



CJRT · RCTR

Summer 2003, Volume 39 (3)



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- Forum Highlights

RT Week
September 28 –
October 4, 2003

*The journal for respiratory
health professionals in Canada*

*La revue des professionnels de la
santé respiratoire au Canada*

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**Canadian Journal of
Respiratory Therapy**
**Revue canadienne de
la thérapie respiratoire**

**Official Journal of the CSRT
Revue officielle de la SCTR**

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The *CJRT* acknowledges the financial support of the Government of Canada, through the Publications Assistance Program (PAP), toward our mailing costs.

Cover Photo by Karen Johnson

Left to right: Dressed for work: Carole Madeley RRT, Tracy McCron RN, Denise Mason outside Lakeridge Health, Oshawa

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About this issue

Thank you, Ottawa! A big "Thank You" also goes out to the planning committee members and CSRT staff at Head Office for making Forum 2003 the big success it was. Colya Kaminiarz who was the official (volunteer and much appreciated) photographer of the festivities in Ottawa, has been taking pictures of the past three CSRT forums, and is greatly appreciated for his efforts. Inside you'll find some of Colya's great pictures to enjoy, along with the *Forum Highlights*.



Allan Shemanko

We also have to thank all the Respiratory Therapists who have been working in the Greater Toronto Area during the Severe Acute Respiratory Syndrome (SARS) outbreaks earlier this year. If you've ever wondered what it would be like to be faced with working in a crisis situation such as this, we have a treat for you. Carole Madeley has written a diary that makes for a very interesting read, as she was one of those faced with working with SARS patients during the crisis. Thank you for this personal contribution!

As frontline health care professionals, Respiratory Therapists often work rotating shifts. The results of this "jet lag" can cause a variety of health care problems, one of which is sleep deprivation. Les Matthews has written a wonderful editorial on this topic called, "Asleep at the Wheel". If you are balancing a career and family, this article is for you. A new contributor to the journal is Mike Lemphers. He has submitted an article on *Noninvasive Positive Pressure Ventilation*. Thank you Mike, for your hard work!

It's hard to believe, but Respiratory Therapy Week is just around the corner! This year Respiratory Therapy Week is scheduled for September 28 to October 4. To assist you with your planning activities, we have included the catalogue of available merchandise available through the CSRT at very reasonable prices.

We hope you enjoy this issue!

Allan Shemanko, RRT
President, CJRT

On Air

Queen's Golden Jubilee Medal Winner

Jan Haffner, B.P.T., C.A.E.

Fran Hill R.R.T., has been presented with the Queen's Golden Jubilee Medal.

Deirdre Freiheit, CEO for the Canadian Lung Association, was on hand for the ceremony. She commented at the Annual Awards Banquet, held April 16, 2003, that "This medal is presented to Canadians

who have made significant and prolonged contributions to society, and in particular to their communities. Fran Hill has greatly contributed nationally through her involvement with the Canadian Lung Association's Sleep Apnea Working Group."

There are two words to describe Fran in relation to her professional career — passionate and energetic. With a seemingly unlimited source of energy she meets each challenge with enthusiasm and a deep desire to improve the health and lives of those who live with lung disease and their families.

Fran graduated with a Respiratory Therapy Associate Degree in Applied Science in 1994. She began her work with the Lung Association in Saskatchewan six years ago as the Home Respiratory Therapy Coordinator. In this role she provides contract services for the SAIL Home Oxygen program in the province of Saskatchewan. She travels extensively throughout Saskatchewan, providing home oxygen workshops for health professionals.

Fran a CSRT member, has accomplished much to raise the awareness of obstructive sleep apnea. She is frequently asked to speak on sleep apnea to the public and to health care professionals. She has been an extremely active member of the Sleep Apnea Working



Fran Hill (right), with CLA CEO Deindre Freiheit

Group and has been responsible for the development of the Canadian Lung Association sleep apnea website at www.lung.ca. She publishes the on-line "Cybersnewzzzz" which is available six times a year. In addition, she has developed the Sleep Apnea Handbook which is now widely used and distributed throughout Canada, and is available in English, French and Chinese.

Fran has taught extensively to many audiences and is well respected for her knowledge and skills in caring for people with lung disease. She is always a willing teacher. The Canadian Lung Association and the CSRT congratulate Fran on her well-deserved award.

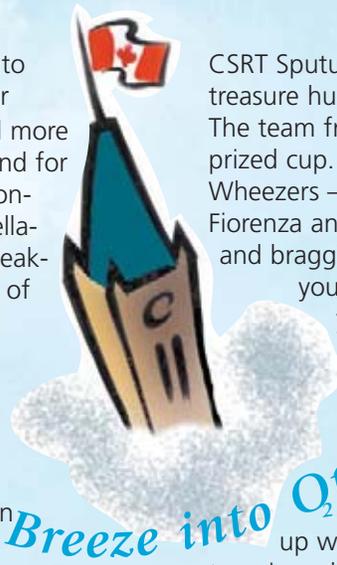
Jan Haffner B.P.T., C.A.E., is a Certified Asthma Educator, and Vice President — Health Initiatives for the Lung Association of Saskatchewan

Forum 2003 highlights

The CSRT Educational Forum, Breeze into Ottawa, was a great success, with over 40 exhibitors, about 200 delegates and more than 35 speakers and presenters on hand for the two-day event. Despite on-going concerns about SARS, there were no cancellations from exhibitors and only a few speakers were obligated to decline because of increased work commitments.

Thank you to Cherly Homuth and Ginette Greffe-Laliberté for their expeditious organization of a SARS Screening area. Pam Cogan did an excellent job of keeping the Registration Desk running like a well-oiled machine. Thank you Pam for a great job of orchestrating volunteers.

All sessions were well attended and some workshops were overflowing with attendees. Debates were lively and there was plenty of discussion in the breakout groups.



CSRT Sputum Cup Challenge was a three-legged treasure hunt race, organized by H el ene Brunette. The team from the Ottawa Hospital claimed the prized cup. Congratulations to the Bytown Wheezers — Dave Brown, Darren Thornton, Frank Fiorenza and Dave Swift who took home the glory and bragging rights to the Sputum Cup! Thank you H el ene for the wonderful ensembles you created for contestants!

Despite the cool conditions, the social soir ee was sold-out with over 180 aboard the Sea Prince II. First Mate Barry Robertson warmed the crowd up with a lively sea shanty. Guests went on to enjoy a buffet dinner, dancing and some great raffle prizes.

Where to next? CSRT Forum 2004 will be held in Toronto.



Daniel Par e presents the chain of office to incoming CSRT President Jim Winnick.



Daniel Par e presents the Professional Achievement Award to Catherine Burke-Tremblay of Summit Technologies.

and events photos



Robert Finch accepts the 2002 CSRT Gold Medal. He is also the Trudell Award winner for University College of the Cariboo.



Lisa Coes accepts the 2002 CSRT Bronze Medal. She is also the Trudell Award winner for Fanshawe College.



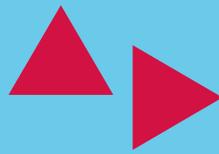
CSRT set up a precautionary SARS screening table, manned by Ivanette Stubbert.



Sputum Cup winners: Bytown Wheezers of Ottawa took home the Cup From left to right: Dave Swift, Frank Fiorenza, Darren Thornton, Dave Brown

All Forum 2003 photos courtesy of own roving cameraman, COLYA KAMINIARZ.

Want to see more photos? Check out Colya's web address
<http://homepage.mac.com/colya/PhotoAlbum5.html>



Calcutt departure

Ms. Luanne Calcutt is no longer with the CSRT. On behalf the Executive of the CSRT BOD I wish to thank Ms. Calcutt for her contributions and wish her well in her future endeavours.

