The Public Health Approach to Diabetes: Dealing with a Tsunami

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Director Emeritus, Baker IDI Heart & Diabetes Institute, Melbourne, Australia
Health & Socio-economic Impact of Diabetes in Australia

Leading cause of adult blindness

Leading cause of end stage kidney failure

66% of all heart deaths occur in people with diabetes or pre-diabetes

50% of all non-traumatic lower limb amputations from diabetes
The Shame of Australia: Indigenous Diabetes

The Australian, Friday, November 27, 2009

2 THE NATION

In a bed not of his own making

Tjungala is sick of living in an Alice Springs creekbed. The 58-year-old town campsite where he lives is a step back in time, a place where he is forced to live in a "bed not of his own making." He says it is a place where he is forced to live in a "bed not of his own making."

Tjungala, who suffers from diabetes, never thought he would have to live in a creekbed. He says it is a place where he is forced to live in a "bed not of his own making." He adds, "I am sick of living in the creeks."

Tjungala is not alone. Many others in the town campsites are forced to live in "beds not of their own making."

The federal government has not properly explained the implications of the leases, or the potential compulsory acquisition, to town camp residents. They are not aware of the implications of the leases, or the potential compulsory acquisition. They are not aware of the implications of the leases, or the potential compulsory acquisition. They are not aware of the implications of the leases, or the potential compulsory acquisition.

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This is the 1958 Rovers Premiership Aboriginal team... all but one are DEAD.

A SPORTING CHANCE

SPORT lives on as an image of Aborigines that everybody plays by the rules. The history of sport in Australia is a history of discrimination by the rules of society. It is a parallel example of the way the social denial and exclusion between black and other Australians has continued.

By GEOFF WILKINSON

A LONGL race to be completed... Pagan 16.11

This is the 1958 Collingwood Premiership team... all are still ALIVE.
The History of The Diabetes Epidemic

Phoenix, Arizona – Pima Indians

Pacific – Nauru

Australia - Indigenous

New Zealand – Maori
The 10 Top Nations for Diabetes Prevalence

- Seychelles
- Kuwait
- Reunion
- Singapore
- Puerto Rico
- Cuba
- Bahrain
- Qatar
- UAE
- Nauru

* For 20-79 year population
The Symptoms Of Diabetes

- Polyuria
- Polydipsia
- Polyphagia

- POLYNESIA
Global projections for the diabetes epidemic: 2010-2030 (millions)

2010 = 285 million
2030 = 438 million
Increase 54%

Diabetes numbers:
10 highest countries (2007)

China now has 90 million people with diabetes

The Diabesity Epidemic in Australia
Diabetes in Australia – Joining the Global Epidemic

Dunstan D et al. Diabetes Care 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
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<tbody>
<tr>
<td>1981</td>
<td>250,000</td>
</tr>
<tr>
<td>1983</td>
<td>400,000</td>
</tr>
<tr>
<td>1990</td>
<td>550,000</td>
</tr>
<tr>
<td>1995</td>
<td>725,000</td>
</tr>
<tr>
<td>2000</td>
<td>1,000,000</td>
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</table>

2010: >1,500,000

Dunstan D et al Diabetes Care 2002
Australia: COAG Prioritises Diabetes Prevention:
April 13th 2007

Public health crisis top of leaders’ list

MARK KENNY
POLITICAL EDITOR
CANBERRA

MAJOR new spending to address type 2 diabetes, which affects around a million Australians, will be among the top agenda items when the nation’s territory, state and Commonwealth heads of government meet in Canberra this morning. The meeting at the Council of Australian Governments (COAG) is being held to discuss the economic crisis facing the states.

The initiative is part of a “national capital” approach by the states in an attempt to balance productivity and workforce participation levels.

Premier, who met yesterday, will also see the COAG meeting to push for a 80 percent reduction in greenhouse gas emissions by 2050, after all states formally came on board at yesterday’s Council of Federation meeting. States have agreed to push identical legislation by December of next year to give effect to the targets.

However, hopes of early progress faded when the Prime Minister, John Howard, said yesterday that a greenhouse policy would be driven by his state’s industrial leaders rather than by COAG.

Premier Mike Rann told The Advertiser the states were eager to gain Commonwealth support for an action plan to address diabetes “which was reaching epidemic proportions in Australia.”

He said too many young people were being affected by diabetes, often linked to issues such as childhood obesity.

“What we hope to get out of the meeting at the very least is a commitment to a national partnership on tackling a burgeoning social problem and burgeoning health problem that in many cases is preventable,” Mr Rann said.

“Hopefully, it will lead to a national campaign on diabetes like the successful one on HIV and AIDS several years ago.”

Approximately 1,000,000 people are diagnosed with diabetes in Australia each year.

Business reforms

PRIME Minister John Howard has proposed a significant reform of business regulations at today’s COAG meeting to win a positive billion-dollar lift in the state of its competitive position on the international stage.

The Prime Minister’s office yesterday was negotiating with states to agree to the recognition of trade union recognition as a continuing source of aggression.

In addition to mutual recognition of skilled trade qualifications, it was planned for business to agree to a “national capital” approach to bargaining agreements, with intermediaries not to transfer their union registration or cease until it expires.

