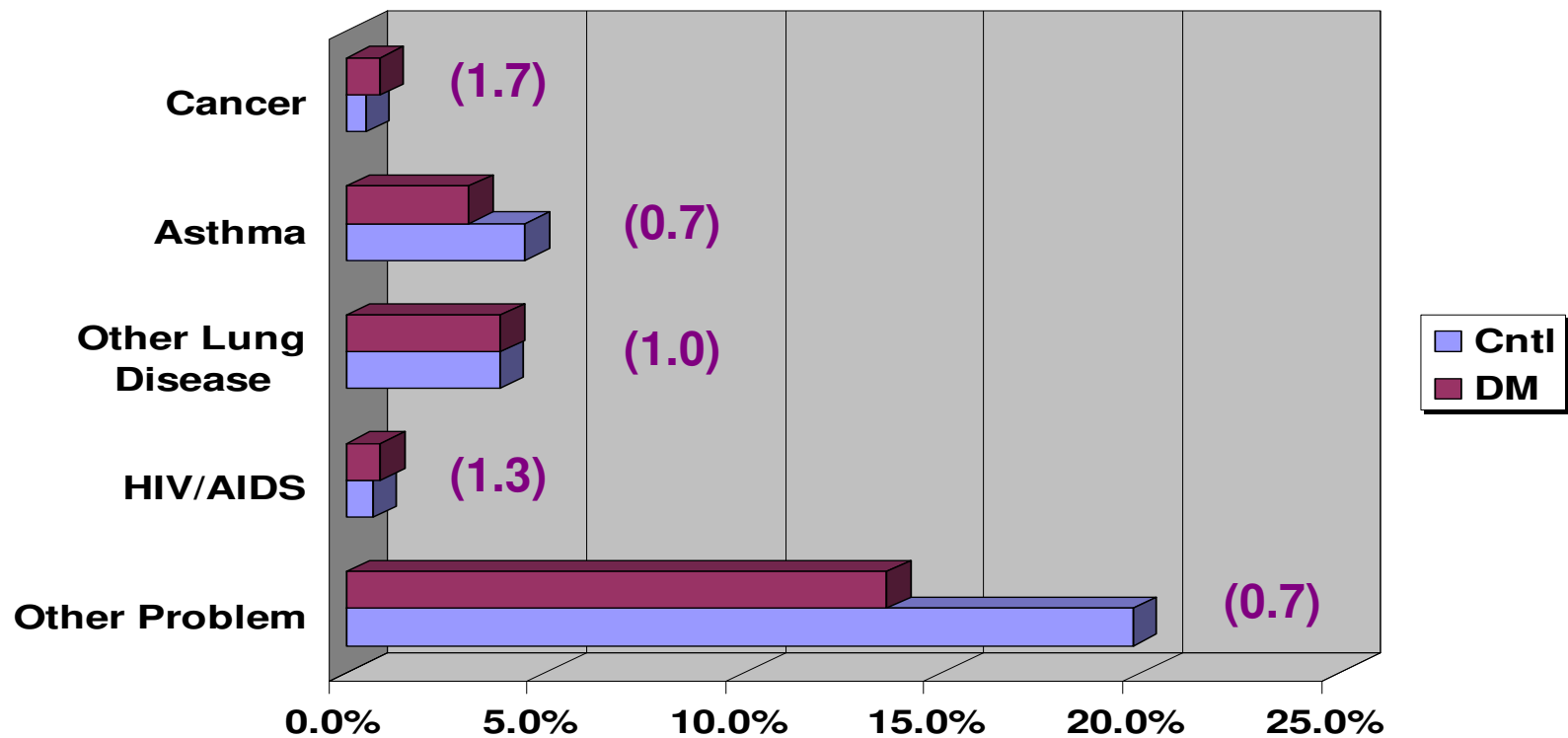
Cardiovascular Diseases

(ever diagnosed, self-reported)



