

Improve Health and Lower Diabetes Costs

– A comparison of Seven Countries



April Choi, Kristi Bohn
and Ian Duncan
April 2, 2014

Agenda

- **Background and Diabetes data**
- **Shrinking the burden: Population interventions**
- **Shrinking the burden: Cost interventions**
- **Shrinking the burden: Information Technology**
- **Role of the actuary**

Background and Diabetes Data

Global Health Care Spending Increased from 8.2% of GDP in 2000 to 9.2% of GDP in 2010



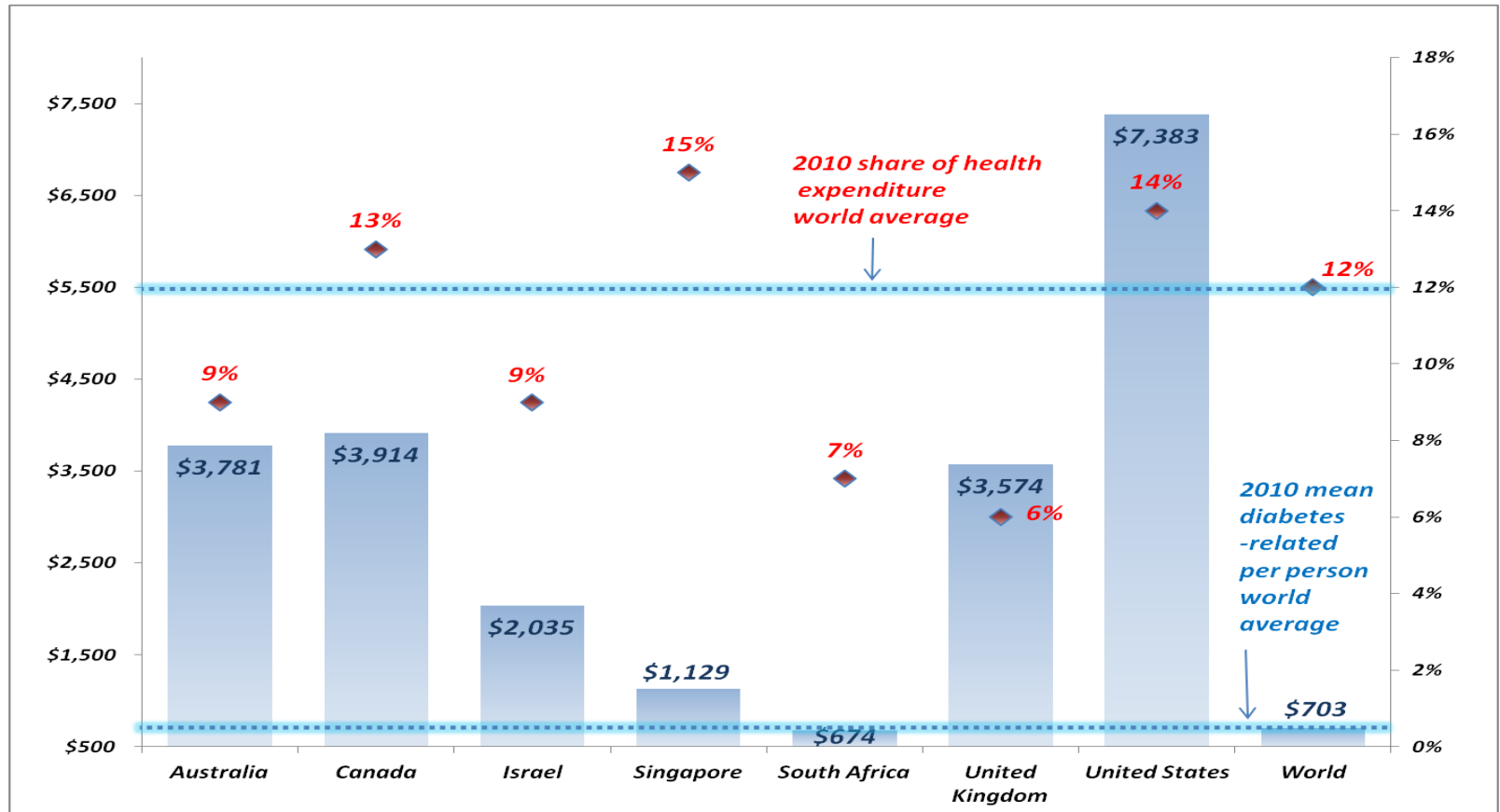
<u>Countries</u>	<u>2000</u>	<u>2010</u>
Australia	8.1%	9.0%
Canada	8.8%	11.4%
Israel	7.5%	7.7%
Singapore	2.8%	4.5%
S Africa	8.1%	8.7%
UK	7.0%	9.6%
US	13.4%	17.6%
World	8.2%	9.2%

