Since the advent of new medication therapies in the mid 1990s, people living with HIV/AIDS are living longer.1 HIV increasingly is perceived as a chronic, multi-systemic and episodic condition characterized by periods of wellness and illness in the developed world. As a result, individuals may be living with significant levels of bodily impairments, functional activity limitations, and social participation restrictions. This article outlines the respiratory effects of HIV/AIDS and the implications for clinical rehabilitation practice.

Prevalence and Incidence of HIV/AIDS
Health Canada estimates that, at the end of 2002, about 56,000 people were living with HIV in Canada. This is about a 12% increase from the estimate of 49,800 in 1999. Although the prevalence of HIV is increasing, the incidence has remained stable with approximately 2800 to 5200 new infections reported in 2002, similar to that in 1999.2 While men who have sex with men represent the greatest number of new infections, the incidence of HIV continues to rise among heterosexuals, including women, who now account for 14% of the total number of people living with HIV in Canada.3

Characteristics of HIV/AIDS
Human immunodeficiency virus (HIV) is a retrovirus that targets CD4 cells (or T-cells) which assist the body in fighting off infection and disease. Infected cells die approximately 24 hours after becoming infected, and while the body is able to replenish these cells, it may run into difficulty keeping up, eventually resulting in deterioration of the immune system. Acquired Immune Deficiency Syndrome (AIDS) is a classification of HIV disease, when a person’s CD4 count drops below a certain threshold leaving him/her susceptible to a variety of opportunistic infections or malignancies. Used primarily by the Centers for Disease Control (CDC) for surveillance purposes, the term AIDS is rarely used in clinical practice.

HIV may be transmitted through unprotected sexual activity (including vaginal or anal intercourse), sharing contaminated needles (intravenous drug use), and from mother to child during pregnancy, labour or delivery, and breast feeding. In the past, people may have been infected by receiving a transfusion of infected blood or blood products. However since 1985, all donated blood is screened for HIV. HIV is not transmitted through the air, casual contact such as kissing, or contact with sweat, tears or saliva. HIV cannot survive outside the body, and thus it is not transmitted via toilet seats or from sharing utensils. As health care professionals, we use universal precautions when working with people living with HIV, donning standard protective equipment when dealing with direct exposure to blood and body fluids. These precautions are no different than those used when working with any client population.

Continued on page 4
**CHAIR’S MESSAGE**

Happy New Year!!! I hope that you all had a wonderful holiday and were able to spend some quality time with family and friends!! I hope that one of your New Year’s resolutions is to continue your involvement with the ORCS and, perhaps, to become even more involved.

2005 was a very successful year for our regional groups and their educational programs. The Toronto seminar in November was sold out with more than 200 registrants. In addition to Better Breathing 2005, we had 10 educational seminars throughout Ontario during 2005, attended by more than 800 people. Indeed, it was a very good year for us.

The New Year also promises to offer you several excellent educational opportunities. Full day seminars are being planned for the spring in Thunder Bay and Ottawa and evening sessions will be held in other locations. If you have not already done so, please register for the Better Breathing 2006 Conference being held at the Doubletree® International Plaza Hotel on February 2-4, 2006.

I would like to introduce Daniela Misetic-Smith, who recently joined the ORCS in the position of Administrative Assistant. Welcome Daniela!

I would also like to congratulate Andrea White Markham for her recent Meritorious Service Award from The Lung Association for her hard work and dedication to the ORCS and OLA initiatives. Congratulations Andrea!!

Looking forward to seeing you at Better Breathing 2006!

LISA CICUTTO, CHAIR, ORCS

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**EDITOR’S COMMENT**

I hope you have all had a GREAT holiday season!

The Winter edition includes an article on the Respiratory effects of HIV/AIDS by Kelly O’Brien from the University of Toronto. The field of HIV/AIDS has changed considerably over the last decade and the article is quite enlightening on the role that health care professionals in the respiratory area could have with these patients. HIV/AIDS has become more of an episodic illness with an important role for rehabilitation. We have also included an article on the challenges and rewards of providing health care to the homeless. The author, Barbara Craig, was the speaker at the 2005 Better Breathing Breakfast session.