As you may have noted on the website and in this edition of the journal, we are inviting applications for the position of Executive Director of the CSRT. Applications should be received in head office no later than July 31, 2003.

In the interim I would request that inquiries to the head office be directed to Sylvia Stiehl who will route them to myself or other members of the Executive or BOD as appropriate.

I thank you in advance for your patience and understanding if responses are a little slow. Every attempt will be made to address concerns of CSRT members on a priority basis.

Jim Winnick
CSRT President

Congratulations to the successful CARTA Exam writers — July 2002

Ms. Hong Zhang is the Trudell winner for SAIT

Amie Bradford
Melinda Cooke
Hazel Cruda
Tonia Cummings
Jeanette Dayton
Pamela Derochers
Abninder Dhaliwal
Prabhjot Dhillon
Susan Down
Krystin Gravelle
Alexandra Goojha
Elizabeth Fisher
Alison Harkness
Cynthia King

Shelly Labelle
Jeffery Little
Sheryl Postma
Barbara Presch
Jesse Robertson
Jason Schinbein
Chris Smeeth
Clive Southcombe
Aman Sraw
Matthew Stubbings
Susan Weatherbee
Karrie Wilkins
Sonia Wood
Kira Young
Hong Zhang

Air quality

Curious about the local pollutants in your air or the current pollen count? Check out these Weather Network sites:

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[http://www.theweathernetwork.com/features/pollen/pollen count](http://www.theweathernetwork.com/features/pollen/pollen%20count)

CALENDAR OF EVENTS

August 3–8, 2003
12th World Conference on Tobacco or Health (WCTOH)
Helsinki, Finland
<http://www.wctoh2003.org/>

August 10 – 14, 2003
10th World Conference on Lung Cancer
Vancouver, Canada
www.2003worldlungcancer.org

August 11 – 13, 2003
Annual Conference The Royal College of Physicians and Surgeons of Canada
Halifax, Nova Scotia
www.rcpsc.medical.org

September 27–October 1, 2003
European Respiratory Society — 13th Annual Congress
Vienna, Austria
<http://www.ersnet.org/0/0/0.asp>

October 11 – 15, 2003
American Society of Anesthesiologists Annual Meeting
San Francisco, California
Email: mail@ASAhq.org

October 18, 2003
Mount Sinai Hospital 2003 Obstetric Anesthesia Conference
Toronto, Ontario
Tel: (416) 586-4800/2931
Fax: (416) 586-8664
asta.juana@mtsinai.on.ca

October 25–30
American College of Physicians — Chest 2003
Orlando, Florida
<http://www.chestnet.org/CH/EST/>

November 5 – 8, 2003
7th Biennial Congress of Asian Oceanic Society of Regional Anesthesia and Pain Medicine
Bangkok, Thailand
Email: cdm@cdmthailand.com

November 27 – 29, 2003
Canada's Sixth National Conference on Asthma and Education/Sixième Conférence canadienne sur l'asthme et l'éducation (ASED 6)
Montreal, Quebec
Email: ased@cnac.net

December 8–11, 2003
AARC Congress — 49th International Respiratory Congress
Las Vegas, Nevada
<http://www.aarc.org/>

Message from the President

In this, my first message as CSRT President, I would like to take the opportunity to thank our immediate Past-President, Daniel Pare, for his commitment and tireless work for our Society this past year.



Jim Winnick

It was a challenging time for the CSRT, but a time filled with opportunity as well. In a new era of inter-provincial cooperation Daniel was instrumental in establishing the CSRT as a credible partner with the four regulated provinces in the Labor Mobility Consortium and the new National Alliance. Through this partnership the CSRT has participated in the establishment of a Mutual Recognition Agreement that provides an avenue for the movement of RTs between regulated and non-regulated jurisdictions. CSRT is also a partner in a process that will see the creation and validation of a truly national Competency Profile for the Respiratory Therapy profession in Canada. It is my firm belief that our success in these areas is due, in large part, to the honesty and integrity that Daniel brought to the discussions and negotiations. *Merci beaucoup mon ami*, it will be my privilege to continue and try to build on what you have accomplished.

This past year also saw the acceptance of the CoARTE accreditation process by the CRTO and the Ontario schools. I would like to acknowledge and thank Patricia Haaland, CoARTE secretariat, and the CoARTE council for their commitment to providing and maintaining such a high quality process.

I would also like to acknowledge and thank the organizing committee of this year's Forum in Ottawa and all the staff at the CSRT head office for their extra effort and long hours. I am pleased to announce that the CSRT's 40th birthday party, Forum and AGM will be held in Toronto, May 2004. Please watch the website and journal for dates and venue.

At the AGM in Ottawa, the by-laws supporting the new Board of Directors structure, were passed overwhelmingly. This paves the way to implement the new Board structure as of the next AGM in 2004.

Much work is yet to be done to make the new structure a reality and members of the current Executive and BOD will be busy over the next few months establishing job profiles for the new Director portfolios and terms of reference for the Advisory Cabinet for Education and Clinical Standards and the Advisory Cabinet for Professional Advocacy. We will also, as directed by the membership at the 2003 AGM, develop terms of reference and a bylaw establishing a provincial "house of representatives" to provide a continuing venue for provincial input to the CSRT Board.

Please read Brent Kitchen's article on CSRT Board restructuring page 14.

I invite the CSRT membership to put your names forward when the call for nominations comes. You'll get lots of extra work, no pay and the opportunity to make a meaningful difference in the development and advancement of our profession.

In closing, I thank you, the members of the CSRT, for the opportunity and privilege of serving you and our profession.

A stylized, handwritten signature in black ink, consisting of several loops and a long horizontal stroke.

Jim Winnick, RRT
CSRT President



FOUNDATION NEWS

Social Committee Makes Donation

The CSRT would like to extend its thanks to the Breeze into Ottawa Social Committee who did an outstanding job of organizing the Social Soirée dinner cruise. Despite the blustery, wet weather the event was sold out. With a captive audience, the Committee sold raffle tickets for several great gifts. Daniele Champeau of Montreal won a DVD player courtesy of Medigas; Kristin Homuth, of Ottawa also went home with a DVD player, courtesy of Pigeon Insurance; Wrae Hill of

Toronto won a gift basket from the City of Ottawa. VitalAire donated a wonderful chocolate-themed basket. In total, the Social Committee raised over \$900.00 for the Canadian Respiratory Therapy Foundation.

A great big thanks to:

Carole LeBlanc
Joan Norgren
Kathy Walker

A Special Thank You

Thank you to all our friends who donated to the Canadian Respiratory Therapy Foundation.

Mary Bayliss
Leah Bergstreiser
William F. Butler
Deanna Charlebois
Zelia Da Silva
Charles Frew
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Asleep at the Wheel

Sleepy or Intoxicated? You're Still Impaired

Les Matthews RRT

Thirty years ago drunk drivers were commonly escorted home and charges laid at the discretion of the police officer. As a teenager, I remember that drunk driving was considered unsafe, but most adults would say, "at least he or she's not doing drugs". Today driving while under the influence of alcohol or drugs is socially unacceptable. It is a well-known fact that drunk or impaired drivers kill thousands of Canadians every year and we are working towards reducing the numbers through every means possible. If you are driving a motor vehicle with a blood alcohol level above 0.08 you are considered to be legally impaired and a danger to society. The short and long term consequences of driving while over the limit are a deterrent to most.

The medical definition of impairment is "A loss or abnormality of psychological, physiological or physical function". In society one is impaired when their faculties are diminished so that their ability to see, hear, walk, talk, or judge distances is below the normal level considered to be safe.