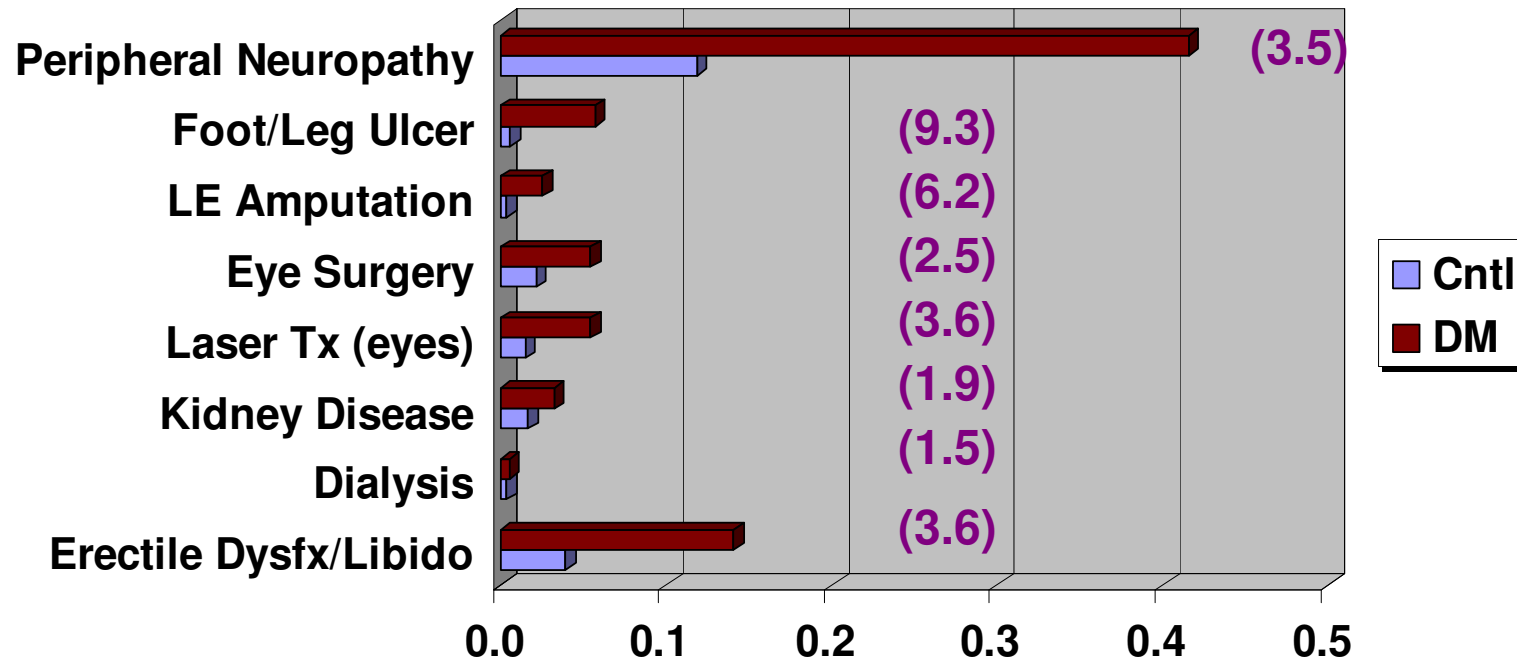
Other Chronic Diseases

(proportion ever diagnosed, self-reported)



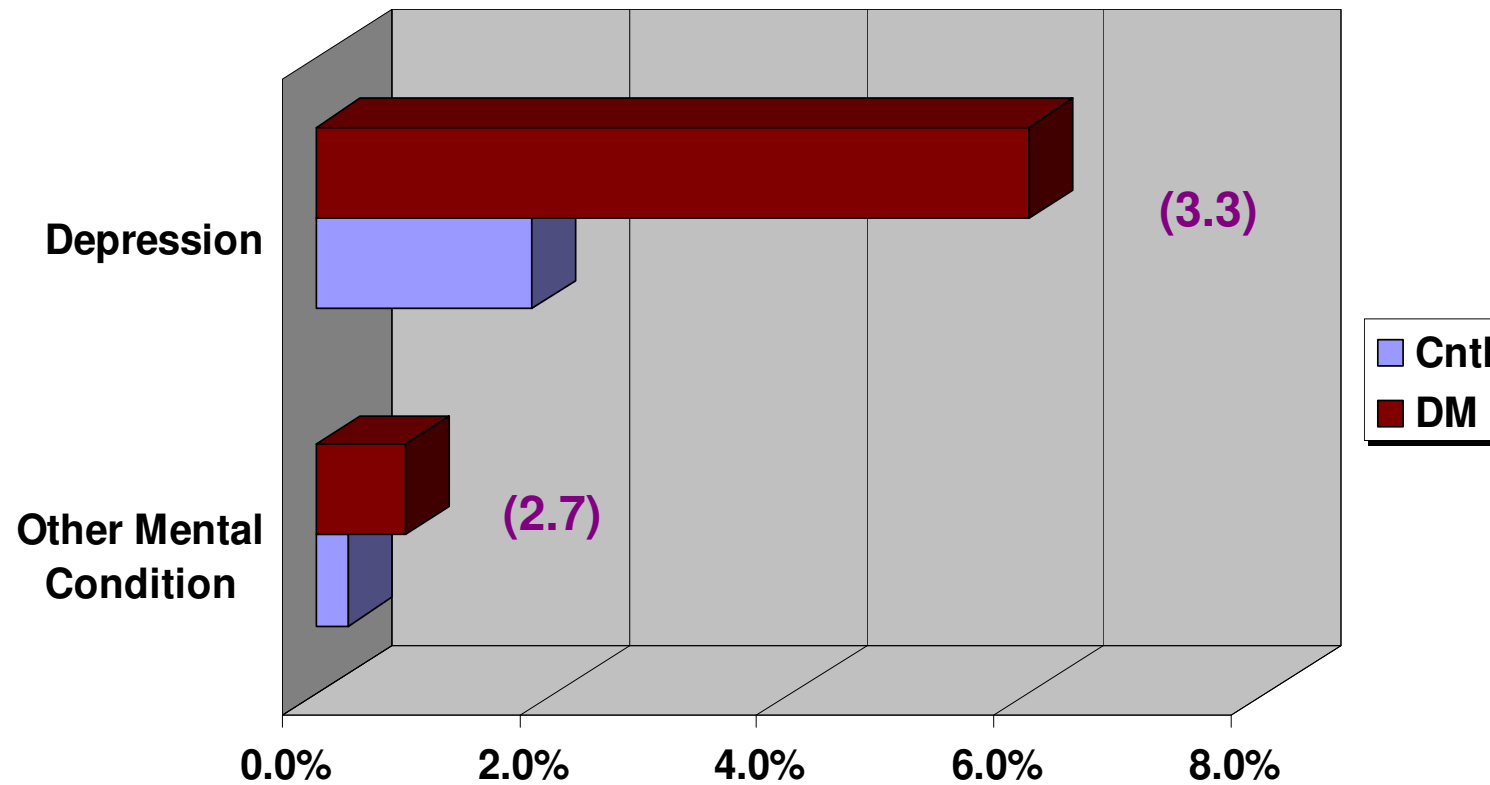
Other DM-Related Conditions

(ever diagnosed or received, self-reported)