We are very pleased to welcome two new members to our Editorial Board: Yvonne Drasovean, a Respiratory Therapist from London Health Sciences Centre and Rosalynn St. Germain, a Respiratory Therapist at Kingston General Hospital.

We are indebted to GlaxoSmith-Kline for sponsoring this edition of Update.

As always, your input is important to us and we welcome any letters to the Editors. We are always looking for volunteers or for submissions to Update. Contact us at orcs@on.lung.ca. I hope to see you all at Better Breathing!

DINA BROOKS, CO-EDITOR

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**Support Us ••• Planned Giving Makes a Difference**

Remembering The Lung Association in your Will is a thoughtful gesture that will touch the lives of many who have difficulty breathing.

A planned gift to The Lung Association will help support our vital research and community services work on the prevention and control of asthma, chronic lung disease, tobacco cessation and prevention, and the effects of air quality on lung health.

For information on how to leave your legacy in the fight against lung disease, please contact, in confidence:

Jayne Fry, Manager, Planned and Major Gifts
The Lung Association, 201 – 573 King Street East, Toronto, ON M5A 4L3
Tel: (416) 864-9911 x 251

When you can't breathe, nothing else matters.™
Register today for The Lung Association’s annual conference, Better Breathing 2006, scheduled for February 2-4, 2006 at the Doubletree® International Plaza Hotel at 655 Dixon Road, Toronto. The ORCS program offers a wide range of topics of interest to people working in many respiratory care settings including acute, chronic and critical care in hospitals, rehabilitation, community care, public health and education.

Conference Highlights
Thursday, February 2
• ORCS Respiratory Health Educators Interest Group (RHEIG) annual pre-conference workshop with a presentation on Tobacco Policy and four health educator workshops

Friday, February 3
• Sponsored Breakfast presented by Novartis
• Plenary Session: Respiratory Disease from Cradle to Grave. Dr. Malcolm Sears will discuss Childhood and the Development of Respiratory Disease and Dr. Deborah Cook will address The Palliative Approach to Patients Suffering from Respiratory Disease
• ORCS and OTS joint scientific session, entitled What’s New in Lung Health
• ORCS sessions address the important theme of Outcomes in Respiratory Care featuring Dr. Matthew Stanbrook, Dr. Sandra Walker and Dr. Margaret Herridge

Saturday, February 4
• Breakfast Session with Courtney Maguire, a respiratory therapist, discussing lessons learned from her personal experience as a critical care patient.
• Concurrent workshops on research, rehabilitation and critical care topics including a poster presentation workshop
• ORCS/OTS Luncheon with Dr. Donald Tashkin on Defining Disease Modification, sponsored by Boehringer Ingelheim and Pfizer
• New this year - Critical Care Lecture Session, featuring Dr. David Leasa and Dr. Randy Wax on the management of ARDS, Sepsis and SIRS.

Please visit www.on.lung.ca/orcs for the full program or call (416) 864-9911, ext. 256 for information. Register before January 16 to avoid the late fee.

ORCS Annual General Meeting
February 3, 2006, 2:15 p.m., Plaza B Room
Doubletree International Plaza Hotel, Toronto

January 15-20, 2006

April 28-29, 2006
An Acute Cardio-respiratory Skills Update Course for Physiotherapists including lecture and small group teaching on chest assessment, CXR, ECG and ABG analysis, oxygen therapy, evidence-based practice, ventilators, lines and tubes and case studies, will be held at Toronto General Hospital, 200 Elizabeth St., Toronto. Contact therese.hawn@uhn.on.ca.

April 19-20, 2006
The American Thoracic Society conference will be held in San Diego. Contactats2006@thoracic.org or (212)315-8658.

May 25-28, 2006

June 29-July 2, 2006
Physio6 – Turning the Tide, the Annual Congress of the Canadian Physiotherapy Association, will be held at the Delta Saint John, New Brunswick. Visit www.physiotherapy.ca.

November 17-19, 2006
The Canadian COPD Alliance conference will be held at the Westin Hotel in Calgary. www.lung.ca/CCA.

November 20-21, 2006
The Face of Tuberculosis, presented by The Lung Association’s Tuberculosis Committee, will be presented at the Crowne Plaza Hotel in Toronto. Details to follow.