DELEGATION: SA Premier Mike Rann leads his counterparts – Clare Martin (NT), Peter Beattie (QLD), Morris Iemma (NSW), Paul Lennon (Tas), Alan Carpenter (WA), John Stanhope (ACT) and Steve Bracks (Vic) – to Canberra yesterday.
“If current trends continue, by 2020, diabetes will be the leading cause of disease for men and the second leading cause for women.”

The Hon Kevin Rudd, (Former) Prime Minister
April 2008
Diabetes In Indigenous & Non-indigenous Australians:

K O’Dea 2002
Type 2 Diabetes In Children: Indigenous Communities

- 17 ATSI children discovered
- Sex ratio (M:F) 1:2.5
- Age range: 6-16 years
- Mean age at diagnosis: 12 years
- Obesity: 15/17 - mean BMI 32.8
- Complications such as renal failure and coronary heart disease

A.K. Sinha et al 2000
Number of new cases of ESRF (total and diabetic): Australia 1980 - 2006

Diabetic cases

- Type 2 (Ins Requiring)
- Type 2 (Non Insulin)
- Type 1
- Undefined
- Total New Patients

Year of Entry

ANZdata registry
“New” Confounding Disorders Accelerating the Diabetes & Metabolic Syndrome Epidemic

- Sleep Apnoea
- HIV/AIDS Therapy
- Non-alcoholic Steatohepatitis (Primary NASH)
- Obesity
- Diabetes
- Insulin Resistance
- Dyslipidaemia

Consensus Development Conference on Antipsychotic Drugs and Obesity and Diabetes
Transport Incidents in Japan from Sleep Apnea

- 27 Feb 2003
  - Shinkansen runs at 270kph for 26km with the driver asleep.

- 30 April 2004
  - ANA pilot falls asleep twice during an internal flight.
Genetic-Environment Interaction For Diabetes

ENVIRONMENT

EARLY LIFE
- Low birth weight
- Poor nutrition

ADULT LIFE
- Sedentary lifestyle
- Dietary factors

DIABETES +/-
THE METABOLIC SYNDROME

GENES
<table>
<thead>
<tr>
<th>Competing “Causation/s” of Type 2 Diabetes</th>
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<tr>
<td><strong>“Western” view</strong></td>
</tr>
<tr>
<td>• BAD BEHAVIOURS</td>
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<tr>
<td>• BAD CHOICES</td>
</tr>
<tr>
<td>• LAZY</td>
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<tr>
<td>• OBESITY</td>
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Alex Brown: Personal communication
The Dutch Famine Hunger Winter

- Netherlands affected by acute famine at end of World War 2
- Official rations: 400 to 800 calories per day
- Women exposed to famine delivered small babies.
- These low birth weight babies (exposed to famine *in utero*) had a higher prevalence of adult diseases such as:
  - Diabetes
  - Cardiovascular disease
  - Hypertension
  - Obesity
Epigenetics

A mechanism for transmission of effects of the developmental environment on intrauterine growth and adult health across generations?

Source: http://learn.genetics.utah.edu/content/epigenetics/inheritance/
## Costs for Person with Diabetes (2003)

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>No complications</td>
<td>$4025</td>
</tr>
<tr>
<td>Microvascular only</td>
<td>$7025</td>
</tr>
<tr>
<td>Macrovascular only</td>
<td>$9055</td>
</tr>
<tr>
<td>Both</td>
<td>$9645</td>
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Total Cost of Diabetes

Annual cost: $3.1 billion in 2003 but now in excess of $8 billion
Impact Of Lifestyle Change In Australian Aborigines On Type 2 Diabetes And CVD Risk Factors

Impact of 7 weeks temporary reversion to hunter gatherer lifestyle:

- Weight loss
- Striking improvement in glucose tolerance
- Improved insulin response
- Normalisation of dyslipidaemia
- Reduction in blood pressure

O’Dea K. Diabetes 1984:33; 596
UN General Assembly Resolution on Diabetes: 2006

The General Assembly,

Recalling the 2006 World Health Organization’s “Global Strategy for Diet, Physical Activity and Health,”

Recognizing that diabetes is a chronic, debilitating, and costly disease associated with severe complications, which poses severe risks for families, Member States and the entire world and serious challenges to the achievement of internationally agreed development goals, including the Millenium Development Goals,

Recalling World Health Assembly resolutions WHA47.36 of 19 May 1993 on the prevention and control of diabetes mellitus and WHA57.17 of 23 May 2004 on a global strategy on diet, physical activity and health,

Welcoming the fact that the International Diabetes Federation has been observing 14 November as World Diabetes Day at a global level since 1991, with co-sponsorship of the World Health Organization,

Recognizing the urgent need to pursue multilateral efforts to promote and improve human health, and provide access to treatment and health-care education,

1. Decide to designate 14 November, the current World Diabetes Day, as a United Nations Day to be observed every year beginning in 2006,

2. Invite all Member States, relevant organizations of the United Nations system and other international organizations, as well as the civil society, including non-governmental organizations and the private sector, to observe World Diabetes Day in an appropriate manner, in order to raise public awareness of diabetes and its complications, as well as its prevention and care, including through education and the mass media.

3. Encourage Member States to develop national policies for the prevention, treatment and care of diabetes in line with the sustainable development of their health-care systems, taking into account the internationally agreed development goals, including the Millenium Development Goals.

4. Requests the Secretary-General to bring the present resolution to the attention of all Member States and organizations of the United Nations system.

88th plenary meeting 20 December 2006
Acknowledgements
THE END