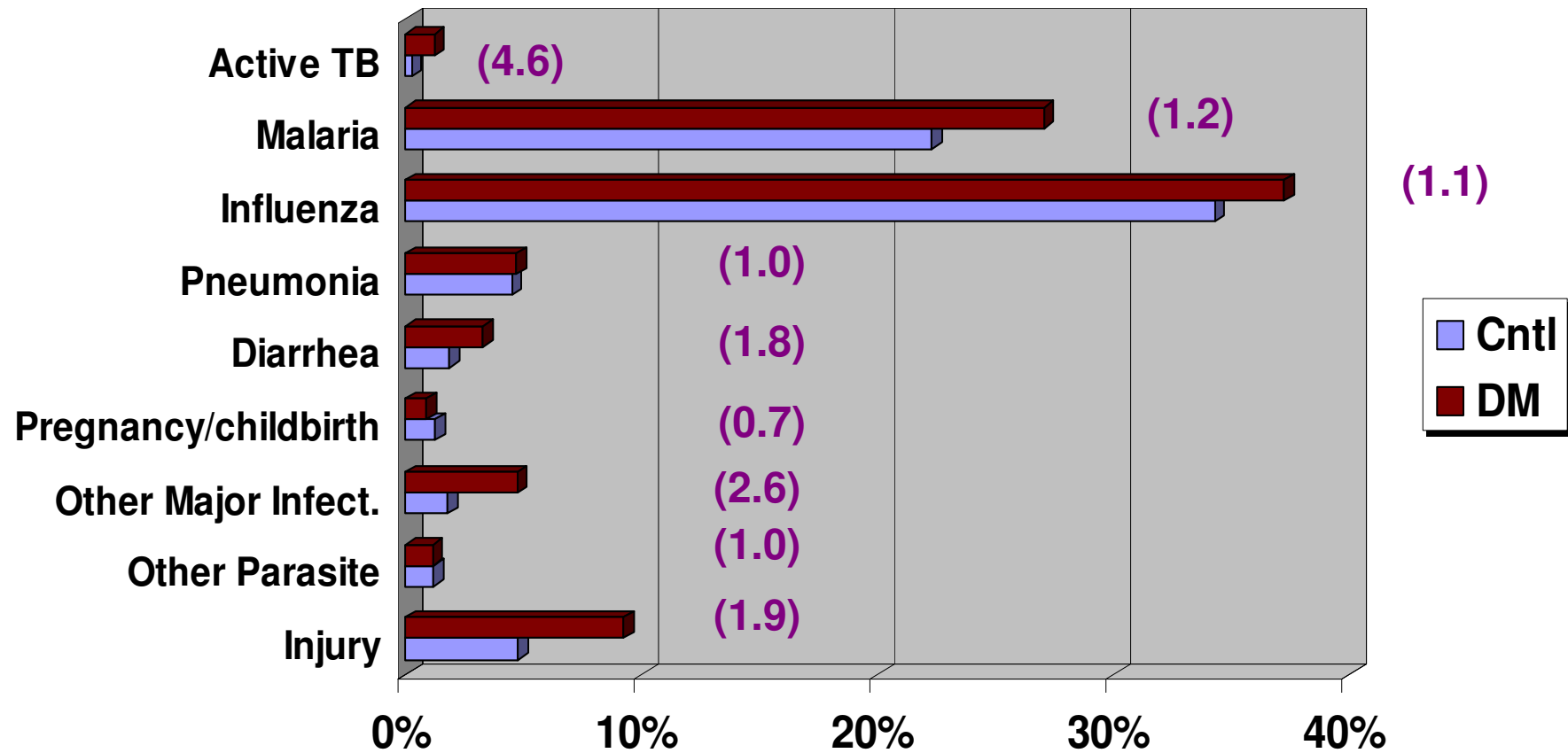
Mental Illnesses

(ever diagnosed, self-reported)



Non-Chronic Conditions

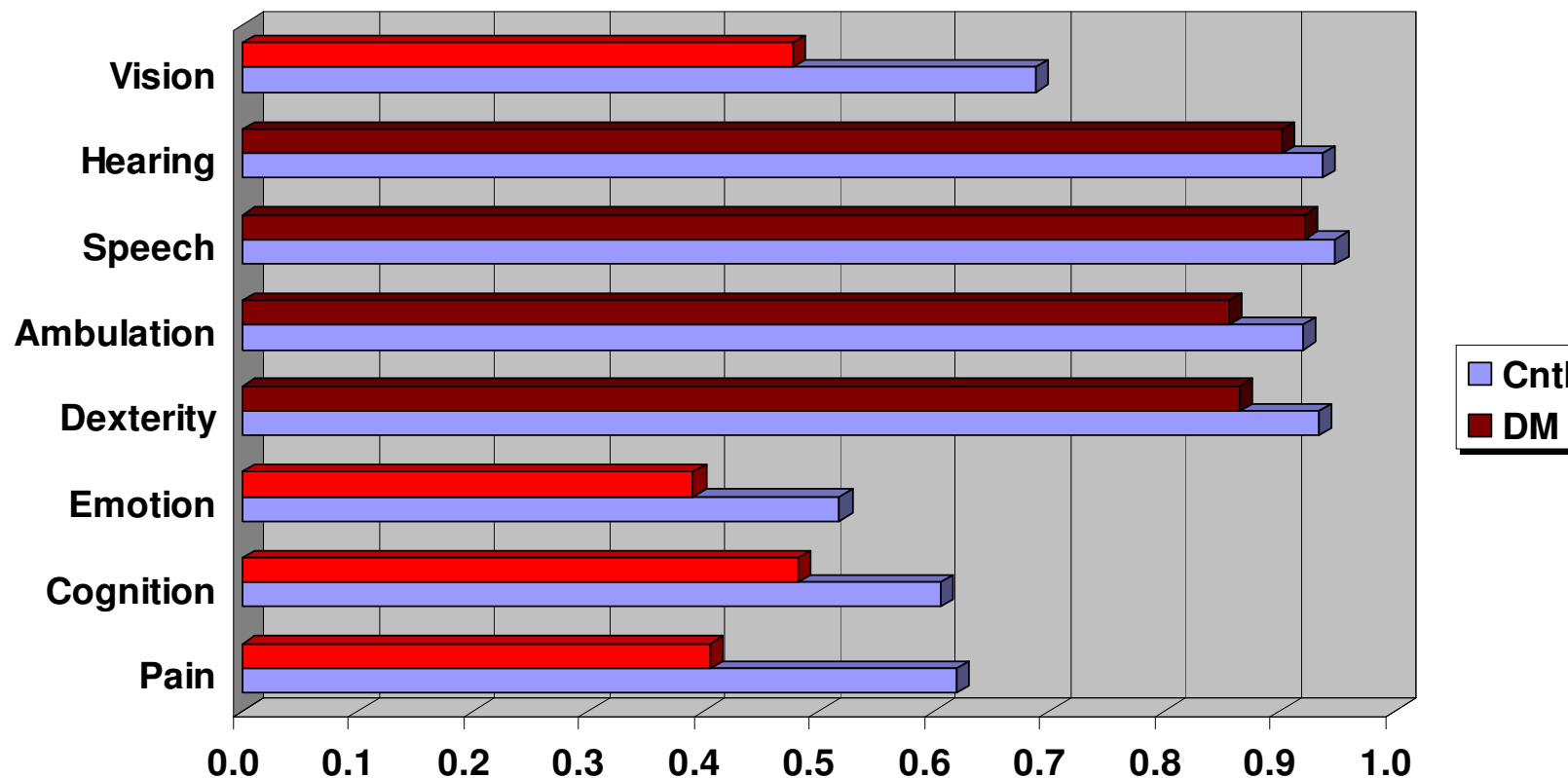
(last 90 days, self-reported)



