



## Diabetes and Health Care Costs in Alberta

**T**he prevalence of diabetes is increasing in most developed countries around the world. This is also the case in Alberta. In 1997, the age-adjusted diabetes prevalence was 3.0%, which represented 80,360 people.\* In 2007, age-adjusted prevalence jumped to 4.6%, which represented 163,857 individuals.\* Although the ADSS cannot differentiate between type 1 and type 2 diabetes, we know that 90-95% of all people with diabetes have type 2 diabetes. Reasons for the increase in the number of people living with diabetes can be attributed to a number of factors, but primarily our aging population, and increasing obesity due to unhealthy lifestyles.

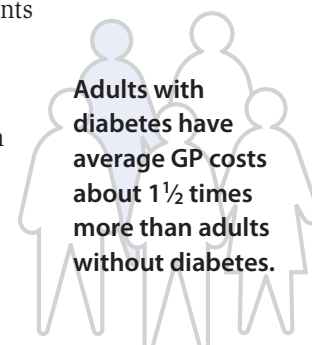
The ADSS previously reported that, on average, people with diabetes access physician services two to three times more often than people without diabetes; spend almost three times as many days in hospital than their non-diabetic counterparts; and

\*includes ages 1 year and above.

visit emergency departments about twice as often as people without diabetes. Increased health care utilization for people with diabetes is appropriate in most cases in order to prevent and treat complications that are associated with diabetes. It is not surprising then that people who have diabetes cost the health care system much more on average compared to people without diabetes.

Because the ADSS is based on data from the administrative databases from Alberta Health and Wellness, which are maintained for billing purposes, we can estimate the excess costs associated with

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### New Home for ADSS

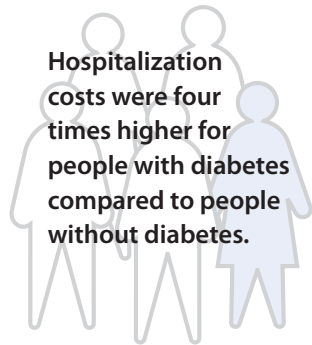
The ADSS team along with the ACHORD group are happy to have moved into our new, permanent office space on February 23, 2009. Our new offices are now located in the Alberta Diabetes Institute within the Health Research Innovation Facility at the University of Alberta. Our new address is:

2-040 Health Research Innovation Facility  
University of Alberta  
Edmonton, AB T6G 2E1

We are planning our Grand Opening and Open House on Thursday May 21, 2009. More information will be available

on our website in the near future. We are all very happy to finally be in our new area and are hoping you will be able to join us to celebrate.





**Hospitalization costs were four times higher for people with diabetes compared to people without diabetes.**

treating people with diabetes. Using the latest data available for the ADSS, we are able to compare the costs of physician services, acute care in the emergency departments, and hospitalizations for people with and without diabetes in 2007.

**Physician Costs**

Adults (over 20 years of age) with diabetes have average General Practitioner (GP) physician costs that are about one and one-half times more than adults without diabetes (Figure 1). The largest difference in GP costs were between the ages of 40-49 years. After age 50, the ratio was smaller due to numerous other illnesses present in the older ages which contribute to increased GP costs overall, but reduce the excess costs associated with diabetes alone.

Increasing costs with increasing age can also be seen when examining specialist costs. In Figure 2, we captured costs from the following medical specialties: Endocrinology, Ophthalmology, Internal Medicine, Psychiatry, Nephrology and Cardiology. Although the average specialist costs for people with and without diabetes were less than the average GP costs, the ratio between the diabetes and non-diabetes populations is much larger (1.3 to 6.4). As with GP costs, the largest ratios were in the younger populations, as accumulating chronic medical conditions in older adults reduced the cost differences associated with diabetes alone.