*For further information on ORCS programs, call (416) 864-9911, e-mail orcs@on.lung.ca or visit www.on.lung.ca/orcs.

IN THE SPOTLIGHT: Andrea White Markham, RRT, CAE, MS(R)c

Congratulations to Andrea White Markham, ORCS nominee and recipient of The Lung Association’s Meritorious Service Award for exemplary volunteer service. Andrea is a Registered Respiratory Therapist, Certified Asthma Educator and COPD Educator who is currently completing her Master’s degree in Respiratory Science at Charles Sturt University. She is a member of the Respiratory Therapy Faculty of The Michener Institute. Andrea has been a volunteer for the ORCS since 1993, serving in numerous capacities including chair and member of the Greater Toronto Region Executive Committee and the ORCS Education Committee and member of the Provincial Committee. Andrea is also a long-time member of the Executive Team of the Respiratory Health Educators Interest Group. Throughout her career as an Asthma and COPD Educator at William Osler Health Centre and in her current position, Andrea has been a dedicated volunteer and an enthusiastic supporter of The Lung Association in her home community of Mississauga and the ORCS. Thank you and congratulations Andrea!

Become an ORCS member or renew your membership for 2006-2007
Individual $40; Student $25; RHEIG add $15
Call (416) 864-9911 for information or visit www.on.lung.ca/orcs
The course of HIV disease is primarily monitored by two immunological and virological surrogate markers, CD4 count and viral load. CD4 count, measured in cells/mm³, represents the integrity of the immune system. Viral load, measured in number of copies of virus per milliliter of blood, indicates the amount of virus circulating in the blood. These two markers are inversely proportional. For example, a person with a low CD4 count (e.g., 100 cells/mm³) and high viral load (e.g., 1 million copies/ml) may be vulnerable to infection. Alternatively, a person may live with HIV for a number of years feeling completely healthy. During this time, he/she may have a high CD4 count (e.g., 700 cells/mm³) and an undetectable viral load. An undetectable viral load does not mean that a person is cured from HIV, but rather the virus is below the threshold able to be detected by the test. Current tests are sensitive enough to detect as low as 50 copies of HIV in each milliliter of blood.³

While there is no cure for HIV/AIDS, there are classes of antiretroviral drugs that target the virus at different stages of its life cycle. The goal of these drugs is to reduce the amount of virus in the body, minimizing viral load and maximizing CD4 count. Individuals often take a combination of at least three classes of these antiretroviral drugs termed “highly active antiretroviral therapy” (HAART). While HAART is often effective at increasing CD4 count and reducing viral load, these drugs are commonly fraught with unwanted side effects, some of which include nausea, fatigue, diarrhea and changes in body composition.

### HIV-Associated Respiratory Illnesses

Even though HAART has sharply reduced the incidence of respiratory illnesses, respiratory infections and malignancies continue to remain a key cause of death among people living with HIV.³ Termed opportunistic infections or AIDS-defining illnesses, these conditions usually occur when a person's CD4 count drops below 200 cells/mm³, indicating severe immune-suppression and leaving him/her susceptible to an array of fungal, bacterial or viral infections. Examples of these respiratory conditions are discussed.

*Pneumocystis carinii* pneumonia (PCP) is one of the most common opportunistic infections associated with HIV/AIDS. Known as a fungal infection, PCP is an interstitial pneumonia characterized by lung inflammation and alveolar damage that may result in impaired gas exchange and respiratory failure.⁴ Symptoms of PCP can include fever, dyspnea, fatigue, sweat, and an unproductive dry cough. Chest x-ray findings may appear normal in early stages, and then progress to diffuse bilateral interstitial infiltrates with or without evidence of pleural effusion.⁵

*Cryptococcal pneumonia*, similar to PCP, is also a fungal infection and usually presents as a meningitis. Respiratory symptoms and chest x-ray findings are often similar to PCP.⁶ Prophylactic treatment is available to prevent these infections and is usually prescribed if a person's CD4 count begins to drop below 200 cells/mm³, leaving him/her susceptible to infection.