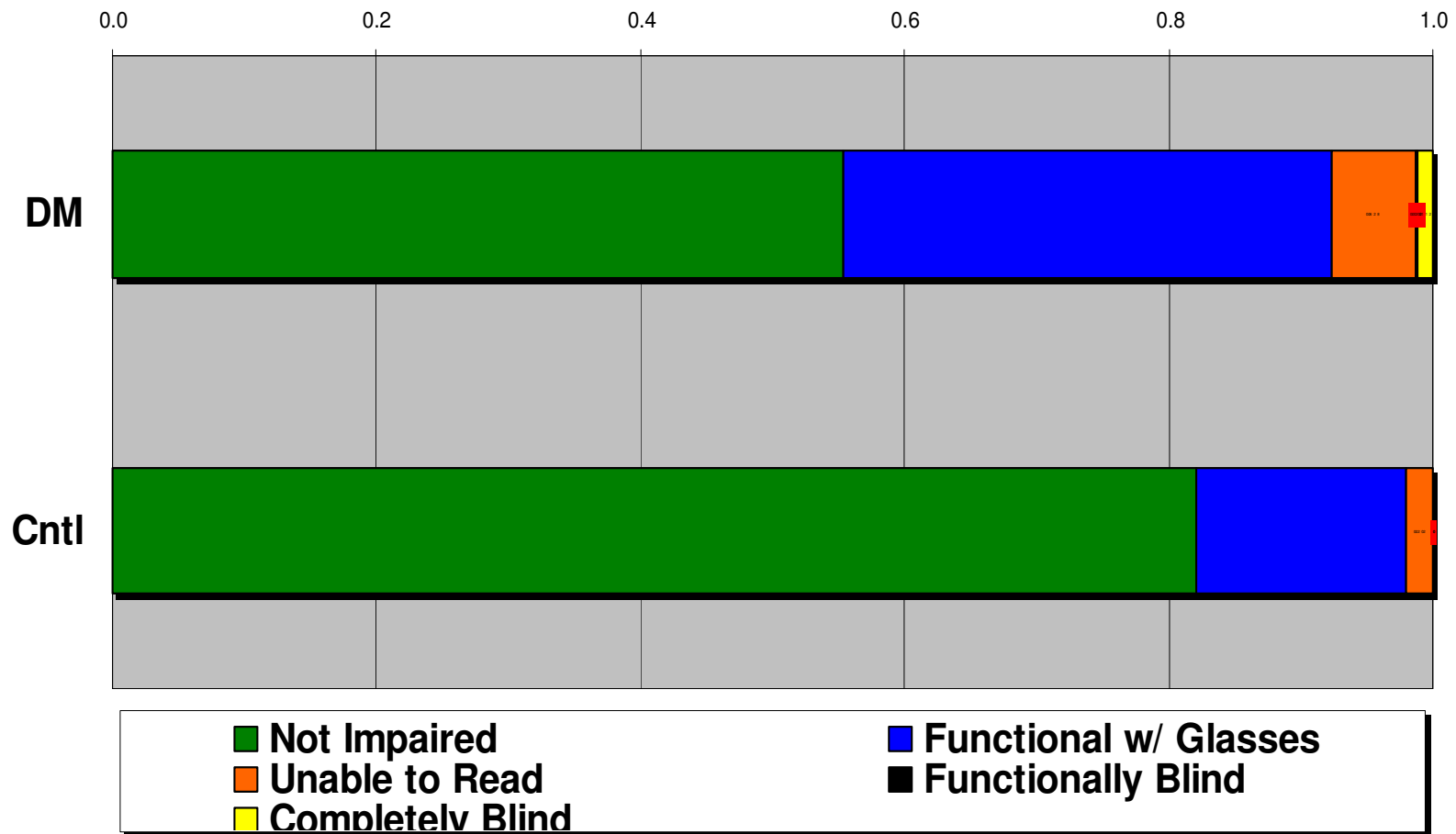
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These health problems
greatly reduce
ABILITY TO FUNCTION,
physically and mentally

