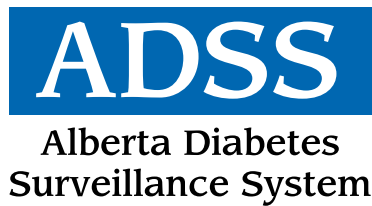


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Diabetes and Eye Disease

Diabetic retinopathy (DR) is an important and common complication of diabetes, and one of the leading causes of vision loss in Canada. Screening for DR in people who have diabetes is effective in identifying treatable eye disease. When treated in a timely fashion the risk of moderate to severe vision loss can be prevented. One of the most common and effective treatments for DR is laser photocoagulation. This is when ophthalmologists cauterize the retina to reduce leakage from small blood vessels or stop new blood vessels from growing which can then prevent progression and further vision loss.

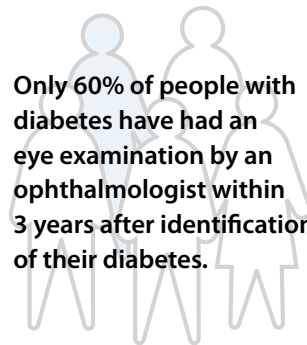
In Canada, the current standard of care for DR screening is a stereoscopic assessment of the retina through a dilated pupil by an experienced eye care professional. The timing of a screening examination varies depending on the type of diabetes, but it is generally recommended on

an annual basis. In the Alberta Diabetes Atlas 2007, we reported on the rate of eye examinations by an ophthalmologist for people with and without diabetes, as well as the rate of eye exams following the initial identification of

diabetes. In Alberta, only 50% of people with diabetes had been assessed by an ophthalmologist within one year of diagnosis, increasing to only 60% after 3 years (Figure 1). Due to limitations in the data, we are unable to capture visits to optometrists who are also able to assess patients for diabetic eye disease.

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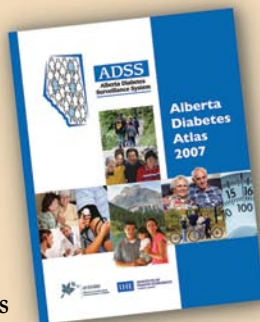
Only 60% of people with diabetes have had an eye examination by an ophthalmologist within 3 years after identification of their diabetes.



HOT OFF THE PRESS: THE ALBERTA DIABETES ATLAS 2007

Albertans now have at their fingertips the *Alberta Diabetes Atlas 2007*, a comprehensive picture of people living with diabetes in the province. This Atlas is a product of the Alberta Diabetes Surveillance System (ADSS), a partnership between the Institute of Health Economics (IHE) and Alberta Health and Wellness (AHW).

Over 500 copies of the *Alberta Diabetes Atlas 2007* were sent across the province to policy makers, advocacy groups and health care clinicians; some copies were also sent nationally to these same



groups. In its debut week, the Edmonton Journal ran a story about the Atlas, and Dr. Jeff Johnson appeared on City TV's Breakfast Television segment as well. There has been a lot of positive feedback associated with the Atlas that we hope to build on by beginning to answer more specific questions arising from the data. An example of this is the information on diabetes and eye disease that we are showcasing in this Newsletter. More detailed information on diabetes and eye disease can be found in the full Atlas, and on our website (www.achord.ca).



Teleophthalmology increases access to eye care for people with diabetes living in rural and remote communities in Alberta.

Diabetes and Eye Disease

(continued)

We hope to be able to better capture all eye care for this population in the future.

Regardless, access to appropriate eye care is an important consideration for people with diabetes. Limited access to this type of care may be especially problematic for people with diabetes living in northern Alberta. Northern Lights Health Region had the lowest rates of eye examinations performed by an ophthalmologist in the province. In this region, less than 20% of people with diabetes had an eye examination in any of the years of observation.

Teleophthalmology is a newly emerging technology that can be used to combat the problem of access to eye examinations by ophthalmologists. This is when a digital retinal camera is set up in a rural or remote community and a specially-trained photographer takes pictures of the retina at the back of the eye. These pictures are sent through a secure computer network to ophthalmologists for examination in urban centers. After an ophthalmologist reviews the picture, the results or diagnoses are sent back to the individuals' physician or nurse. Individuals requiring treatment are then referred to a major centre, such as Grande Prairie, Lethbridge, Medicine Hat, Red Deer, Edmonton or Calgary, to undergo clinical assessment and treatment.