Figure 1: General Practitioner Cost by Age, 2007

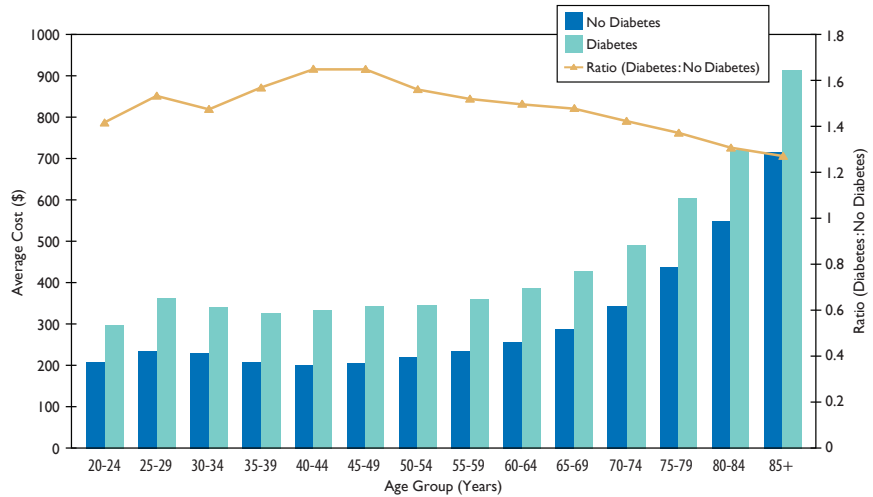
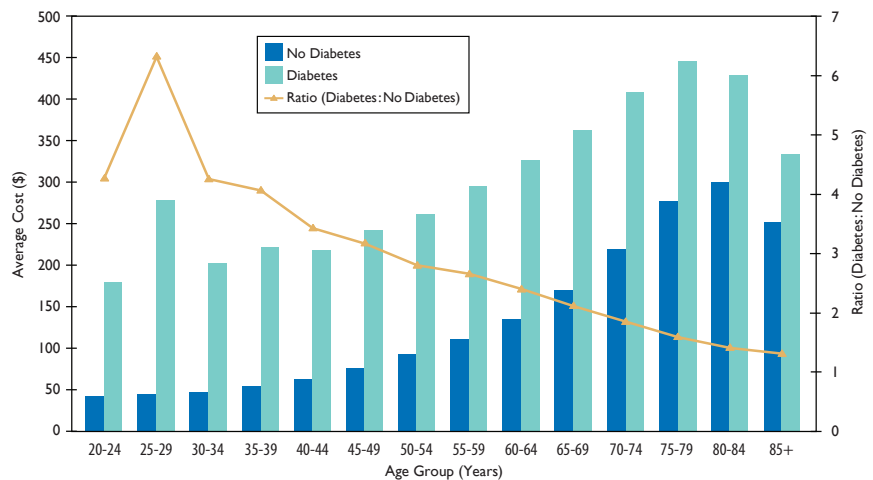


Figure 2: Specialist Cost by Age, 2007



**Hospitalization and Emergency Department Costs**

Each hospital inpatient record contains a resource intensity weight (RIW), which is a measure of the relative amount of hospital resources used to treat certain case-mix groups of patients. RIWs are calibrated annually by the Canadian Institute of Health Information (CIHI) and incorporated into the Discharge Abstract Database (DAD), such that the average inpatient acute care case in Canada has a value of one; individuals with higher acuity have RIW values greater than one and vice versa. The RIW is then multiplied by an estimated cost per weighted case (CPWC), a dollar amount derived from the CIHI Hospital Financial Performance Indicators.

The CPWC measures the average cost of treating inpatient acute care cases. Each of the 9 Alberta Health Regions has a unique CPWC. Our calculated hospital cost, therefore, takes into account the number of days that an individual was hospitalized and the case-mix or acuity of the individual when and where they were hospitalized.

In order to estimate the average cost of an emergency department (ED) encounter, we consulted the Health Economics department within Alberta Health and Wellness. While costs are lower for less acutely ill patients, and higher for more acutely ill patients (range \$162-653), the average cost is \$225. Therefore, we assigned a cost of \$225 each time an individual with or without diabetes accessed emergency department care.