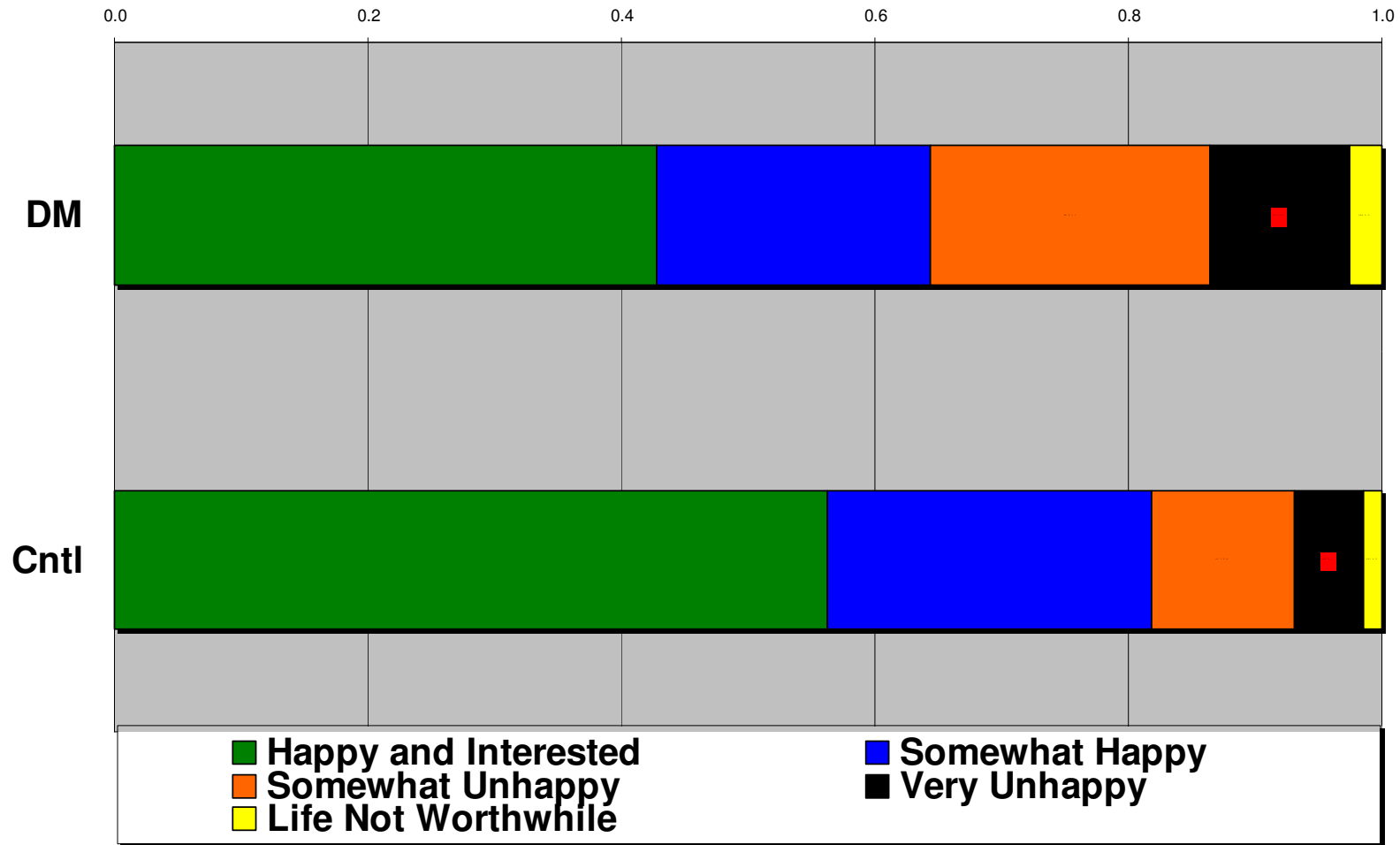
Percent of Subjects Reporting Normal Function, Health Utility Index[®] 3



