

# Renal Disease Mortality in Nova Scotia From 1998 to 2005: A Descriptive Analysis Using Both Underlying and Multiple Causes of Death



Alison Zwaagstra, BHIM, MHI, CHIM<sup>1</sup>, Grace Johnston, PhD<sup>2</sup>, Ahmad R Tarakji, MD, FRCPC, FACP, FASN<sup>3</sup>  
<sup>1</sup>Capital DHA, <sup>2</sup>School of Health Administration, Dalhousie University, <sup>3</sup>Department of Medicine, SouthWest Nova DHA

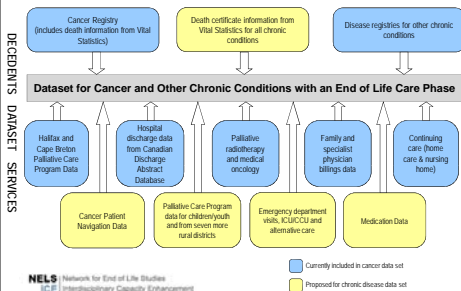
## Objectives

With support from Canadian Institutes of Health Research (CIHR) Interdisciplinary Capacity Enhancement (ICE) grant, the Network for End of Life Studies (NELS) is exploring ways to build research and surveillance capacity to help improve care for vulnerable populations. This study examines palliative and end of life care issues for persons dying of chronic conditions such as renal disease specifically for decedents over age 65.

**Rationale:** Renal disease deaths has been one of a series of chronic diseases when it comes to investigating end of life care for persons dying from specific chronic diseases in Nova Scotia.

## Introduction

The Network for End of Life Studies (NELS) focuses on the analysis of death certificate data from Nova Scotia Vital Statistics (NSVS). Subsequent work will involve linkage of NSVS data to administrative data from disease registries, palliative care program (PCP) databases, the Canadian Institute for Health Information (CIHI) hospital discharge abstract database, SEAScape (single entry access- continuing care), medication databases (e.g. Pharmicare) and physician billings.



## Purposes

The purposes of this study are to:

- share a synthesis of renal disease findings from an analysis of NSVS death certificate data;
- dialogue with persons interested in further building research and surveillance to improve care available to people at end of life with renal disease; and
- examine disparities in health service use for populations at risk for reduced access to quality end of life care.

This analysis is being shared with you to explore ways to build research and surveillance capacity to help improve care for vulnerable populations. Historically, palliative care programs have been developed for persons dying relatively quickly of cancer each year. In recent years, there has been increasing interest in examining palliative and end of life care issues for persons dying of chronic conditions other than cancer.

## Methodology

Type of renal disease and classification of renal disease deaths using the International Classification of Disease (ICD) codes were investigated by the Nova Scotia Vital Statistics (NSVS) death certificate database which is being maintained by the Population Health Research Unit (PHRU) at Dalhousie University. The ICD-9 renal disease diagnoses used were: 580-589, 250.4, 403-404, and for ICD-10 they were N00-N07, N17-N19, N25-N27, E10.2, E11.2, E14.2, I12-I13.

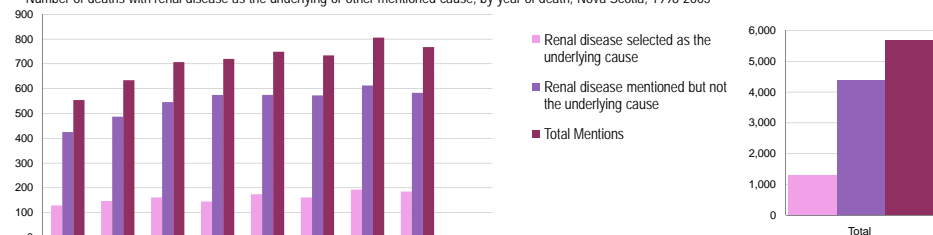
There can be up to 13 causes of death listed on the death certificate. When only one cause of death is recorded, this cause of death is selected as the underlying cause. When more than one cause of death is recorded, the underlying cause is identified using a set of rules developed by the World Health Organization (Statistics Canada, 2005). Methods used in this study are similar to those in a study conducted by Gorina and Lentzer (2008) who investigated multiple cause-of-death data for decedents over age 65.