Driving when you are sleepy can have exactly the same consequences as driving when you are drunk. As a matter of fact, you are impaired when you are sleepy and even a small amount of alcohol can significantly compound the impairment. One study demonstrated that going 20 hours without sleep was equivalent to a blood alcohol level of 0.10 — well over the legal limit. The studies are also demonstrating that if you are sleepy while you are doing anything potentially dangerous you are at much greater risk of having an accident.

Sleep debt is accumulative. If you miss one hour of sleep per night for 20 nights it will have the same affect as going for 20 hours with out sleep. Imagine the impact of going for months or years without a proper nights sleep. We must also keep in mind that when you combine drugs or alcohol and sleepiness the effects are dangerously compounded. Someone who has chronic sleepiness or fatigue may be impaired without ever having a drink. We should consider this in the equation when we let friends or colleagues work, drive or engage in any dangerous activities.

Unfortunately our society is treating sleepiness in much the same way alcohol was being treated years ago. Although we can see the danger we tend to brush it off. A significant number of motor vehicle accidents are directly related to fatigue or sleepiness. We need to wake up and see the terrible impact this problem has on our society. Too many distractions keep us from sleeping properly and there isn't enough public education about the dangers of driving or working while sleepy. Today, millions of dollars are being spent on sleep research and there are answers that didn't exist even five years ago. If you or someone you know is at risk — get help. Friends and colleagues shouldn't let friends and colleagues drive or work sleepy. The consequences may be devastating.

Les Matthews RRT (A) MA, is Sleep Disorders Clinic Coordinator at University College of the Cariboo.

CoARTE Update

Relationship between CSRT Board of Directors and CoARTE

- It is the CSRT's accreditation program.
- CoARTE is a council of the CSRT.
- CSRT Board of Directors holds liability and ultimate financial responsibility.
- CSRT provides the accreditation secretariat in Ottawa.
- CSRT allocates finances from membership fees for CoARTE operations, to supplement the annual fees from the schools and annual administrative fees from the regulatory bodies.
- CoARTE is the accrediting body that accords accreditation status to the schools.
- CoARTE operates independently from the CSRT Board.
- CSRT Board cannot overturn any accreditation status decision made by CoARTE.
- CSRT Board has no influence on the day-to-day operations of CoARTE.
- CoARTE accredits to the CSRT entry-to-practice document, currently the CSRT Occupational Profile.
- CSRT approves schools that have been accredited/approved by CoARTE; graduates from these schools are eligible to write the CSRT national certification examination.
- In provinces where regulatory bodies are responsible for approving educational programs, contracts for CoARTE accreditation services are with the CSRT.
- The Accreditation Secretariat provides regular reports to the CSRT Board of Directors for information.

Accreditation Workshop

The May 2003 accreditation workshop in Ottawa was a great success. Representatives from all the Ontario schools were present: program coordinators, senior administrators, clinical managers/educators and some faculty. Additionally, the CRTO provided three respiratory therapists to be trained as CRTO representatives on program review teams for the Ontario schools.

Other participants included two CoARTE members, the program coordinator from Vanier College and a respiratory therapist involved with the development of a new university program for respiratory therapy in Ontario.

Quebec Schools

Recently, the four Francophone schools in Quebec expressed an interest in learning about CoARTE. Patricia Haaland, Consultant for CoARTE, gave a presentation in Quebec City on June 9, accompanied by Janet Louise Vachon whose role is to provide administrative support for the accreditation secretariat one day a week.

Program coordinators from all the Quebec schools, including Vanier College, which has already attained CoARTE approval, attended the five-hour meeting. Some faculty members and senior administrators were also in attendance. A representative from the provincial regulatory body, OPIQ, came for the afternoon.

Overall, this first meeting was very positive and the schools are interested in seeking CoARTE approval. A teleconference for CoARTE members has been scheduled for later in June to discuss questions raised by the schools.

2003 Site Visits

The College of the North Atlantic, NF and the New Brunswick Community College-Saint John have submitted their applications for accreditation, (Self-Study). Site visits are scheduled for September and November respectively.

2004 Site Visits

The University College of the Cariboo, BC and Vanier College in Montreal are scheduled for site visits March and October respectively.

CoARTE Annual Meeting

The next annual meeting will be in Ottawa on Sunday November 16, 2003, pushed back from May. If any stakeholder wishes CoARTE to consider a particular issue, please submit by e-mail to phaaland@csrt.com by October 1, 2003.

The Council on Accreditation for Respiratory Therapy Education (CoARTE, pronounced CO-AR-TEE) is the national accrediting body for respiratory therapy educational programs.

Asthma Trec:

The Asthma Training and Educator Course Offered by the NB Lung Association

**October 16–19th, 2003
Moncton, New Brunswick**

The asthma training and educator course that gives health education professionals the latest information and training in asthma care based on the Canadian Consensus Guidelines. The course also prepares you to write a national asthma educator certification exam.

64 NCPD credits from the Canadian Society of Respiratory Therapists

For more information contact:

Theresa Bartlett BA, BN, RN
NB Lung Association
1-800-565-LUNG or (506) 455-8961

theresa.bartlett@nb.lung.ca

Our Apologies

In the Forum Edition of the *CJRT* May 2003, Brent Kitchen was introduced as CSRT President-Elect. At that point in time he was nominated as President-Elect.

As of June 1, 2003, Brent has taken the position of CSRT President-Elect.

The CSRT wishes to acknowledge the on-going support of our Corporate Partners. Sponsorship by our Corporate Partners helps the CSRT maintain the current standards of excellence in the profession. Thank you!

CSRT Corporate Partners 2003 – 2004

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Trudell Medical Marketing
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New Structure for the CSRT Board of Directors

What's it all about?

Brent Kitchen, RRT

At the CSRT Annual General Meeting held in Ottawa, June 1, 2003, the membership approved bylaw changes that were required to change how the CSRT Board of Directors is structured. The Long-Range Planning Committee recommended these changes in 2001. A mailout ballot of the membership was conducted in November of 2002, which had a response rate of 26% (which is considered to be a good response for a mailout ballot), 90% of members voted in favour of the changes.

Why Restructure?

The Board of Directors (BOD) manages the affairs of the CSRT. When the CSRT Long-Range Planning Committee reviewed how the BOD was structured, and how the provincial presidents who make up the BOD were elected, it identified some key concerns. At one time most CSRT Directors were the presidents of the provincial divisions of the CSRT (the association/society of each province). Once some provinces became self-regulated, it became the president of the college and association in some of the regulated provinces who sat on the CSRT BOD. Members of the colleges in these provinces who elect these presidents are not necessarily CSRT members, so the college president who was sitting on the CSRT BOD was not necessarily elected by the CSRT members. The CSRT could therefore not guarantee that its entire BOD was elected by CSRT members and was representing them appropriately.

At times the old structure also put these representatives in a conflict of interest situation. Were they there to represent their province or to represent the profession nationally? Sometimes the interests of one province can conflict with the interests of the profession overall.

Other issues were identified when the old structure was reviewed. If a Board member is also the president of their provincial body, can they really dedicate all the time needed to do the work of the CSRT? The Long-Range Planning Committee identified key issues on which the CSRT needed to focus and decided that the organization would be best served if Directors on the Board had specific portfolios with responsibilities to work towards addressing these issues (ie. membership services, professional advocacy, national/provincial relations). There is also a desire to have people with certain qualifications take on each of these specific portfolios, which would have been difficult under the old structure.