Source: WHO, 2013

Chronic Diabetes Is A Significant Contributor to Global Health Care Spending

- Diabetes Accounted for 11.6% of total Health Care Spending Worldwide in 2010.
- It Is Projected to Continue to Increase.
- What are the Intervention Efforts Deployed By Various Countries Around the World?

In 2010, 12% of Health Expenditure Was Spent on Diabetes and Mean Per-Person Diabetes-Related Expenditures = \$703



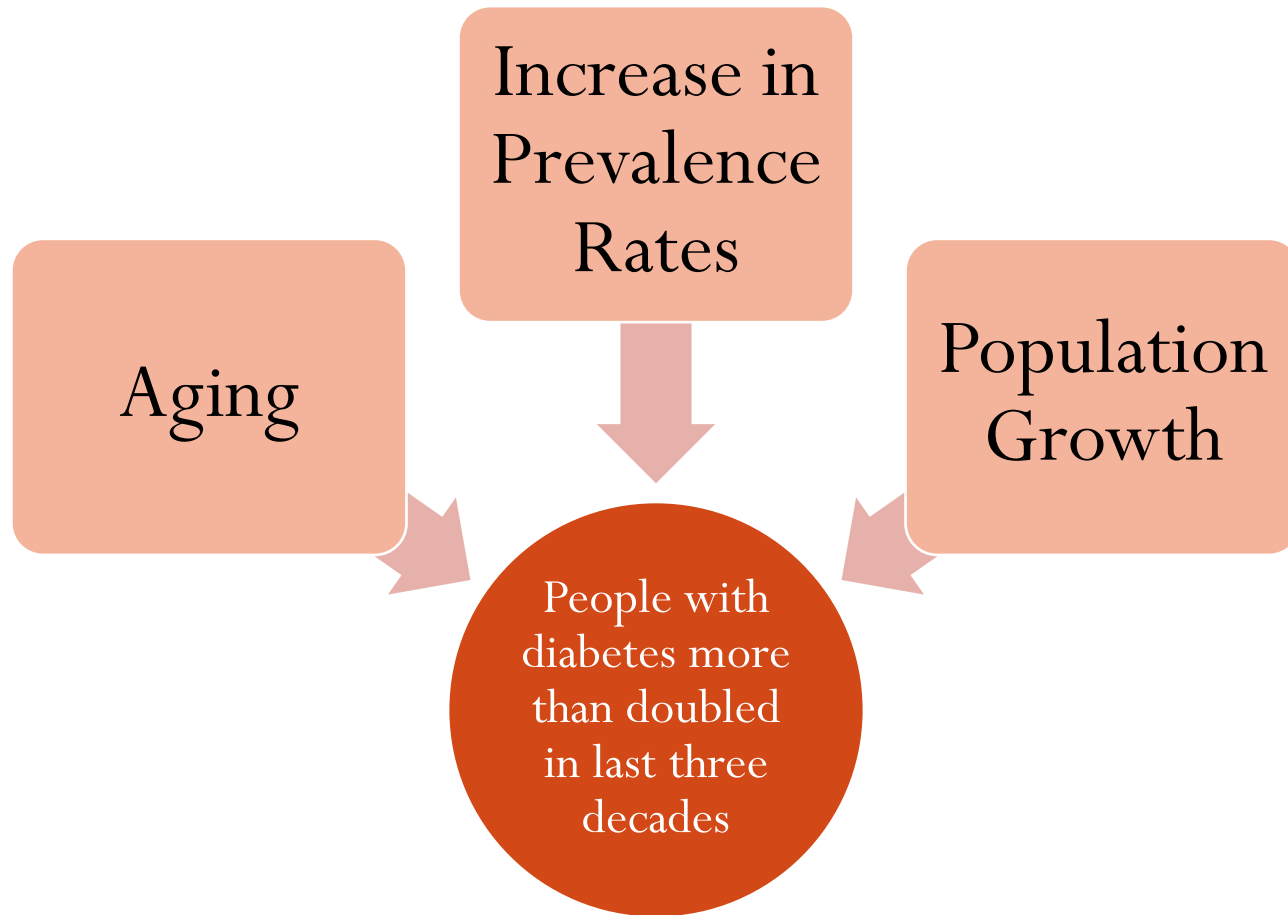
R=2

Source: International Diabetes Federation, www.idf.org/sites/default/files/economic_impact_of_diabetes.pdf

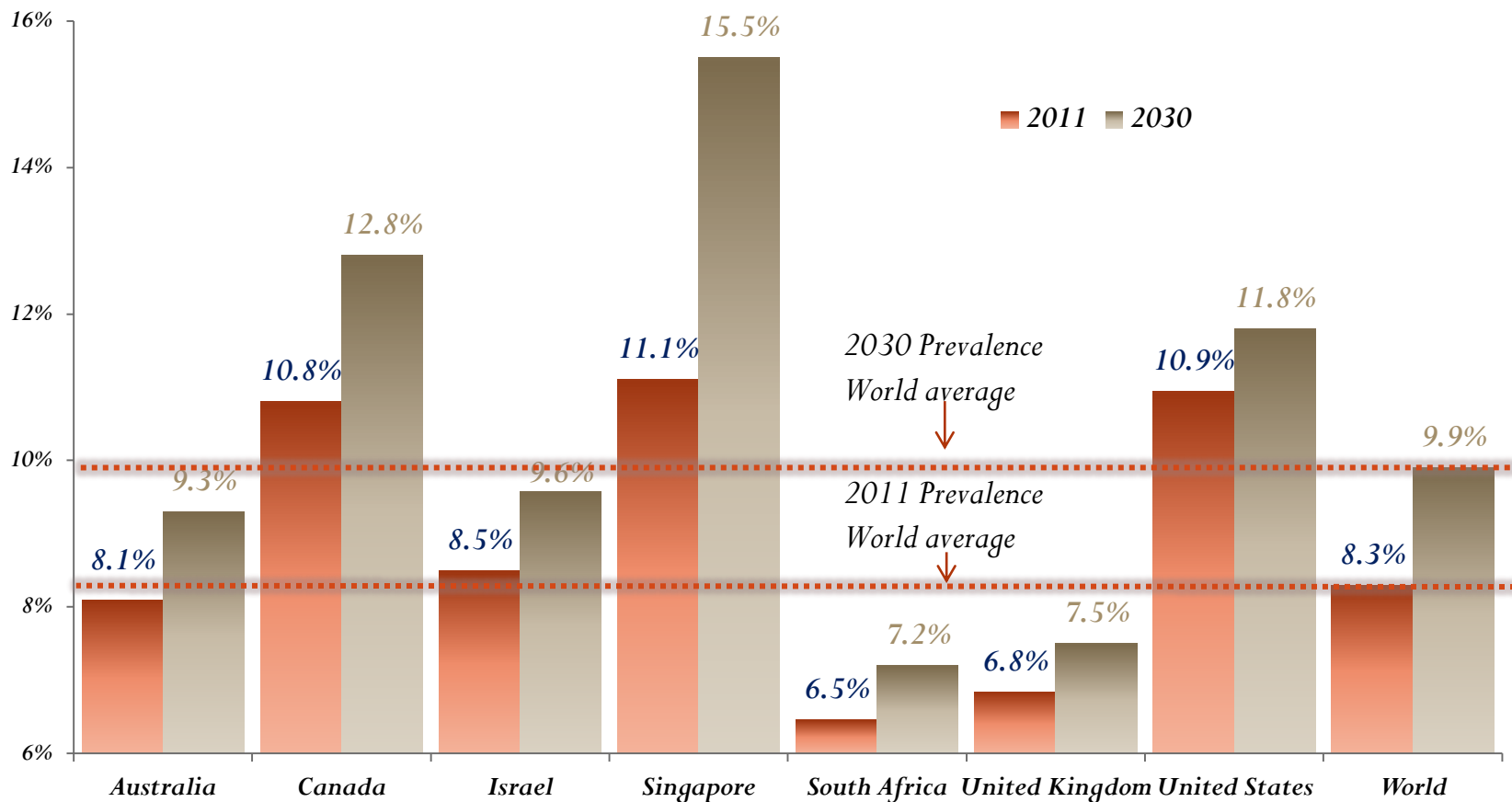
Worldwide, the number of adults with diabetes increased from 153million to 347million, more than doubled, in last three decades.