## Results

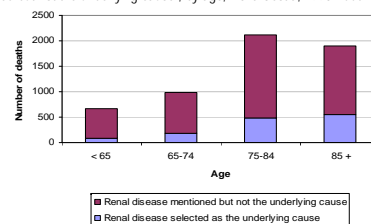
A total of 1,295 persons died with renal disease as their underlying cause of death from 1998 to 2005 in Nova Scotia. Among those with renal disease selected as the underlying cause, other non-renal disease causes of death which were mentioned, included chronic diseases such as congestive heart failure (21.9%), essential hypertension (17.1%), chronic ischemic heart disease (15.2%), diabetes mellitus (13.1%), and pneumonia (8.4%). When renal disease was mentioned as another cause, the most common underlying cause of death was cancer (16.5%).

A 4,377 persons had renal disease as a cause of death which was not selected as the underlying cause. Thus, a total of 5,672 persons had any mention of renal disease on their death certificate which is 8.9% of all deaths from 1998 to 2005.

Number of deaths with renal disease as the underlying or other mentioned cause, by year of death, Nova Scotia, 1998-2005



Number of deaths with renal disease as the underlying cause and renal disease mentioned but not the underlying cause, by age, Nova Scotia, 1998-2005



The majority of renal disease deaths appeared to be among people aged 65 or older. Renal disease is reported as a cause of death more often in males under age 85 but there were more deaths in females aged 85 and over, the same pattern was seen with death from other chronic diseases.

The mean age of decedents with an underlying cause of renal disease is 81.2 years while the mean age of decedents with any mention of renal disease is 78.3 years.

Further, the percentages of persons dying in-hospital or out-of-hospital were examined. Using the PHRU NSVS data, 62.6% of all adult deaths occurred in hospital between 1998 and 2005 in Nova Scotia. From 1998 to 2005, 77.7% of all deaths - where renal disease was mentioned on the death certificate - occurred in hospital. The following table shows that the percentage dying in hospital decreases as age increases with 85.3% dying in hospital among those under 75 years, and 67.5% dying in hospital among those 85 years and over.

	Aged <75		Aged 75-84		Aged 85+		Overall	
	N	%	N	%	N	%	N	%
Renal disease selected as the underlying cause	225	84.6	363	75.0	322	59.1	910	70.3
Renal disease mentioned but not the underlying cause	1,192	85.4	1,343	82.7	962	70.9	3,497	79.9
<b>Total Mentions</b>	<b>1,417</b>	<b>85.3</b>	<b>1,706</b>	<b>80.9</b>	<b>1,284</b>	<b>67.5</b>	<b>4,407</b>	<b>77.7</b>

## Conclusions

In recent years, there has been increasing interest in examining palliative and end of life care issues for persons dying of chronic conditions other than cancer.

When death certificates are analysed, descriptive data can be obtained to plan palliative care for persons dying with renal disease. Nova Scotia's high rates of dying in-hospital lead to questions on whether the hospital is the most appropriate place for end of life care for most persons dying with renal disease.

The NELS ICE would like to increase capacity for interdisciplinary research development to improve care at the end of life for vulnerable populations. In order to further enhance this capacity, the development of an expanded end of life dataset and the dissemination of findings from the analysis of these data is needed.

## References

Canadian Institute for Health Information. (2008). *2008 Annual Report Treatment of End-Stage Organ Failure in Canada, 1997 to 2006*.

Gorina, Y., & Lentzer, H. (2008). Multiple causes of death in old age. *Ageing Trends*, No. 9. National Center for Health Statistics, Hyattsville, MD.

Grunfeld, E., Lethbridge, L., Dewar, R., Lawson, B., Paszat, L. F., Johnston, G., et al. (2006). Towards using administrative databases to measure population-based indicators of quality of end-of-life care: testing the methodology. *Palliative Medicine*, 20, 769-777.

NELS ICE. (2008). End of Life Care in Nova Scotia Surveillance Report. Network for End of Life Studies (NELS) Interdisciplinary Capacity Enhancement (ICE), Dalhousie University, Halifax, Nova Scotia, Canada.

Statistics Canada. (2005). *Causes of death: Definitions*.

## Further information

Please contact:  
 • Alison Zwaagstra @ [Alison.Zwaagstra@cdha.nshealth.ca](mailto:Alison.Zwaagstra@cdha.nshealth.ca)  
 • Grace Johnston @ [Grace.Johnston@cdha.nshealth.ca](mailto:Grace.Johnston@cdha.nshealth.ca)  
 • Ahmad Tarakji @ [ATarakji@swndha.nshealth.ca](mailto:ATarakji@swndha.nshealth.ca)

More information on this analysis and related projects can be obtained @ <http://nels.schoolofhealthservicesadministration.dal.ca>