Figure 1 Cumulative Incidence of Eye Examination by an Ophthalmologist within the First 3 Years after Identification of Diabetes (1995-2001)

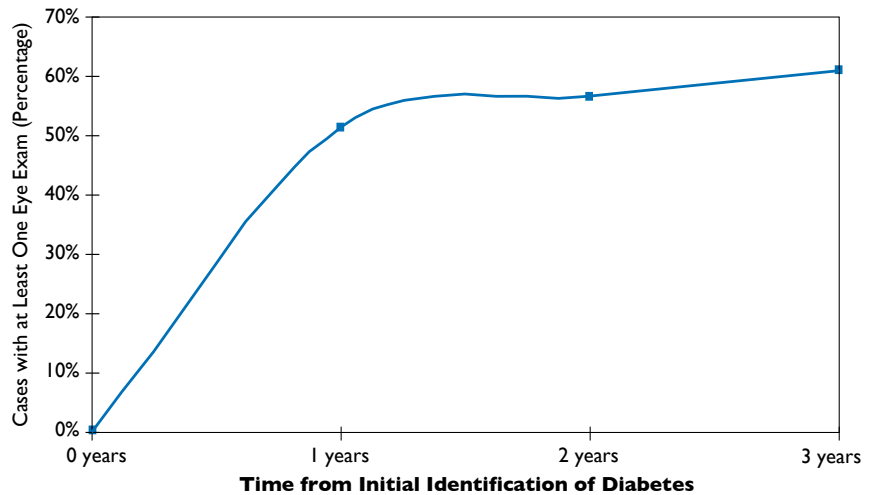
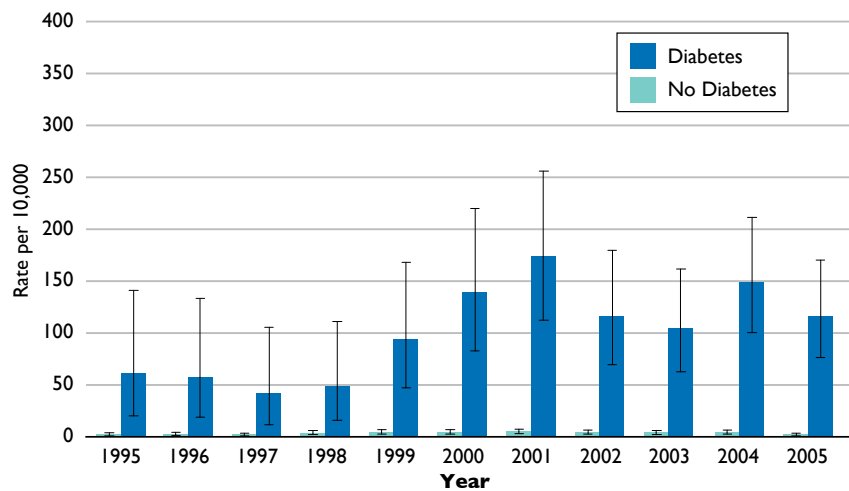
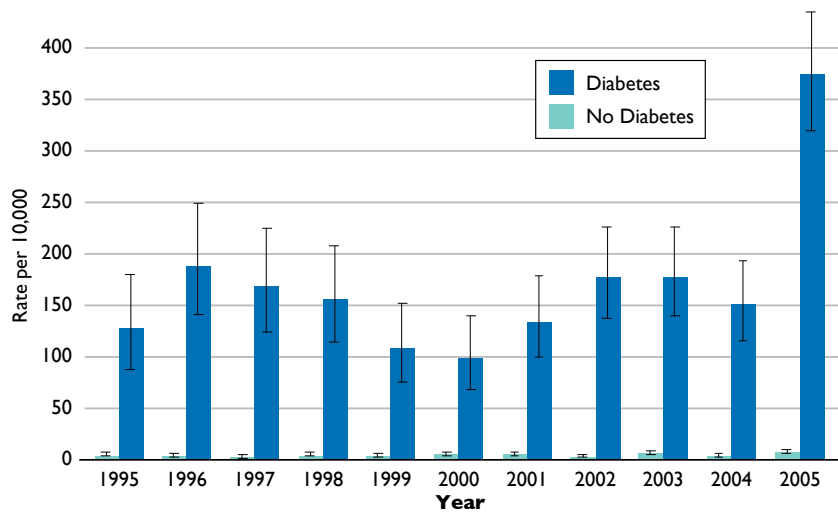