Community acquired or bacterial pneumonia is the most frequent pulmonary complication of HIV, although its incidence has dramatically declined since the introduction of HAART in the developed world.⁷ Symptons may include a spiking fever and productive cough, depending on the stage. While vaccines are available, their efficacy remains undetermined. Treatment includes antibiotic therapy.⁷

*Pulmonary Tuberculosis*, another respiratory infection associated with HIV, may include symptoms such as cough, dyspnea, fever, fatigue, weight loss, chest pain and night sweats.⁴ Early chest x-rays may appear normal, while later in the disease infiltrates, hilar adenopathy, pleural effusion, and nodules may be apparent. Tuberculosis is highly transmissible and may be fatal, thus making it important for those infected to adhere to medical treatment.⁷

Finally, *Kaposi's Sarcoma* (KS) is a form of cancer associated with HIV/AIDS, characterized by the abnormal growth of small blood vessels. KS most commonly affects the skin in the form of lesions that resemble bruises. However, KS may also affect the lungs resulting in airway blockage and fluid retention. Symptoms may include weight loss, dyspnea, cough, hemoptysis, and pleuritic chest pain. Chest x-ray findings are usually non-specific consisting of bilateral interstitial and/or alveolar infiltrates and pleural effusion.⁷ Treatment involves chemotherapy. All of the above respiratory conditions are usually diagnosed via chest x-ray, bronchoscopy with bronchoalveolar lavage or transbronchial biopsy.
Respiratory Effects of HIV/AIDS... Continued from page 4

among the most prevalent restrictions. 10 Others included: engaging in community roles and experiencing discrimination. Any of the above limitations or restrictions may be associated with the preceding respiratory impairments such as decreased endurance, fatigue and shortness of breath. 10

Aerobic Insufficiency in HIV/AIDS

While deconditioning contributes to aerobic insufficiency among people living with HIV, it is unlikely that it is the sole reason for the decreased activity tolerance. 13 For example, adults living with HIV have a decreased maximal rate of oxygen consumption (VO2max) that ranges approximately 15-20% below that predicted for age-matched controls. 14,15,16,17 Ventilatory threshold 14,15 and lactic acid threshold 14,15,18 also occur earlier with exercise among people living with HIV compared to the general population. While reduced pulmonary function has been reported among persons with respiratory infections such as PCP and Kaposi's sarcoma, 19 the literature is less clear on whether there is a link between reduced activity tolerance and pulmonary function in people living with HIV. 13

More recently, research has begun to investigate the respiratory effects associated with HAART. For instance, people living with HIV taking HAART are said to have decreased arterial-venous oxygen difference during peak exercise compared with those living with HIV not taking HAART, and with those non-infected. This may deter muscle oxygen extraction and utilization by peripheral muscles, further limiting activity tolerance. 20 Reduced arterial-venous difference may also be attributed to anemia (when the oxygen carrying capacity of the blood is reduced) which may further be exacerbated by smoking. 18

Exercise as a Treatment Intervention

Emerging evidence has addressed the benefits of exercise for people living with HIV. A systematic review that assessed the effect of aerobic exercise interventions on immunological / virological, cardiopulmonary and psychological outcomes for adults living with HIV concluded that aerobic exercise, or a combination of aerobic and progressive resistive exercise is safe and may lead to improvements in cardiopulmonary fitness and quality of life for adults living with HIV who are medically stable. 21 Specifically, results demonstrated a significant improvement in VO2max of 1.6 ml/kg/min for HIV participants who engaged in constant or interval aerobic exercise compared to those who did not exercise. 21 Greater improvements of 4.3 ml/kg/min were seen among participants exercising at heavy intensity compared with participants exercising at moderate intensity. 21 No changes in CD4 count or viral load were documented with exercise. Nevertheless, this promising research highlights the potential for respiratory improvement among people living with HIV. Further research is needed to determine the optimal frequency, intensity, time and type of exercise to maximize respiratory benefits.

Implications for Clinical Practice

With an increased number of individuals who have access to HAART living longer, more people are living with the respiratory disablement associated with HIV and its associated treatments. As a result, there is an increased role for rehabilitation in the context of HIV/AIDS. Rehabilitation may be broadly defined as all services and activities that address or prevent impairments, activity limitations and participation restrictions. 