### Total Costs

Combining the 3 components of health care costs, people with diabetes have, on average, total costs that are three times higher, at \$4165, compared to people without diabetes, at \$1348 (Figure 3). Hospital costs were the largest percentage of total costs (Figure 4) both for people with and without diabetes (65% and 51% respectively), and were, on average, four times higher for people with diabetes compared to people without diabetes (Figure 3).

Average ED cost for an individual with diabetes was double the cost for an individual without diabetes (\$207 versus \$107) (Figure 3), while the total percentage of ED costs is about the same (5% versus 8%) (Figure 4).

In both populations, total physician costs (combined GP and all Specialist costs) accounted for the second highest cost. Although these costs accounted for 41% of the total costs for the non-diabetic population and only 30% for the diabetic population (Figure 4), the total average cost (Figure 3) was the largest for people with diabetes (\$1233). Considering that the diabetes population only accounts for about 5% of the total population, this population consumes much higher health care costs on average.

### Discussion

Our estimates of the costs of care are limited to those components paid directly through AHW. A limitation of our cost findings is that they do not take into account all other costs, paid through global regional health budgets, or out of pocket for people with diabetes. For example, drug therapy is generally

Figure 3: Average Health Care Costs by Category for Population Age 20 and Over, 2007

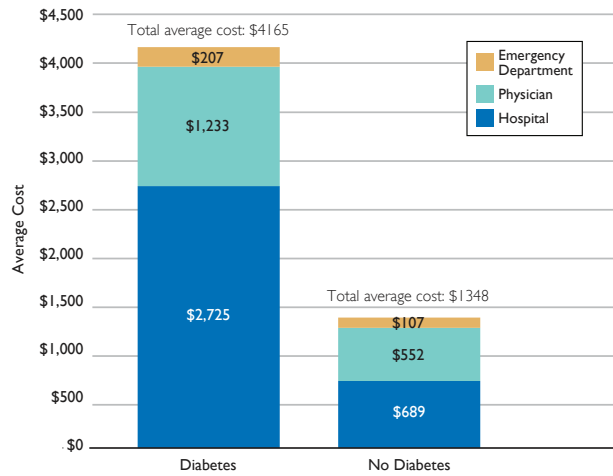
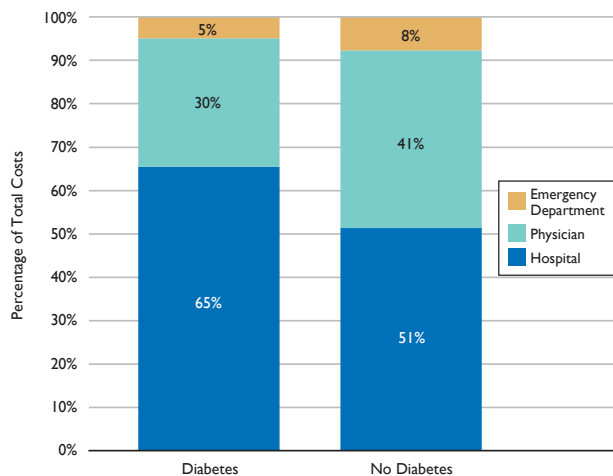
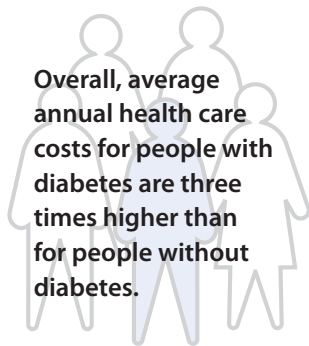


Figure 4: Percentage of Health Care Costs by Category for Population Age 20 and Over, 2007



recognized as the second largest component of health care costs after hospitalizations, at about 17% of total health care spending, but we do not have complete data on the whole population to estimate these costs. There are many other costs associated with managing diabetes, such as the costs of diabetes education centers and their staff, the costs of chronic disease management teams including allied health care professionals, diabetes supplies, laboratory tests, etc. Utilization of these other resources increase the health care spending for people with diabetes, suggesting we have substantially underestimated the cost of health care for people with diabetes in Alberta.

Overall, average annual health care costs for people with diabetes are three times higher than for people without diabetes.



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**ADSS**  
Alberta Diabetes Surveillance System



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