Source: The Lancet, July 2011

Thirty Percent of the Increase in Number of Adults with Diabetes Was Due to Increase in Prevalence Rates



Diabetes Prevalence Rate Was Projected to Increase from 8.3% in 2011 to 9.9% in 2030



Source: International Diabetes Federation, November 2011

Health Expenditure for Diabetes is Projected to Increase 30% from 2010 to 2030 (\$ in millions)

Year	Australia	Canada	Israel	Singapore	South Africa	UK	US
2010	\$4,105	\$11,217	\$649	\$493	\$865	\$7,648	\$197,956
2030	\$5,650	\$15,494	\$968	\$826	\$1,086	\$9,131	\$264,344
Growth	38%	38%	49%	68%	26%	19%	34%

Year	World
2010	\$375,984
2030	\$492,065
Growth	30%

R=2

Source: International Diabetes Federation, www.idf.org/sites/default/files/economic_impact_of_diabetes.pdf

Diabetes Types



Type 1 diabetes

- Body fails to produce enough insulin
- Generally diagnosed during childhood, not preventable



Type 2 diabetes

- Body fails to use insulin properly
- Generally appears after age 30 and prevalence rate increases with age



Gestational diabetes

- High blood glucose level occurs during pregnancy
- May pass after pregnancy or develop into Type 2 diabetes

Type 2 Diabetes – Risk Factors

- Being overweight or obese
- A Sedentary lifestyle
- Age
- Family history of the disease
- Genetic predisposition
- Urbanization
- Cultural beliefs

Diabetes Can Be Controlled Effectively



Shrinking the Burden : Population Interventions

The Business Case for Prevention

- Diabetes requires life-long treatment and cannot be cured (yet).
- Uncontrolled diabetes usually leads to complications that are serious and costly to treat.
 - Complications include blindness, stroke, heart disease, kidney failure, or leg amputation.
- People with diabetes likely to double in the next two decades.
- A major difference between Type 1 and Type 2 diabetes is prevention: Type I diabetes is not preventable.
- But all types of diabetes can be controlled.

Population Level Interventions



Diabetes awareness



Promote prevention and screening



Improve data collection



Deploy information technology



Fund research for better treatments
or a cure

Diabetes Awareness



International Diabetes Federation

Diabetes Awareness



- National Diabetes Month is November in US and Canada
- Diabetes Alert Date (America: 4th Tuesday of March)
- Global awareness efforts



Diabetes is a Family Affair

This National Diabetes Month, make healthy lifestyle changes as a family.