The New Structure

A new structure was proposed to address each of the concerns identified by the Long-Range Planning Committee. Each of the Directors will now be elected by the general membership through a mailout ballot. Each of the Directors will have a specific portfolio to manage and a nomination committee will be searching for people with specific skill sets and experience to stand for election to these positions. Now only

CSRT members will elect the BOD. Directors will not have the responsibility of also having to do the work of a provincial body. Each of the Directors will now have a specific portfolio that they will be elected to manage. The portfolios are:

- President
- President-elect
- Past-President
- Treasurer/Chair of the Finance Committee
- Director of Human Resources (to manage legalities, job descriptions for positions, committees, etc.)
- Director of Education and Clinical Standards (to Chair the Advisory Cabinet of Education/Standards)
- Director of Professional Advocacy (to Chair the Advisory Cabinet for Professional Advancement)
- Director of Membership Services (*CJRT*, Education forum, web site development, member benefits, etc.)
- Director of National/Provincial Relations (to link with the proposed House of Delegates to ensure that all regions of the country are represented)

These nine directors, plus a public member will make up the CSRT Board. The Board was previously composed of 13 directors, but could have had as many as 15 under the old structure.

One of the key concerns that members brought forward was the possible loss of provincial or regional representation with the new structure. The CSRT BOD heard these concerns. At the 2004 Annual General Meeting the CSRT BOD will be presenting a bylaw to create the CSRT House of Delegates. The House of Delegates will act as a representative body of the CSRT members in each of the provinces. It will participate in establishing the goals and objectives of the CSRT and participate in governing the society.

What's Next?

This is a year of transition for the CSRT BOD. The bylaws required to make the changes have been approved. The current BOD, still composed under the old structure, is in the process of creating job descriptions for each of the new Director positions. The nomination committee is being formed to begin the search for individuals who will run for the director positions next year. Next spring members will receive mailout ballots to vote for the individuals who will make up your new Board.

If you have questions about the new Board positions or have an interest in running for a position on the Board, please contact the CSRT head office or myself at brent.kitchen@rqhealth.ca. Please consider serving your profession, which has served so many of us so well.

Brent Kitchen, RRT, is the President-elect of the CSRT. He is currently at the Regina Qu'Appelle Health Region, in Regina.

National Leadership Issues Facing Respiratory Therapists

Gil Vergilio, RRT (A) M.Ed., Quality Management Advisor, Fraser Health Authority
Nancy Garvey, RRT/RRCP CAE, Clinical Research Manager, Hospital for Sick Children

Introduction

The leadership issues facing Respiratory Therapy are well-known and for the most part national in scope. Over the past few decades Respiratory Therapists practicing in Canada have been affected by three major external influences:

- the implementation of profession-specific Colleges to regulate professional practice
- the introduction of various models of health care service delivery within particular health care settings and,
- the restructuring of health care systems within each province.

Multiple hospital sites, the lack of a traditional department and/or involvement in multiple programs are all challenges to providing "the best" respiratory care to our patients.

The current structural changes occurring in Canada's health care system present significant challenges for our profession's leadership. With these changes come significant opportunities for growth and development. Respiratory Therapy leaders are being challenged to oversee the efficient and effective delivery of clinical services and, to lead the movement within their organization in identifying and implementing "best practices" in respiratory care. In other words we are being asked to not only "do things right" but to ensure that we are "doing the right things right".

How we respond to the growing demands for the delivery of high quality clinical services and the ongoing implementation of best practices will greatly impact our role within a restructures health care system, and our ability to grow and develop as a profession.

Concurrent Sessions on Leadership

The sessions were held during the CSRT Annual Educational Forum in Ottawa, May 30 and 31, 2003. The purpose of the sessions was to create a framework for the support and ongoing development of the leadership within Respiratory Therapy. This day long session, chaired by Nancy Garvey provided a series of timely presentations and panel discussions to review some of the pressing issues facing our professional leadership. Response from the members at the forum was overwhelming with about 75 participants in attendance.

Leadership Break-Out Group

The "Break-Out Group" met at the end of the day to brainstorm and identify key issues Respiratory Therapists are facing during this unstable period of continuous change and what is needed to support their efforts. An active, lively discussion from the group identified several opportunities to support leadership. There were several suggestions for nationally based initiatives/programs that will hopefully be considered by the CSRT. They include:

- The development of a national "special interest group" under the CSRT's bylaws for Respiratory Therapy leadership. Such a group could be given the mandate to develop other national leadership initiatives.
- The development of a consulting service for conducting external operational reviews. This would consist of members of the profession with the appropriate expertise.

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LA SOCIÉTÉ CANADIENNE DES THÉRAPEUTES RESPIRATOIRES

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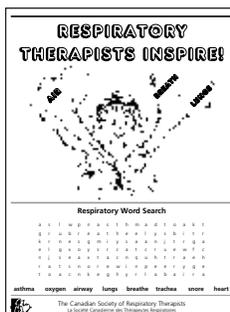
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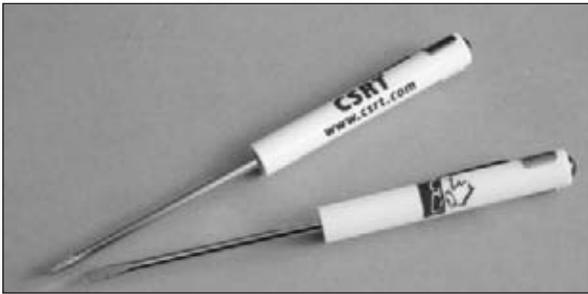
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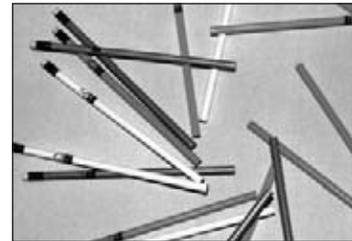
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- The development of a “national quality assurance program”. This would involve the development of national standards and a mechanism for Respiratory Therapy services to be recognized for meeting the standards and establishing best practices in the field of respiratory care.
- The development of a national database for practice/service standards

These represent just a few of the suggestions that were brought forward. The CSRT will look at providing a more detailed version of the notes from the Break-Out Group on the list serve in the near future.

Future Activities

Another leadership session is being tentatively planned for the coming CSRT educational forum in 2004. I would encourage any Respiratory Therapists that are interested in participating in

leadership support activities to monitor the journal for upcoming events and/or contact Nancy Garvey or Gil Vergilio directly. They can be reached at the following email addresses:
nancy@garvey.net
gil.vergilio@fraserhealth.ca

Gil Vergilio is currently Quality Management Advisor at the Peace Arch Hospital, Fraser Health Authority, Surrey, BC. He is past president of both the Canadian and the BC Society's for Respiratory Therapists. He was also a Presenter at the CSRT Forum 2003.

Nancy Garvey is currently working as a Clinical Research Manager at the Hospital for Sick Children, Toronto. She was a moderator for several sessions at the CSRT Forum 2003.

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Abstracts

Exercise Training Improves Exertional Dyspnea in Patients With COPD* Evidence of the Role of Mechanical Factors

Francesco Gigliotti, MD; Claudia Coli, MD; Roberto Bianchi, MD; Isabella Romagnoli, MD; Barbara Lanini, MD; Barbara Binazzi, MD and Giorgio Scano, MD, FCCP

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Background: To our knowledge, no data have been reported on the effects of exercise training (EXT) on central respiratory motor output or neuromuscular coupling (NMC) of the ventilatory pump, and their potential association with exertional dyspnea. Accurate assessment of these important clinical outcomes is integral to effective management of breathlessness of patients with COPD.

Material and methods: Twenty consecutive patients with stable moderate-to-severe COPD were tested at 6-week intervals at baseline, after a nonintervention control period (pre-EXT), and after EXT. Patients entered an outpatient pulmonary rehabilitation program involving regular exercise on a bicycle. Incremental symptom-limited exercise testing (1-min increments of 10 W) was performed on an electronically braked cycle ergometer. Oxygen uptake (O_2), carbon dioxide output (CO_2), minute ventilation (E), time, and volume components of the respiratory cycle and, in six patients, esophageal pressure swings (Pessw), both as actual values and as percentage of maximal (most negative in sign) esophageal pressure during sniff maneuver (Pessn), were measured continuously over the runs. Exertional dyspnea and leg effort were evaluated by administering a Borg scale.