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RESPIRATORY ARTICLES OF INTEREST


Although guidelines recommend daily therapy for patients with mild persistent asthma, prescription patterns suggest that most patients use controller therapies intermittently. The authors conducted a double-blind trial to compare the efficacy of short-course corticosteroid therapy guided by a symptom-based action plan alone or in addition to daily treatment with either budesonide or oral zafirlukast over a one-year period. The three treatments produced similar increases in morning FEF and similar rates of exacerbations even though the intermittent group took budesonide, on average, for only half a week over the year of the study. However, daily budesonide produced improvements in asthma control, symptom-free days and markers of asthma inflammation compared to intermittent budesonide or zafirlukast. In conclusion, although not currently recommended, it may be possible to treat mild persistent asthma with short, intermittent courses of inhaled or oral corticosteroids taken when symptoms worsen. This concept requires further study.


This study looked at the effect ambulatory oxygen (in addition to a concentrator) had on health related quality of life (HRQL), exercise capacity and compliance with therapy in patients with COPD and chronic resting hypoxemia. This was a well designed study where 24 patients underwent a 1-year randomised, double-blind, 3-period crossover trial. Each patient received 1) standard therapy (home O2 with concentrator only) 2) standard therapy with as-needed ambulatory O2 (small cylinders) and 3) standard therapy with as-needed ambulatory compressed air (CA). The main outcomes were HRQL (Chronic Respiratory Questionnaire and SF-36), exercise tolerance (6-min walk test) and daily duration of O2 use. An interim analysis was performed and the trial was stopped prematurely (stopping rules established a priori). Results showed ambulatory O2 had no effect on any of the outcomes (all differences were close to zero and surrounded by very narrow confidence intervals). Few cylinders were used (7.5 O2 versus 7.4 CA over 3-months). In fact patients went out 3 times more without cylinders versus with them. This trial provided strong evidence that the widespread provision of ambulatory oxygen in patients with O2-dependent COPD is not justified. These results often conflict with current practice. The investigators suggested: exploring patient acceptability and tolerability, pairing ambulatory O2 with pulmonary rehabilitation, and using liquid O2 instead of cylinders.

Compiled by Larry Jackson and Mika Nonoyama
Since 1995, I have been working as a Street Nurse at an agency called the Street Health Community Nursing Foundation. My job can be challenging, rewarding, terrifying and satisfying all in the same day. The people I meet and work with have taught me so much. Without exception they are survivors, even though they live in poverty. Universally they need better access to housing and health care.

When I met Barry, he lived in his car and got numerous parking tickets. He wore headphones to “dim the messages” he thought were being transmitted through his teeth from outer space. After working for many years, he lived on a small disability pension. Eventually, when Barry was confident enough to ask for a pair of shoes from our office supply, he confided he was always thirsty and had blurry vision. Testing showed he had diabetes. Over the next few months, with the help of Maurice, a Street Health mental health worker, I succeeded in helping Barry with many things, including obtaining accommodation and a family doctor. I continue to monitor his blood pressure and blood glucose levels and when necessary, help him with everyday problem-solving. There are still many challenges. Since he still lives in poverty in a room with no kitchen facilities, healthy eating is a challenge. Recently, a daily food diary revealed he had fried chicken for breakfast (from a soup kitchen) and fish and chips for dinner. Unfortunately, Barry is on a seven-year waiting list for subsidized housing.

When I was involved in outreach I met Will, a gentleman who lived in a wooded area. He had never collected his Old Age Pension, because he wanted to help Canada recover from its debt. His “camp” contained many interesting items collected over the years, as well as an extensive library built from scrap lumber. As we got to know each other better, I helped him get his Old Age Pension and his Health Card. I have accompanied Will to many medical appointments to assist with his numerous health problems such as eye cancer, which required the removal of his eye. Many years later, I continue to visit Will in his small apartment after a final bitterly cold winter drove him from his beloved woods.

Mary, a 30 year-old homeless woman, has a serious addiction to drugs and alcohol and also has Fetal Alcohol Spectrum Disorder (FASD). Unfortunately she often gets into predicaments. For example she just had her fourth baby, which was immediately apprehended by the Children’s Aid Society. As I write, she is in prison for a misdemeanor. When she is released, we will look into special housing for women with addictions and mental health problems. Much advocacy in the community is required to help people understand why Mary, who has a delightful personality, has poor judgment, difficulty keeping appointments and no notion of the consequences.