Nutrition and Activity Campaigns

- US' Let's Move
 - Michelle Obama
 - Nutrition and exercise
 - Schools, clinics, food service, p. gardens, museums, reservations child care, early education providers
- South Africa's *National Nutrition Week*
- Australia's *Measure Up*
 - National social marketing activity
 - state and territory funding for events
 - planning toolkits provided to support local activities



Nutrition and Activity Campaigns

PROPOSED LABEL / WHAT'S DIFFERENT

Servings:
larger,
bolder type

Updated
Daily
Values

% DV
comes first

New:
added sugars

Change
of nutrients
required

Nutrition Facts

8 servings per container

Serving size 2/3 cup (55g)

Amount per 2/3 cup

Calories 230

% DV*

12%	Total Fat 8g
5%	Saturated Fat 1g
	<i>Trans Fat</i> 0g
0%	Cholesterol 0mg
7%	Sodium 160mg
12%	Total Carbs 37g
14%	Dietary Fiber 4g
	Sugars 1g
	Added Sugars 0g
	Protein 3g
10%	Vitamin D 2 mcg
20%	Calcium 260mg
45%	Iron 8mg
5%	Potassium 235mg

* Footnote on Daily Values (DV) and calories reference to be inserted here.

Serving sizes
updated

Calories:
larger type

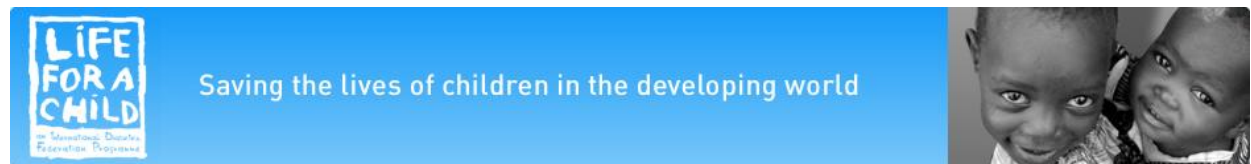
Actual
amounts
declared

New
footnote
to come



Promote Prevention: Children

- Prevention directed at children
 - Healthy eating, more exercise
 - Canada's Comprehensive School Health
 - UK's *Change4Life*
 - Australia's *Health Children*
 - UK's Health Schools Toolkit
 - Planning assistance, services, monitoring outcomes
 - Screening for Type 1 diabetes
 - Financial support for insulin



US researchers finding:

“Overall, there is **moderate to high strength of evidence** that diet and/or physical activity interventions that are implemented in schools help prevent weight gain or reduce the prevalence of overweight and obesity.”

Source: AHRQ Effective Health Care Program *Childhood Obesity Prevention Programs: Comparative Effectiveness Review and Meta-Analysis*

Promoting Prevention

Thousands of efforts and millions of dollars
from:

- Employers
- Governments
- Insurers
- Providers
- Universities
- Community organizations
- Commercial enterprises
- Philanthropists



Shrinking the Burden : Cost Interventions

Cost – Effective Care

- Care Interventions
 - Singapore “right siting”
 - Chronic Disease Management Program
 - Deliver on Target program shifts patients to PCPs and away from hospitals
 - In 2011, the Australian Government launched a 3 year Diabetes Care Project. The project has 4 key components:
 - a care facilitator to coordinate care
 - an education and training program
 - a disease registry tool, and
 - more funding to those patients who have greater needs.

Cost – Effective Care

- Care Interventions
 - In Israel, most of the major public hospitals have created centers for treating diabetes and pre-diabetes patients.
 - In 1996, South Africa launched the Diabetes Management Program, funded by the private sector. Family doctors and other health-care professionals are invited to open accredited centers specialized in diabetes care for a monthly 'capitation' fee.
 - US efforts patient-centered medical homes (PCMH), Accountable Care Organizations, bundled payment, 24/7 nurse lines, telemedicine adoption, urgent care center and retail clinic expansions, and disease management activities; all of these focus on education and expanded counseling access that may reduce costly emergency room use and hospitalizations.

US Researchers' Finding:

“In 2010, there were approximately 12.1 million diabetes-related emergency department (ED) visits for adults 18 years or older, which represented 9.4 percent of all adult ED visits.”