Results: Measurements at baseline and pre-EXT were similar. Significant increase in exercise capacity was found in response to EXT: (1) peak work rate (WR), O_2 , CO_2 , E, tidal volume (VT), and heart rate increased, while peak exertional dyspnea and leg effort did not significantly change; (2) exertional dyspnea/ O_2 and exertional dyspnea/ CO_2 decreased while E/ O_2 and E/ CO_2 remained unchanged. The slope of both exertional dyspnea and leg effort relative to E fell significantly after EXT; (3) at standardized WR, E, and CO_2 , exertional dyspnea and leg effort decreased while inspiratory capacity (IC) increased. Decrease in E was accomplished primarily by decrease in respiratory rate (RR) and increase in both inspiratory time (TI) and expiratory time; VT slightly increased, while inspiratory drive (VT/TI) and duty cycle (TI/total time of the respiratory cycle) remained unchanged. The decrease in Pessw and the increase in VT were associated with lower exertional dyspnea after EXT; (4) at standardized E, VT, RR, and IC, Pessw and Pessw(%Pessn)/VT remained unchanged while exertional dyspnea and leg effort decreased with EXT.

Conclusion: In conclusion, increases in NMC, aerobic capacity, and tolerance to dyspnogetic stimuli and possibly breathing retraining are likely to contribute to the relief of both exertional dyspnea and leg effort after EXT.

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<http://www.chestjournal.org/cgi/content/abstract/123/6/1794>

Noninvasive Positive Pressure Ventilation in Critical Care

Michael Lemphers, RRT

Invasive mechanical ventilation (via an endotracheal or tracheostomy tube) is associated with serious complications.^{1, 3, 6, 8, 9} Many of these adverse effects may be reduced or avoided with the use of noninvasive mechanical ventilation (NPPV).^{1, 2, 4, 5, 7}

This review details the results of a computerized literature search from 1996 to April 2003. It outlines the potential benefits and complications of using NPPV compared to invasive mechanical ventilation. As well, this review describes the equipment required and its potential applications.

Potential benefits of using NPPV

The goals of NPPV are to provide adequate oxygenation and CO₂ elimination. NPPV appears to have the highest efficacy in patients with acute exacerbations of chronic obstructive pulmonary disease (COPD) with hypercapnic ventilatory failure.^{1, 2, 4, 10}

Endotracheal intubation may result in injury to the teeth, oropharynx, larynx and trachea. NPPV has been shown to decrease the requirement for intubation in certain disease states.^{1, 2, 4, 10}

Endotracheal tubes bypass the normal upper airway defense mechanisms. They increase the incidence of nosocomial pneumonia (NP).^{1, 10} Nava et al reported 0% NP in the NPPV weaning group and 28% in the MV weaning group.⁹ Girou et al demonstrated that patients who were invasively mechanically ventilated (MV) had 175% greater incidence in NP compared to those patients who received NPPV (22% vs. 8% respectively, $p = 0.04$).¹¹

NPPV may decrease patient care costs. Keenan et al concluded for COPD exacerbations that NPPV not only decreased intubation rates and patient mortality compared to MV, but also, NPPV costs less per patient admission.¹² Girou et al reported that the

NPPV patients had a decreased mean Intensive Care Unit (ICU) length of stay (LOS) compared to the MV patients (9 vs. 15 days, $p = 0.02$).¹¹ This conclusion was supported by Antonelli et al who reported a mean ICU LOS of 6.6 days for the NPPV group survivors compared to 14 days ($p = 0.002$) for the MV group survivors.⁴ Nava et al also demonstrated a reduced mean ICU LOS for the NPPV weaning group compared to the MV weaning group (15.1 vs. 24.0 days respectively, $p = 0.005$).⁹ Conversely, Martin et al demonstrated no difference in ICU LOS between NPPV and MV groups treated for acute respiratory failure.¹³

Equipment required for NPPV

Patient interface

The most common interface between the ventilatory device and the patient is a mask. This mask may be nasal or full-face (oronasal).^{1, 2} The nasal mask is primarily used for chronic disorders. The clinician may apply nasal "pillows" instead of a nasal mask. These are soft compressible pads that seal directly against each nare. The full-face mask is more commonly used for acute conditions.^{1, 2} The full-face mask allows for higher ventilating pressures with less gas leaks than in the nasal mask. However, the full-face mask may increase the risk of aspiration of gastric contents. They also tend to result in pressure necrosis to the bridge of the patient's nose. Newer full-face masks potentially reduce these pressure injuries by using better mask seal materials and seal designs.¹

Less commonly, the patient may replace the mask with a mouthpiece. These may be customized for chronic patients. Patients with neuromuscular disease have had success with this apparatus.¹

Ventilatory devices and delivery modes

Available devices include critical care ventilators and bilevel pressure generators. Critical care ventilators have more alarms and modes of breath delivery than do the pressure generators. The ventilators provide a set pressure and/or volume while the pressure generators will only provide a set pressure.^{1, 2}

Volume ventilation maintains a set volume in the presence of changing patient dynamics. This may result in high peak pressures during breath delivery. This may increase gastric inflation.

Currently, pressure ventilation is more common than volume ventilation for the clinical application of NPPV. It maintains a set pressure during breath delivery. However, patient tidal volume will vary with changes in patient dynamics.^{1, 2} Pressure ventilation may be delivered via pressure support (PSV) or pressure control (PCV). PSV breaths are patient-triggered to inspiration and pressure or flow-cycled to expiration. The patient will only receive a breath if he/she makes an inspiratory effort. PCV breaths are time and patient-triggered to inspiration and time-cycled to expiration. The clinician sets a respiratory rate above which the patient may exceed if desired. The patient may be more likely to encounter mask interface leaks during volume ventilation because ventilating pressures are not set and may vary to a high level. These will decrease delivered tidal volume.² The clinician generally sets the tidal volume higher (between 10 – 15 mL/Kg) to compensate for this.¹ Leaks during pressure ventilation will usually increase inspiratory time and may decrease delivered tidal volume.² Proportional assist ventilation (PAV) is a relatively new mode of pressure ventilation. It automatically adjusts pressure levels to provide support for a given percentage of the patient's work of breathing. There is no conclusive evidence regarding the efficacy of PAV in NPPV.²

Continuous positive airway pressure (CPAP) may be noninvasively applied to a patient. In CPAP, the patient breathes spontaneously at an elevated baseline pressure. The patient's breath is not assisted. CPAP is technically not a mode of NPPV because inspiratory support is not given above the baseline pressure.¹

Application of NPPV for specific acute disorders

Several studies have recently been published assessing the effectiveness of NPPV in treating ARF.^{3-5, 12-15} NPPV efficacy in treating ARF varies with the causative disease process. For NPPV to be of benefit, the deterioration must be potentially reversible within "days."¹

COPD

COPD patients represent the largest patient group that has been studied concerning NPPV effectiveness.¹ A 2001 International Consensus Conference committee recommended consideration of NPPV for COPD patients who develop "rapid clinical deterioration."² In their January 2000 review of NPPV literature, Antonelli and Conti stated that NPPV is effective in treating COPD patients.³ They also state that as long as there are no contraindications to the use of NPPV, COPD patients with an acute exacerbation of their disease should always undergo a trial of NPPV.³ NPPV decreases endotracheal intubation in patients with acute severe COPD exacerbations.^{1-3, 5, 10, 12, 14} If set appropriately for COPD patients, NPPV decreases patient breathing effort and PaCO₂ levels.³ COPD patients may not need to be alert to benefit from NPPV.^{1, 3}