Figure 2 Crude Rates of Retinal Laser Treatment for Northern Lights, 1995-2005



Fort Vermillion is a community in the Northern Lights Health Region where teleophthalmology was introduced in 1998-1999. Over the past decade there is a small upward trend of the number of eye examinations in this region following the introduction of teleophthalmology. Although the number of teleophthalmology assessments is small relative to other eye examinations, and were limited to the Fort Vermillion area, they nonetheless had a visible impact on the ability of Northern Lights residents to access eye care. Furthermore, there was an increase in the rates of laser photocoagulation in the years following the introduction of teleophthalmology (Figure 2). This suggests that the introduction of teleophthalmology to a previously under-served population brought about

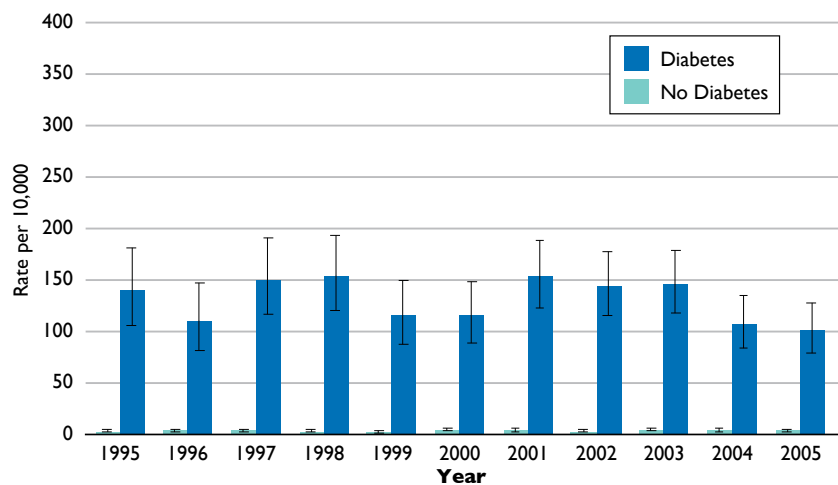
Figure 3 Crude Rates of Retinal Laser Treatment for Palliser, 1995-2005



Palliser region had the highest rates of eye examinations and in 2005 had 2 to 4 times the rate of laser photocoagulation compared to all other regions.

2 to 4 times higher than the rest of the province. Compared to the rates over the preceding 9 years, (1995-2004) the spike in laser photocoagulation in 2005 is very apparent (Figure 3). This discrepancy is especially noticeable when Palliser is compared to other southern health regions, such as Chinook (Figure 4). Due to the observational and descriptive nature of the ADSS administrative data, it is not possible to know why the Palliser numbers are so different from the rest of the province. One hypothesis may be that ophthalmologists in this region have a lower threshold for treating DR compared to ophthalmologists in the rest of the province.

Figure 4 Crude Rates of Retinal Laser Treatment for Chinook, 1995-2005



immediate increases in rates of laser photocoagulation. This higher rate of laser treatments between 1999 and 2002 might reflect a backlog of individuals with diabetes in need of laser treatment, now identified by teleophthalmology. After 2002 the photocoagulation rates tapered off but still remained higher than rates prior to 1998, suggesting that the annual incidence of diabetic retinopathy is still increasing.

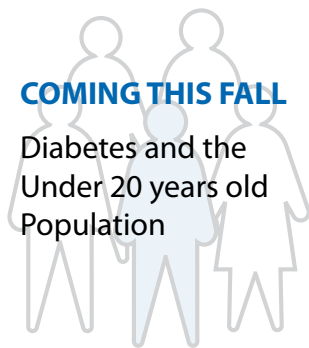
Another interesting aspect of the laser photocoagulation data is the comparison across health regions. In 2005, the rates of photocoagulation were similar between all regions (although Northern Lights was lower than the rest of the province) except in the Palliser Health Region in southern Alberta, where the rate of laser photocoagulation was

Next Steps

We plan to examine the more recent trends in screening and treatment for diabetes and eye disease, and the relationship between access to services and rates of utilization, as more data becomes available. In recent years, additional access to teleophthalmology has become available, such as in Edson, as well as the Mobile Diabetes Screening Initiative for serving off-reserve Aboriginal communities in Alberta. In addition, we are interested in exploring more direct connection between clinical characteristics of patients examined through teleophthalmology and their long-term health outcomes through the ADSS databases.

COMING THIS FALL

**Diabetes and the
Under 20 years old
Population**



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