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project Statistical Brief #167: *Emergency Department Visits for Adults with Diabetes, 2010.*)”

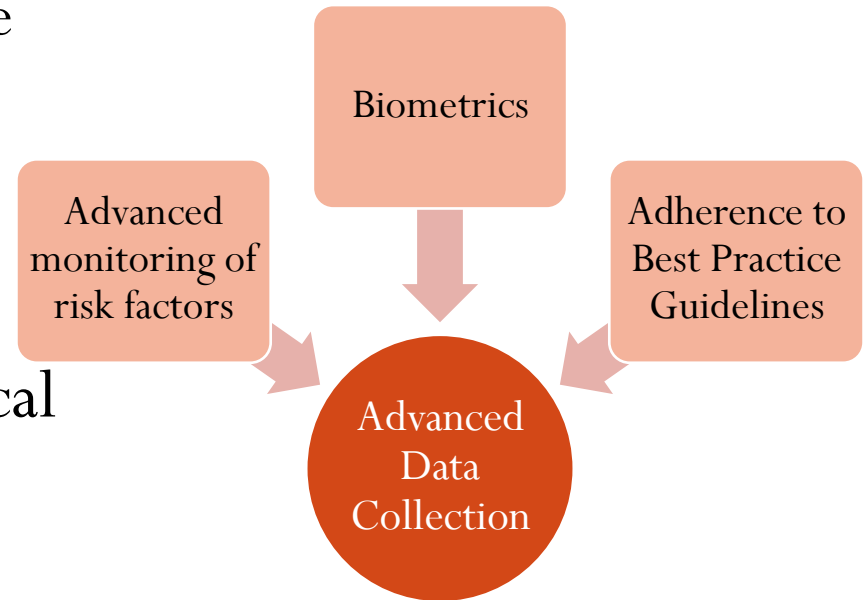
Unit Cost Efforts

- US Medicare mail-order pharmacy, July 2013
 - Only 18 private companies selected through competitive bidding to provide diabetic testing supplies
 - Cost was reduced from about \$78 per 100 test strips/lancets to \$22, a 72% savings.
- Commercial Insurer and employer design encouragement example in the US:
 - DME suppliers versus pharmacy retailers
 - Pharmacy retailers versus mail order
 - Allowing only one or two low-cost choices for the preferred list
- Lesson from global efforts to address high retirement plan fees

Shrinking the Burden : Information Technology

Improve Data Collection

- What is the prevalence and rate of change in prevalence?
- Facilitates prioritization against competing resources
- Facilitates strategic and tactical planning
- Common global efforts to expand the type of data collected



Deploy Information Technology

- Electronic Health Records (EHRs)
 - Many countries now investing in EHRs, though nationwide use not yet prevalent
 - Challenges:
 - Lack of standardized terminology
 - Lack of standardized software structure
 - Costly capital investment
 - Provider adaptability
 - Privacy concerns
 - No agreed upon measures of success.

Deploy Information Technology

- Electronic Health Records (EHRs)
 - In 2007, the Israeli government proposed a law regarding a National Medical Record, aimed to regulate a national EHR.
 - Feasible in Israel, where all the hospitals, providers, and the four HMOs are all subject to the National Health Act.
 - A partial pilot has been implemented in governmental hospitals.
 - There are published standards for the electronic medical data that providers, hospitals and HMO must keep.
 - In the US, CMS provides financial incentives to providers through its “Meaningful Use” Initiative.
 - has increased the adoption and reporting of clinical data.

Deploy Information Technology

- Electronic Health Records (EHRs)
 - Singapore has implemented the National Electronic Health Record system
 - Data integrated from multiple sources
 - Over the patient's life span
 - Widely used
 - Australia has rolled out the Personally Controlled eHealth Record System
 - Working to increase physician use
 - Discovery Health in South Africa
 - Private sector, commercial enterprise
 - "HealthID" allows doctors to access health records instantly.
 - Mobile phone applications allow the patient to carry out administrative functions and compare medical prices.
 - Telemetric glucometer connected to smartphone, readings transmitted and patient records in Health ID updated, with alerts to doctor if readings are out of range.