Asthma

Soroksky et al have published the only randomized, controlled trial studying the efficacy of NPPV in asthma.¹⁵ They compared outcomes in severe asthmatics treated with NPPV via a nasal mask and conventional pharmacology (treatment group) to those patients treated with conventional pharmacology alone (control group). The investigators initially used an inspiratory positive airway pressure (IPAP) of 8 cmH₂O (up to 15 cmH₂O) for the treatment group. They also employed an expiratory positive airway pressure (EPAP) of 3 cmH₂O (up to a maximum of 5 cmH₂O). The investigators also applied a "placebo" NPPV to the control group with both IPAP and EPAP settings at 1 cmH₂O. This was considered by the investigators to be a "subtherapeutic" level of NPPV. The treatment group had a greater mean percentage improvement in forced expiratory volume in 1 second (FEV₁) compared to control group after 3 hours of treatment (51.1% vs. 24.1% respectively, p = 0.002). Mean percentage improvement in peak expiratory flowrate after 3 hours was

also greater in the treatment group than in the control group (55.5% vs. 21.9% respectively, $p = 0.02$). As well, mean percentage improvement in forced vital capacity (FVC) after 3 hours of treatment was higher in the treatment group compared to the control group (48.9 vs. 15.8% respectively, $p < 0.001$). The authors speculated that the use of NPPV may have resulted in improved pulmonary function by unloading the respiratory muscle workload, causing direct bronchodilation, counteracting intrinsic PEEP levels and/or recruiting collapsed alveoli.

Meduri et al reported their experience with using NPPV on 17 status asthmaticus patients.¹⁶ Two patients required intubation for worsening respiratory acidosis. All of the patients survived. The authors concluded that NPPV may be effective in treating status asthmaticus. However, without having a control group, it is possible that the patients may have improved with pharmacological therapy alone.

Although NPPV may indeed unload the inspiratory workload on the respiratory muscles due to dynamic hyperinflation,¹⁶ more randomized controlled trials are needed to determine the benefit of using NPPV for severe asthma and status asthmaticus patients.

Hypoxemic ARF

The International Consensus Conference committee reported that findings are unclear regarding the efficacy of NPPV in the treatment of hypoxemic ARF.² They concluded that more controlled studies are required in this area. If the hypoxemia is accompanied by hypercapnia, the patient may achieve greater benefit from NPPV than if the patient has a $\text{PaCO}_2 < 45$ mmHg.¹

Antonelli et al published a randomized, controlled trial involving 64 patients comparing NPPV versus invasive mechanical ventilation for the treatment of hypoxemic ARF.⁴ COPD patients were excluded from this study. The NPPV group had a higher ICU survival rate than the mechanical ventilation group (72% vs. 53%, $p = 0.19$). As well, only 31% of the NPPV required intubation and invasive mechanical ventilation.

Confalonieri et al published a randomized, controlled trial studying the effectiveness of NPPV versus standard high-flow oxygen therapy.¹⁷ The NPPV group had a significantly lower intubation rate and mean ICU LOS than did the standard therapy group (21% vs. 50%, $p = 0.03$; 1.8 vs. 6.0 days, $p = 0.04$ respectively).

Wood et al assessed the efficacy of NPPV versus conventional therapy at reducing intubation and mechanical ventilation in the emergency department.¹⁸ Both groups had similar intubation rates. The NPPV group showed a trend towards possibly increased mortality rates (25% vs. 0.0%, $p = 0.123$). However, the NPPV group ($n = 16$) had 7 patients (43.8%) that had an admitting diagnosis of pneumonia while the standard therapy group only had 2 patients (18.2%) with the same diagnosis.

Delclaux et al presented a randomized, controlled trial comparing continuous positive airway pressure (CPAP) versus standard oxygen therapy in the treatment of acute hypoxemic nonhypercapnic respiratory insufficiency.⁶ CPAP did not reduce intubation nor did it improve outcome. Moreover, 4 patients in the CPAP group developed cardiac arrest while no one in the standard therapy group experienced this ($p = 0.14$). 3 of the 4 cardiac arrests occurred at the time of scheduled intubation.

The question arises: Did the CPAP prolong the inevitable intubations in these patients until they were too unstable to survive the intubation attempts? The other arrest occurred when the CPAP mask was removed for nursing care. As this is such a large, diverse group of patients, more studies are needed to determine which patient subgroups may benefit from NPPV.¹

Cardiogenic pulmonary edema

Mehta et al published a randomized, controlled trial comparing NPPV versus CPAP for the treatment of acute cardiogenic pulmonary edema (CPE).¹⁹ Both interventions were applied nasally in this study. The investigators reported that NPPV decreased PaCO_2 more quickly than did CPAP. Only respiratory rate decreased significantly with CPAP alone. However, a greater number of patients developed acute myocardial infarction in the NPPV group than

in the CPAP group (71% vs. 31% respectively, $p = 0.05$). The study was terminated early because of this finding. Interestingly, there were a higher number of patients with chest pain in the NPPV group compared to the CPAP group upon entry into the study (also 71% vs. 31% respectively).

Park et al completed a randomized, controlled study comparing oxygen therapy, CPAP and NPPV for the treatment of CPE.²⁰ After 10 minutes of therapy, the NPPV group had the highest PaO₂ and the lowest respiration rate of all 3 treatment groups. They used a lower initial CPAP pressure (5 cmH₂O vs. 10 cmH₂O) for the CPAP group than applied by Mehta et al in their study. Park et al also used lower initial inspiratory and expiratory pressures for the NPPV group (8/3 cmH₂O vs. 15/5 cmH₂O) than used by Mehta et al. Park et al. stated that their rationale for the lower initial CPAP and NPPV pressures was to minimize preload reduction. Park et al reported that 40% (4/10 patients, $p < 0.05$) of the oxygen therapy group and 33.3% (3/9 patients, $p < 0.05$) of the CPAP group required intubation. None (0/7 patients, $p < 0.05$) of the NPPV group required intubation. One death occurred in this study. It was the result of a new acute myocardial infarction in the CPAP group. Although the study by Park et al showed promising results for the treatment of CPE with NPPV, more randomized controlled trials with a larger sample size are necessary.

In their 1998 systematic review of NPPV and CPAP for the treatment of CPE, Pang et al concluded that noninvasive CPAP appears to reduce intubation rates on patients with CPE.²¹ They also stated that NPPV required further study in this area before it can be recommended as a treatment for CPE.

The International Consensus Conference committee recommended that the addition of CPAP to standard therapy may improve cardiopulmonary status and reduce intubations in patients with CPE.²

The use of NPPV following extubation

Girault et al published a randomized, controlled study evaluating the effectiveness of NPPV versus invasive pressure support ventilation (IPSV) following a failed 2-hour T-piece trial.⁸ NPPV reduced the duration of intubation. However, mean total

duration of ventilatory support related to weaning was greater in the NPPV group than in the IPSV group (3.46 vs. 11.54 days, $p = 0.0001$). The ICU and hospital LOS was similar between both groups. Nava et al completed a randomized, controlled trial that compared IPSV and NPPV weaning effectiveness in COPD patients who failed a spontaneous T-piece breathing trial.⁹ NPPV had a higher success rate (88% vs. 68%, no "p" value reported) and shorter mean ICU LOS (15.1 vs. 24.0 days, $p = 0.005$) for weaning compared to the IPSV group. The NPPV group also had a higher 60-day survival rate (92% vs. 72%, $p = 0.009$). None of the NPPV patients developed nosocomial pneumonia while 7 patients (28%, no "p" value reported) in the IPSV group did.

