



SOCIETY OF ACTUARIES

**SOA 09 Annual Meeting & Exhibit
October 25-28, 2009**

Session 31 PD, Diabetes: You and Your Business

Moderator:

[Paul A. Schuster, FSA, MAAA](#)

Presenters:

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Society of Actuaries Annual Meeting

Paul Schuster, FSA, MAAA

RGA

Session 31 Diabetes: You and Your Business
October 26, 2009

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Diabetes Facts

- **24 million Americans (7.8%) have diabetes**
 - 18 diagnosed
 - 6 undiagnosed
- **57 Million Americans have pre-diabetes**
- **1 in every 400 to 600 children and adolescents have type 1 diabetes**
- **1 in three children born in 2000 will develop diabetes in their lifetime. The ratio is one of every two for minority children**
- **The ADA estimates that the total economic cost of diabetes in 2007 was \$174 billion**

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What's this got to do with reinsurance?

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Topics

- **What is diabetes?**
- **How does the industry look at it today?**
- **What's the future look like?**

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Society of Actuaries Annual Meeting

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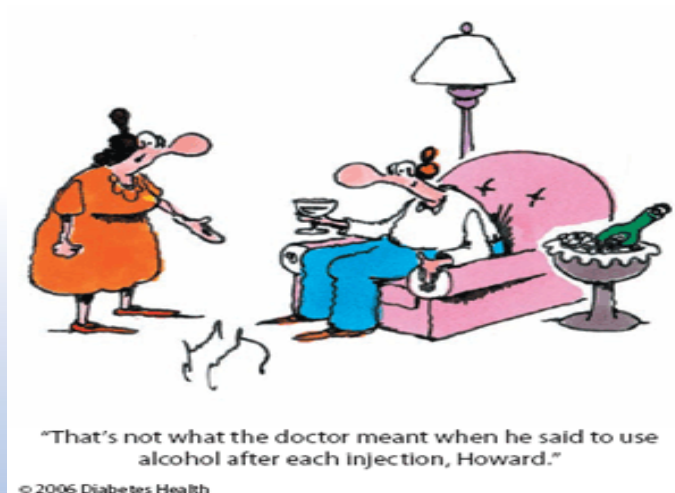
Diabetes Mellitus

A Snapshot of Underwriting Practices
Society of Actuaries - October 26, 2009

Paul J. Miller AALU, FLMI, ACS
2nd VP, Underwriting Services



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Diabetes Health/Cartoons; February 18, 2006



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"I live in constant fear that one day
my hypoglycemic episodes will end up on YouTube."

© 2007 Diabetes Health

Diabetes Health/Cartoons; September 16, 2007



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Topic Points

- Diagnosis Snapshot
- General Population Deaths
- Mortality Study
- Industry Comments
- Diabetes Risk Drivers
- Identifying Diabetes Risk
- Most Favorable/Least Favorable Diabetes Risks
- Our Challenges



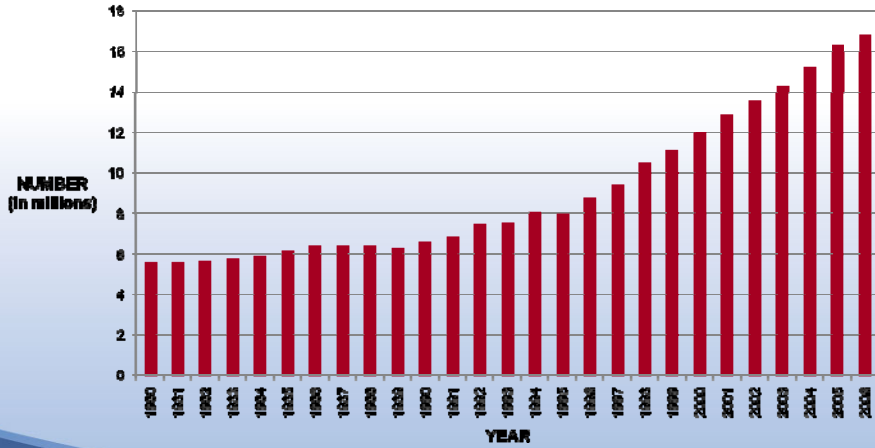
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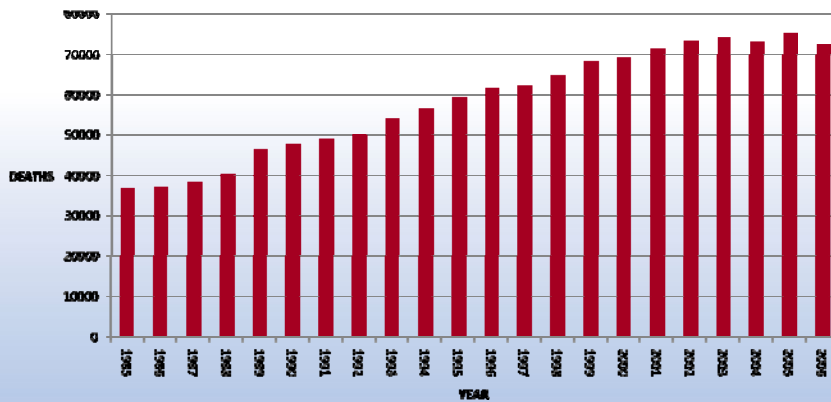
**CDC: National Surveillance Data
Number of Persons with Diagnosed Diabetes
United States
1980 - 2006**



Diabetes Prevalence: CDC Focus Points

- Diabetes is more common in the United States
- From 1980 – 2006, the number of Americans with diabetes mellitus has tripled (5.6 million to 16.8 million)