Fund Research

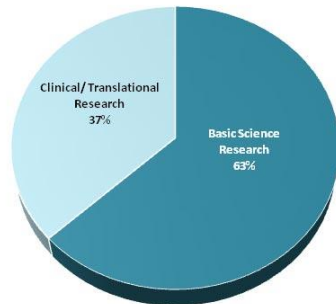


- Cure (private and public)

Much private support of research foundations but also grants.gov



Program Percentage
Basic Science vs. Clinical/Translational
(Dollars)



Fund Research

- Comparative Research



Fund Research

- Translational

- Meaning translates findings from basic science or other research into useful practical applications.
- Example: Australian NPHA administers the Preventive Health Research Fund.
- BRIDGES is an IDF program supported by a grant from Lilly Diabetes that focuses solely on translational research for primary and secondary prevention.



- The Canadian Institutes of Health Research, The Institute of Nutrition, Metabolism and Diabetes.



The Role of the Actuary

What is the role of the Actuary in Healthcare?

- Actuaries have traditionally performed pricing and reserving functions in an insurance environment. Actuarial training and experience makes the actuary the appropriate professional to use techniques such as:
 - Behavioral Economics: what type of response should we expect from agents (members; providers; payers) in response to policy and pricing changes.
 - Risk Management: how do we identify at-risk patients? What interventions/initiatives do we expect to be successful? What do we expect the ROI to be for intervention programs?
- Most national health systems do not use insurance techniques (co-pays; preferred provider contracts; predictive modeling; pay-for-performance; risk-sharing etc.).
- Most national health systems turn to health economists, clinicians and epidemiologists for advice on policy changes.

Continued:



What is the role of the Actuary in Healthcare?

- If we want to contribute and obtain a seat at the Diabetes management table, actuaries will need to increase their knowledge significantly:
 - Clinically: understand the disease, its causes, symptoms and treatments.
 - Actuaries, with their extensive knowledge of prevalence and cost statistics, can play a major role.
 - Behaviorally: understand the barriers to compliance and techniques that have proven successful at incenting behavior change in diabetes populations.
 - Technologically: what are the new apps/systems/data sources and systems that are being used to address the problem?
 - Actuarially: Diabetes represents a significant risk, and actuaries are the experts at risk management. The risk may be to a private or government payer, but in all cases, actuaries can advise payers on techniques to manage and reduce risk. These techniques include:
 - Predictive modeling (a growing opportunity for health actuaries)
 - Risk transfer and risk management methods.
 - Outcomes evaluation: did the program/intervention achieve its goals? What changes will drive better performance?
 - Contracting and contract management.

What is the role of the Actuary in Healthcare? The Challenge

- We will always be at a disadvantage compared with clinicians: we deal with the grubby stuff (money; risk). We don't save lives.
- We are a small profession (compared with clinicians, economists, epidemiologists, etc.).
- We have not traditionally had a seat at the table in most countries.



So to be able to gain a seat at the table we need to be better researched, better informed, armed with better data and have more creative ideas than other professionals.

- The profession needs to move with more urgency to recruit and train the next generation of health actuaries.



For our discussion period: what are actuaries in other countries doing to gain more opportunities to influence their systems?

What is the role of the Actuary in Healthcare? The Challenge

- To gain attention and be taken seriously, we need to raise the health actuarial profile.
- Publish, publish, publish and take every opportunity to speak and interact with non-actuarial agents!

The Role of the Actuary: In summary

- New Level of Collaboration Required
 - Professions
 - Organizations
- Projections of resources needed
- Health and Wellness Program Design
- Support coverage decisions through cost effectiveness studies
- Morbidity and mortality
 - Monitoring and evaluating experience, developing projections.
 - Projecting affect on other social programs and insurances such as social security, pension, long-term care, disability.
- Predictive modeling, contract design and reporting to support revenue sharing.
- Model disease progression for patients to understand current trajectories and evaluate improvements.
- Patient stratification for optimizing patient interventions.