Keenan et al compared NPPV versus standard therapy for patients who developed respiratory distress within 48 hours postextubation.²² The patients had a variety of causative disorders that originally led to mechanical ventilation. The investigators reported no benefits for the routine use of NPPV for all patients who developed respiratory distress following extubation. However, Keenan et al did state that the success of NPPV correlates positively with the experience of those using it. Other institutions with more experience may have more favourable outcomes.

The International Consensus Conference committee recommended more randomized, controlled trials in this area.²

Predictors of success for application of NPPV in critical care

According to Mehta and Hill,¹ the following will improve success of NPPV in the acute care setting:

- Younger age (see below)
- Lower severity of illness
- Cooperative and alert patient (not necessarily so for COPD exacerbation³)
- Patient breathing synchronous with NPPV device
- Intact teeth
- Hypercapnia (PaCO₂ between 46–92 mmHg)
- Acidemia (pH between 7.11–7.34)
- Improved oxygenation, CO₂ removal, heart rate and respiratory rate between 30 minutes³ to 2 hours after application of NPPV

Age was not related to outcome in the study by Anton et al.²³ The investigators assessed prediction of NPPV success in patients with chronic airflow limitation. They also reported that improvements in blood gas values and level of consciousness < 1 hour after application of NPPV in COPD patients were associated with improved outcome. Antonelli and Conti added that if the patient's mental status does not improve within 30 minutes after initiation of NPPV, the NPPV should be discontinued.³

Selection of patients for NPPV

Metha and Hill published a comprehensive NPPV literature review in February 2001.¹ They presented NPPV selection guidelines for patients with acute respiratory failure. The guidelines incorporated a two-step process.

The first step **identified patients** who may benefit from intubation or NPPV. This involved assessing for objective and subjective evidence of sudden respiratory distress. Blood gas criteria included $\text{PaCO}_2 > 45$ mmHg with a $\text{pH} < 7.35$. Another qualifying criteria was a $\text{PaO}_2/\text{F}_i\text{O}_2 < 200$.

The second step **removed patients** who may be at risk of complications from NPPV. This included patients who had the following: respiratory arrest (or impending respiratory arrest), non-respiratory organ instability (such as shock and severe upper gastrointestinal bleeding, or uncontrolled cardiac dysrhythmias), an inability to protect airway, a large volume of secretions or anything interfering with proper mask fit (including facial trauma, surgery or burns). The International Consensus Conference on NPPV in acute respiratory failure (ARF) agreed with these recommendations, as well as adding the following to the list of contraindications to NPPV: cardiac arrest, severe cerebral dysfunction, upper airway obstruction, inability to spontaneously remove pulmonary secretions and, finally, patients with an elevated chance of aspiration of gastric contents.²

Moretti et al published a non-randomized study investigating NPPV failure following initial success in COPD patients.²⁴ They reported that failure after initial success (after 48 hours) occurs in approximately 20% of COPD patients. Patients that had one or more of the following complications

(accompanied by a "lower pH" and more severity of illness) had a greater chance of failing NPPV after initial success: pneumonia, cardiac dysfunction, acute renal failure, metabolic derangement, gastrointestinal complications, COPD exacerbation, coma, shock, sepsis and disseminated intravascular coagulation.

Settings for NPPV and CPAP

Though both volume and pressure NPPV appear to have similar outcomes, pressure NPPV may be more comfortable for the patients.

Some clinicians start with lower pressures and progress higher. Some start with higher pressures and decrease to a lower pressure. There are no studies comparing the two techniques.¹ Once the patient meets the criteria for selection and initiation of NPPV, the clinician must assess for patient compatibility with the NPPV (see the following section on Criteria for discontinuation of NPPV).

Inspiratory pressures should be set to achieve appropriate tidal volumes and reduction in work of breathing. COPD (and asthma) patients may require higher expiratory pressures due to elevated intrinsic PEEP levels.¹

CPE patients should be set on CPAP only at present. More randomized, controlled trials are required to support the use of NPPV for the treatment of CPE. The initial CPAP setting in most of the published literature is at approximately 10 cmH_2O .^{19, 21}

Complications of NPPV

NPPV has similar complications to invasive mechanical ventilation. Some adverse effects, such as nosocomial pneumonia, are reduced with the use of NPPV. Obviously, NPPV avoids endotracheal tube complications. NPPV has other complications primarily associated with the mask and increased oral/nasal pressure. These include: skin redness and ulceration, claustrophobia, nasal congestion, oral/nasal mucosal dryness and gastric inflation.¹ The use of hydrocolloid dressings and the lowest mask strap pressure possible may reduce skin irritation. Lower inspiratory pressures and simethicone may decrease gastric inflation. Prompt patient reassurance and assessment by the clinician may enhance patient compliance with NPPV.

Thiessen and Bursey concluded that patients who have large tidal volumes with high respiratory rates may rebreathe CO₂ on NPPV devices with single tube ventilator circuits.²⁵

Summary

The use of NPPV in the critical care setting has increased markedly over the past decade. It has been shown to reduce intubation rates, ICU LOS and mortality in certain patients. COPD patients benefit the most from NPPV. More randomized, controlled trials are required to determine its efficacy in asthma, hypoxemic ARF and CPE. Although NPPV might have promising results in the treatment of CPE, CPAP is currently the preferred method of therapy until more randomized, controlled trials are complete. NPPV may expedite weaning from mechanical ventilation. Appropriate patient selection and assessment is important for success of therapy. The clinician should discontinue NPPV and initiate invasive mechanical ventilation if the patient fails to benefit from NPPV within an appropriate time.

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SARS Diary

Carole Madeley, RRCP,RRT,CAE
Photo by Karen Johnson

The SARS situation has been an on-going topic of conversation, concern and debate since its outbreak. For those living outside the Greater Toronto Area, (GTA) I'd like to share with you my experience in the Lakeridge Health Oshawa (LHO) SARS clinic. Here are notes from my SARS Diary.



Carole Madeley ready for work at Lakeridge Health, Oshawa

March 27, 2003

Today there was a Provincial Directive from the Ministry of Health and Long Term Care to all Acute Care Hospitals in the GTA and Simcoe County to activate Code Orange.

A Code Orange is activated when the hospital has been alerted that a situation has arisen whereby the need for healthcare services may exceed or will exceed the hospital's current resources and ability. The stage may require the cancellation of normal activities and staff reassignment.

A Command Centre was established at LHO and staffed 24/7 by Managers, Program Leaders, our Chief of Staff, CEO and senior management team members. They worked collaboratively and kept all employees informed about the latest decisions made by the Provincial Operations Centre (POC), the Ministry of Health and Long Term Care and the Ontario Hospital Association.

The Commissioner of Public Health issued a precautionary directive for staff in the GTA and Simcoe County Emergency departments and clinics to wear protective clothing (gloves, gown, eye protection and mask — N95 or equivalent). Lakeridge Health added one other precautionary measure — our sites are closed to visitors and

volunteers. The only exceptions to the “no visitor” rule — the relatives of critically ill patients, partners of mothers expected to deliver and parents of small children. All visitors are required to wear surgical masks. Only one visitor is allowed in at a time. Security has provided with a list of visitors allowed to enter the hospital.

With the strict restriction on visitations, we have witnessed people crying as the security guard turned them away. Family and friends are very frustrated with the restrictions. This rule is still in effect.

Caring staff took the time to deliver personal items that were dropped off at the door for their patients and held telephones to patients' ears so they could speak to their family members. With the visitor restrictions, the nursing station is flooded with phone calls asking them to relay messages or to provide information to family members inquiring about their sick loved one.

Later, Lakeridge Health made arrangements to provide all patients with free telephone access. The hospitals have limited entrances for the staff and the public. All outpatient appointments and procedures are cancelled in order to reduce traffic in and out of the hospitals and ensure safety for patients and staff.