HUI3 Visual Function



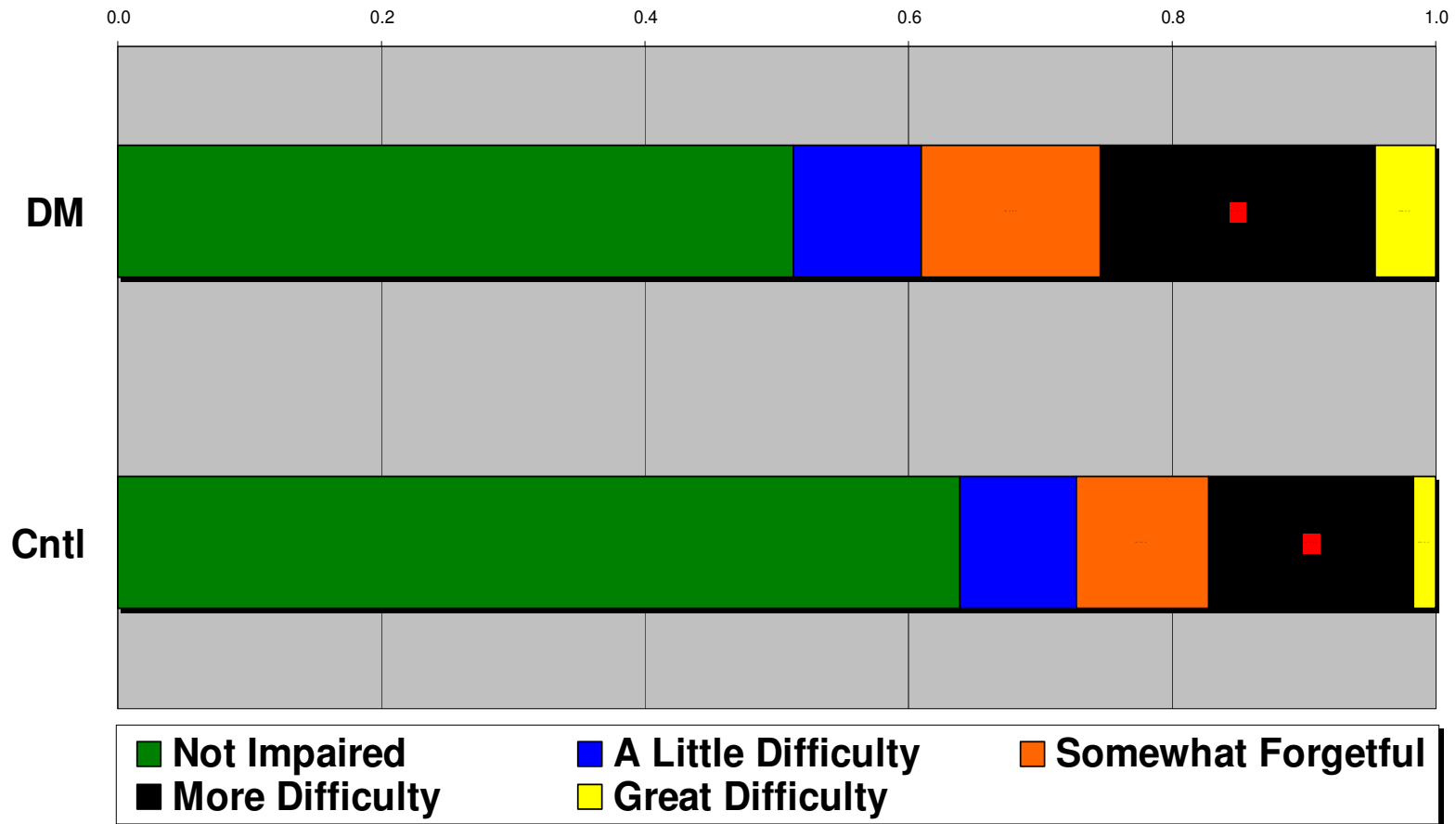
HUI3 Emotional Function



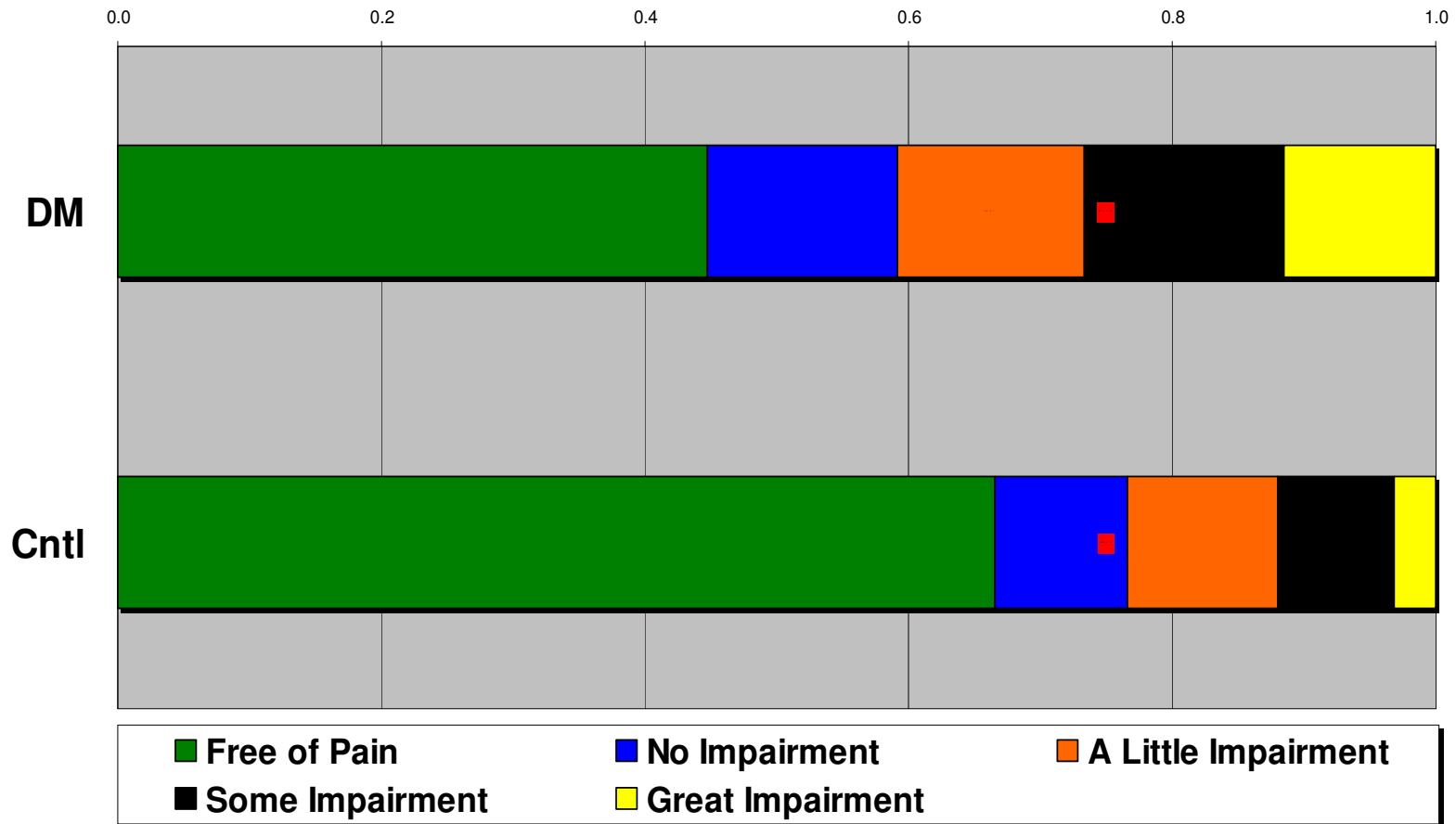
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HUI3 Cognitive Function