At Street Health we face many challenges on a daily basis. There is a serious lack of affordable and supportive housing in Toronto. Street Health was founded when a nurse, who met with homeless people, realized that it is hard to access health care when you have no permanent address. Homeless people are unable to follow medical advice such as “stay warm” or “soak your feet twice a day.” There was and is a need to take health care to the people.

Street Health began with volunteer nurses in 1986 and obtained funding from the Ministry of Health Mental Health Branch in 1989. First located in the basement of All Saints Church, at Dundas and Sherbourne Streets in Toronto, we now work from a Victorian house across from the church. Street Health provides hands-on nursing care and advocates for individuals’ needs and systemic change.

The organization has grown from a small group of volunteers to an agency of over
participation restrictions experienced by an individual. However, given this is a new area for rehabilitation, it is unclear whether the health care community is ready to provide these services and respond to this need. As a result, a nationwide survey was conducted to explore the knowledge, attitudes and practices of Canadian rehabilitation professionals and HIV specialists concerning rehabilitation services for people living with HIV. Rehabilitation professionals surveyed included physical therapists, occupational therapists, psychiatrists and speech-language pathologists who may or may not have been working in the area of HIV/AIDS. HIV specialists surveyed included physicians (general practitioners, infectious disease specialists, psychiatrists and other specialists), nurses, dieticians, pharmacists, social workers and psychologists working in the field of HIV/AIDS. Results showed that only a minority of rehabilitation professionals currently serve HIV clients. Only 39% of rehabilitation professional respondents had knowingly served people living with HIV; they saw an average of 4 HIV positive clients in the past year, and the reasons for which they served these individuals were primarily for rehabilitation issues unrelated to their HIV status, and unrelated to their respiratory impairments. HIV specialists refer HIV positive clients to a range of services, primarily to facilitate social participation, and consider community-based supports and social workers to be crucial in the care of people living with HIV. However, very few refer their HIV clients for respiratory impairments or limitations.

In conclusion, respiratory infections and illnesses associated with HIV/AIDS continue to change. Since the introduction of HAART in the mid 1990s, people living with HIV who have access to and tolerate HAART are living longer, which is largely the case in the developed world. HIV disease increasingly is perceived as a chronic and episodic condition. For those individuals living longer, infections and malignancies may be less common. However the respiratory impairments, activity limitations and participation restrictions experienced as a result of the disease and its associated treatments may persist, highlighting an increased role for clinical rehabilitation. Aerobic exercise is an intervention shown to be safe and effective in improving cardiorespiratory fitness and quality of life for adults living with HIV. However despite the role for clinical rehabilitation, very few rehabilitation professionals work with this population. There is a need for increased education of rehabilitation professionals, HIV specialists, people living with HIV, and other health providers who may refer to rehabilitation professionals on the role of rehabilitation in the context of HIV and need for more collaborative practice among health care providers to better meet the needs of people living with HIV.

For more information on respiratory features of HIV and more broadly, clinical rehabilitation in the context of HIV/AIDS, please see the Canadian Working Group on HIV and Rehabilitation (CWGHR) website at www.hivandrehab.ca.

Acknowledgements:
Kelly O’Brien is pursuing her PhD at the University of Toronto and is generously supported by a Fellowship from the Canadian Institutes of Health Research (CIHR) HIV/AIDS Research Program.

References

Health Care to Homeless... Continued from page 6
twenty-five employees, funded by the Ministry of Health and Long-Term Care and other sources. Over the years, we have added an Identification Replacement Program, mail service, mental health outreach workers, AIDS Outreach workers, a Health Promoter, Hepatitis C worker, Fundraiser and Research Coordinator.

Our work on the Tuberculosis Action Group (TBAG) is one example of the advocacy we do. This coalition demanded and obtained an inquest into the death of a man at The Salvation Army Shelter who died of Tuberculosis. Out of this Inquest came many recommendations such as better air quality in shelters and Central TB clinics in Toronto which, when implemented, may help prevent further deaths from TB in the homeless community.

Each day as a Street Nurse brings new challenges and rewards. We continue to fight for affordable, appropriate housing, adequate incomes and access to the Health Care System. For further information, please go to our website: www.streethealth.ca.
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