**CDC: National Center for Health Statistics
Deaths from Diabetes as Underlying Cause
General Population
1985 - 2005**



**Diabetes Age Adjusted Death Rates
2001 – 2006
CDC: National Vital Statistics Report**

| Year | Diabetes Deaths (final) | Age Adjusted Death Rates/100,000 |
|------|-------------------------|----------------------------------|
| 2001 | 71,372 | 25.3 |
| 2002 | 73,249 | 25.4 |
| 2003 | 74,219 | 25.3 |
| 2004 | 73,138 | 24.5 |
| 2005 | 75,119 | 24.6 |
| 2006 | 72,449 | 23.3 |

Contemporary Diabetes Mellitus: Mortality Among Insured Lives at Time of Issue

(Author Affiliations: MMLC, MIB, AAIM, AHOU and SOA)

- Impairment Study Capture System (ISCS) Study
- 17 companies; policies issued 1989 – 2002, policy year duration experience of 10 years
- Total experience based on 103,104 policy years: males 57,888 policy years (56%) and females 41,972 policy years (44%)
- 495 policy deaths: 284 male and 211 female
- Total mortality all age-groups and risk categories combined = 187% of 2001 VBT
- Underwriting appraisal **effectively** categorizes the diabetic risk for standard and substandard policies
- Mortality ratios varied with the type of treatment – diet lowest, insulin highest
- Interpret results cautiously: Small data set, few participating companies, limited policy years durational experience

J Insur Med 2005; 37:89-100

Substandard Mortality by Type of Diabetes Treatment Single & Multiple Impairments Combined Male and Female

| Type of Treatment | Exposure Policy Years | Observed Deaths - d | Expected Deaths – d' | Mortality Ratio – MR (%) |
|-------------------|-----------------------|---------------------|----------------------|--------------------------|
| DIET | 16,399 | 75 | 47 | 160% |
| ORAL | 36,710 | 220 | 113 | 195% |
| INSULIN | 21,618 | 82 | 37 | 234% |
| OTHER/UNK NOWN | 1929 | 2 | 6 | 35% |
| TOTAL (All) | 76,658 | 379 | 203 | 187% |

Basis of Expected Deaths: 2001 VBT Tables

J Insur Med 2005; 37:89-100

Diabetes Mellitus: Mixed Industry Commentary

- Diabetic Risks may be underpriced
- Diabetes may be a loss leader
- Standard and Preferred policies available for diabetic life insurance risks



Risk Classification Drivers for Diabetes Mellitus

- Type of Diabetes
- Diagnosis & Duration of Diabetes
- Control & Compliance
- Co-Morbidity & Additional Risk Factors
- Complications
- Occupational Risk Factors
- Tobacco Use



Identifying the Risk in Diabetes

- Know the **Duration** of diabetes
- Understand the medication(s) and their uses
- Know the **Control**
 - Hemoglobin A1c profile over several years?
 - Proposed insured testing their glucose?
 - Proposed insured regularly visiting doctor(s)?
- Know the **Complications**
 - Micro vascular disease signs?
 - Macro vascular disease signs?
 - Neuropathy present?
 - Micro albuminuria diagnosed?
- Know the **Co-Morbidities**
 - Hypertension, Hyperlipidemia, Depression, Obesity/Underweight/Tobacco

Diabetes Risks: The Most Favorable

Most Favorable Diabetes Risks

- Regular check ups (every 3 months)
- Stable & Near Normal Hemoglobin A1C's
- Daily glucose monitoring
- Regular exercise
- No or Few (mild) diabetic complications
- No or Few Co-Morbidities

Diabetes Risks: The Least Favorable

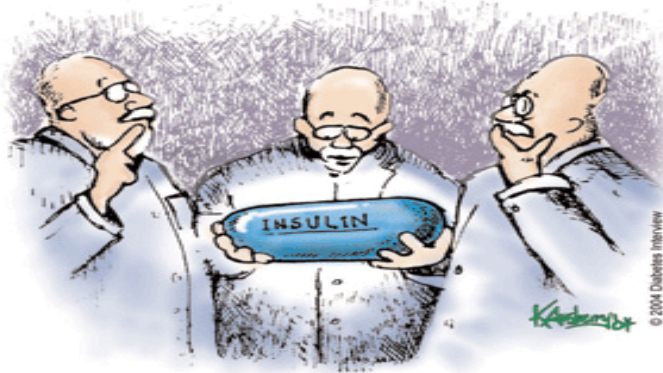
Least Favorable Diabetes Risks

- Infrequent Doctor visits
- Infrequent glucose monitoring
- Obese/Weight Gain/ Infrequent exercise/ Evidence of Coronary Artery Disease
- Recurrent hypoglycemia/ketoacidosis
- Recognized Complacency
- Wide swings/Excursions in Hemoglobin A1c
- Tobacco Use

Challenges with Diabetes Mellitus: A Diabetic's Perspective

- Burden of Diabetes & Obesity Growing in Society
 - How will the increasing diagnosed numbers impact the insured population?
 - How will society address the growing obesity burden?
- Changing Clinical Treatment Protocols
 - How will new treatments improve diabetes outcomes?
 - Can we apply new treatment regimens today in mortality assumptions?
- Lack of Effective Industry Mortality Study & Analysis
 - When will we fund regular industry mortality study groups for diabetes?

© 2004 Diabetes Interview



Despite the valiant efforts of the research group,
the insulin suppository still had one major drawback.

Diabetes Health/Cartoons; November 10, 2005



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Questions?



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