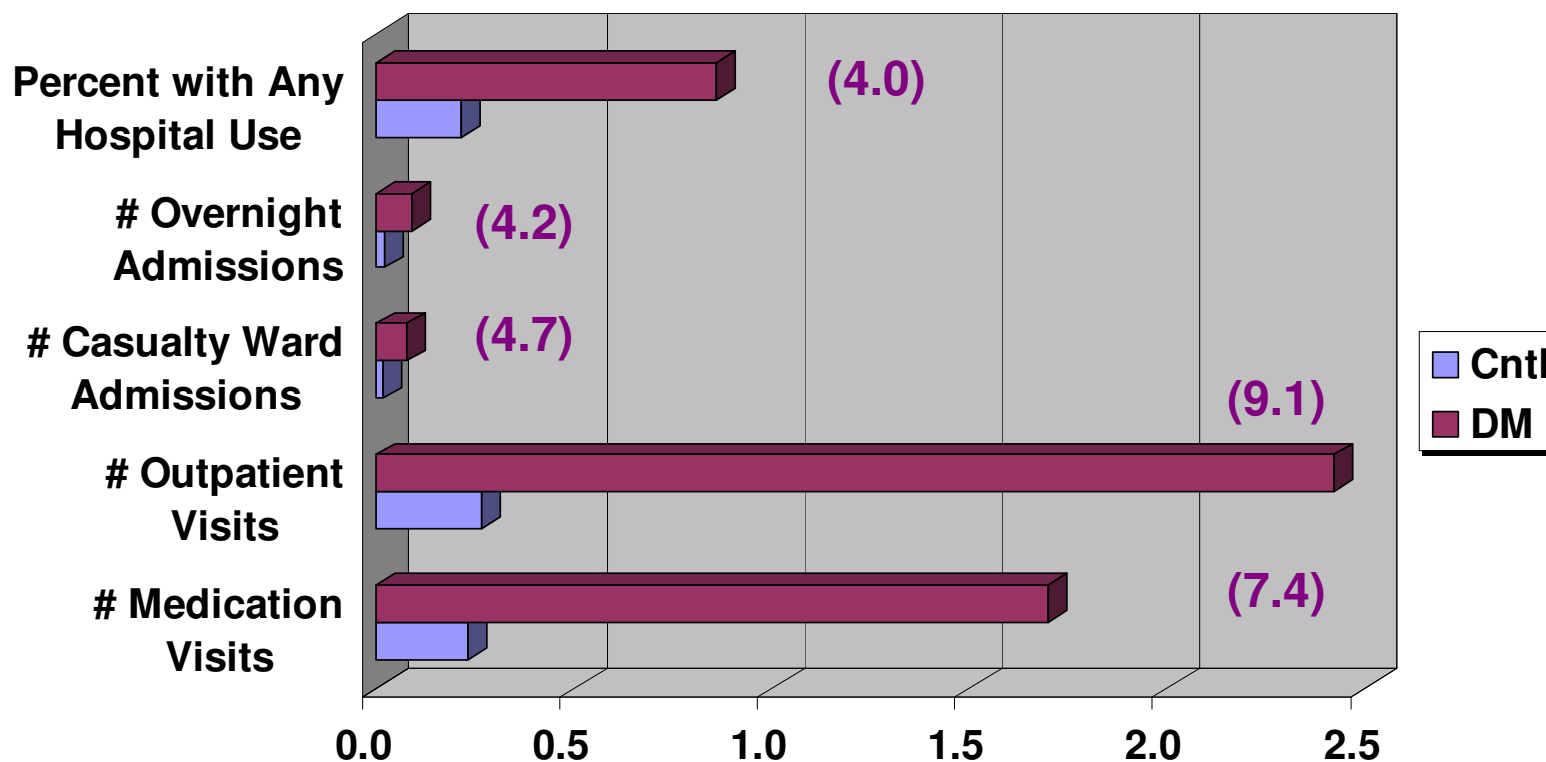


HUI3 Pain



Persons living with diabetes
use many more
MEDICAL SERVICES

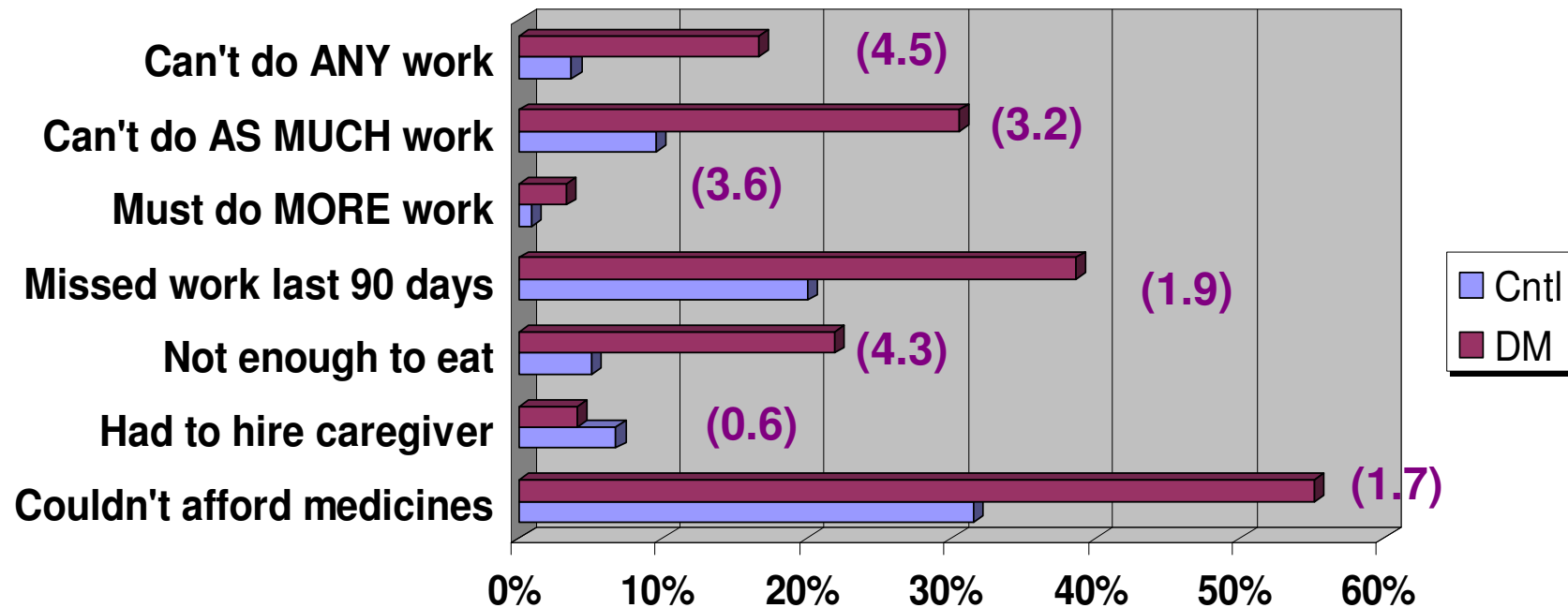
Use of Hospitals, percentage or mean usages person, last 90 days



Sickness, medical expenditures,
and functional disability devastate
PRODUCTIVITY
and well-being

Effects of Health on Subjects

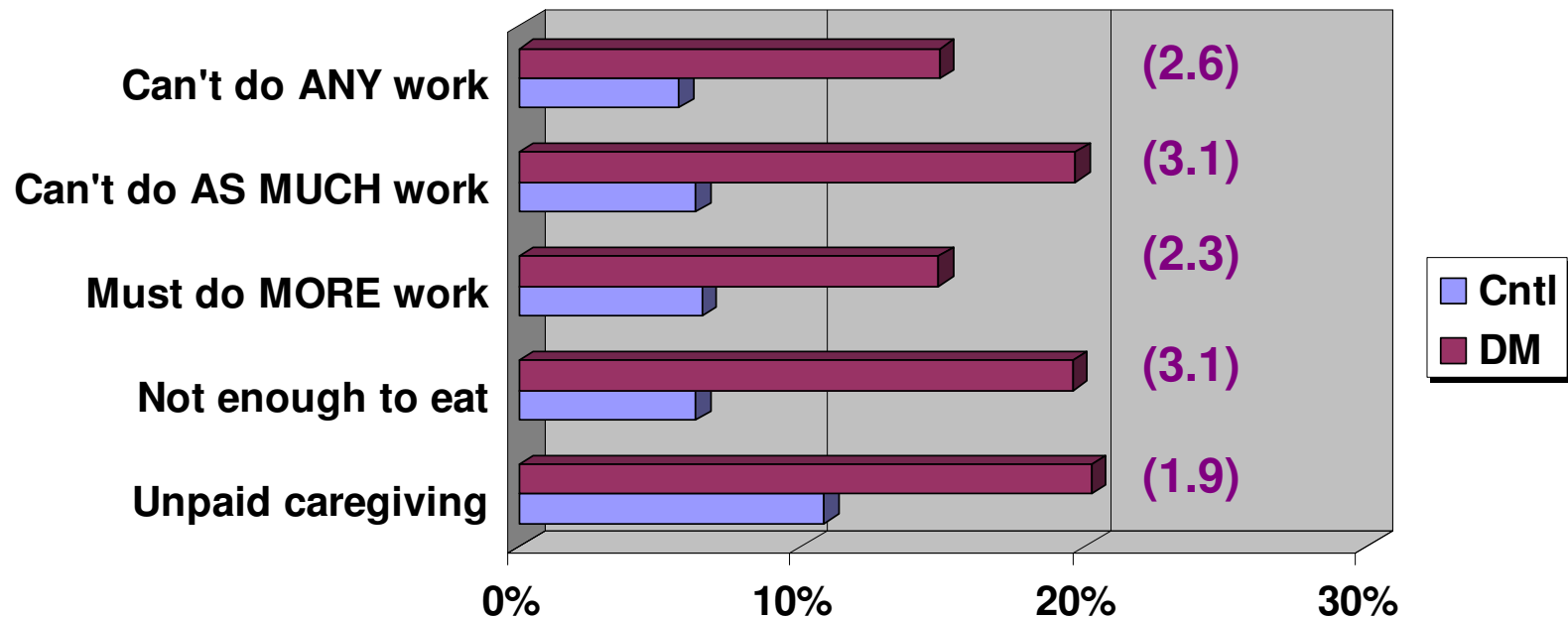
Percent reporting each effect, DM/Control ratio in parentheses



FAMILIES, including **CHILDREN**,
are as much harmed by diabetes
as the person living with the
disease

Effects of Subject's Health on Family Members

Percent reporting each effect, DM/Control ratio in parentheses



The effects of diabetes on children and families must inevitably retard **ECONOMIC DEVELOPMENT** and **ECONOMIC GROWTH**

Persons with DM in Africa are...

- **Much more ill** than comparable persons of their age and sex
- **Much less able to function physically and to work**
- **Much more frequent, and more intensive users of medical care**
- **A severe burden to their families and societies** and, ultimately, **to their nation's economic growth**



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Q&A