LHO, like many GTA hospitals, limited healthcare workers to working at one site. This places an enormous burden on the full-time staff because they now had to cover all shifts.

Anyone entering healthcare facilities must complete a SARS Screening Tool, which was developed for all Ontario healthcare facilities.

March 29, 2003

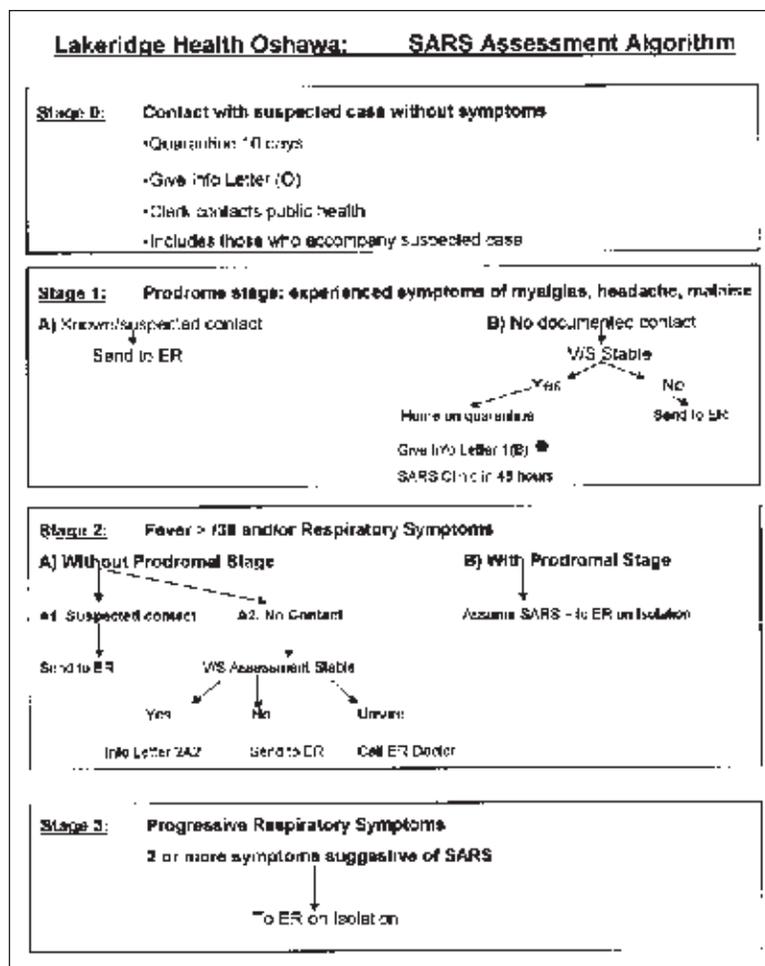
All staff at Lakeridge Health must wear a mask at all times while on duty. This, of course, includes all management right up to the CEO.

Discharged patients have been informed that SARS cases have been treated at the hospital and their risk of exposure is extremely low. They are asked to monitor their health for 10 days by taking their temperature twice a day for 10 days. If a fever, cough, shortness of breath, headache, muscle ache or extreme fatigue develops at any time during the 10-day period, they are directed to come to the SARS Assessment Clinic at Lakeridge Health Oshawa.

April 1, 2003

My Respiratory Rehabilitation Team has been asked to report in at Lakeridge Health Oshawa. It was no April Fool's Joke! We have been redeployed. We helped set-up the SARS clinic. Colleen Dooks, RN, MN, ACNP is our chief coordinator and, by the end of the day, the clinic was organized and ready to be opened for noon the next day, April 2, 2003. Our SARS clinic has two physicians in charge, Dr. David Ross, Respiriologist, and Dr. Michael Silverman, Infectious Disease Specialist, with one of them on call at all times.

Before the clinic doors opened, my team, along with the Pre-op assessment clinic nurses, Surgical Day Care nurses and their support staff and three Nurse Practitioners are given our instructions and also informed that if we were booked the first weekend to work, we would then also be expected to work the Easter weekend. At that moment,



Lakeridge Health, Oshawa — SARS Assessment Algorithm

I thought, "Oh my God! This is going to go on until Easter!"

Many of us usually work day-time hours Monday to Friday. Now we were all expected to work, noon to 8 p.m. including weekends. Car-pooling, babysitters and home schedules have to be revised as we all deal with our new work hours.

In the SARS Assessment Clinic, I work as a coordinator along with the Nurse Practitioners. The coordinator's duties involve assisting the nurses with the assessments and with the decision algorithm that assisted us with a care path. Coordinators also have to sign all the SARS assessment sheets and form letters that were handed out to patients. We consult

our physician on duty when necessary. At the end of each shift, we report our visits to the Command Centre, fax Public Health with the names of patients who need to be quarantined and fax our Occupational Health Nurse with the list of our healthcare staff that were assessed in the clinic.

The clinic has been set up in a separate area — adjacent to the hospital, for those who had been in contact with a suspected SARS case or who were experiencing SARS-like symptoms. Everyone entering the clinic is greeted outside the door by a Security Guard who provides them a mask and asks them to do an alcohol handwash.

Patients complete section A of the screening tool. Once admitted, each patient is assessed by an RN. The RN and the coordinator then decide which path of the algorithm the patient would follow, based on their symptoms. Patients returning to the community are provided with a letter signed by the coordinator giving them directions to follow and clearing them to be seen by their family physician or at a walk-in clinic.

In the SARS clinic, all staff are covered from head to toe with hair covers, goggles, masks, gowns, gloves and shoe covers. Every chair and patient assessment room is cleaned after each patient use.

April 9, 2003

Our mask order was lifted today, however many hospitals across the GTA are still wearing masks

April 28, 2003

The visitor restriction are still in place as well as the limited entrances to the hospitals. We are still under a Code Orange and the SARS screening tool continues to be used. Many hospitals across the GTA are still having employees wear masks. Toronto healthcare workers suffer from the added pressures of heavy workloads in strict SARS hospital environments.

May 23, 2003

New SARS outbreak in Toronto. SARS screening tool and visitor restrictions back in place.

May 31, 2003

Lakeridge Health Oshawa SARS Assessment Clinic is re-opened.

June 3, 2003

All staff, physicians, patients, visitors, volunteers and students are completing the SARS screening prior to entering Lakeridge Health sites or clinics.

June 4, 2003

New directions from the MOH-LTC for SARS prevention. N95 mask, gloves, eye protection and gown must be worn in all patient care areas at all times in all acute care hospitals.

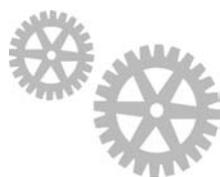
When caring for suspect or probable SARS patients and patients on enhanced contact and droplet precautions staff must double all protective barriers: double head covers, double goggles, double face mask or face shields, double gowns and double shoe covers.

As we slowly return to our NEW normal way of every day providing healthcare, SARS will stay. It's not going away! We are more cautious. This experience has changed our infection control practices and guidelines. It has changed the way we treat every respiratory case coming through the ER.

A Hood and Powered Air Purifying Respirator is now used when intubating known or suspected SARS patients. The hood is a loose fitting, positive pressure respirator headpiece. This headpiece system, when combined with an appropriate powered air purification blower unit or supplied air system, is designed to provide protection for staff from airborne/droplet pathogens during intubations, bronchoscopies with/or known SARS and SARS suspected patients.

Special thanks to my Respiratory Rehabilitation team (for always being supportive); to Colleen (great organizational skills); to Shari, Allison and Pam (very resourceful); to Dr. David Ross (always being there when I needed him); to Dr. Michael Silverman, Dr. Don Atkinson, the nurses and support staff (for taking on their new role and doing a great with it!); to Security and the Command Centre (for keeping us informed).

Carole Madeley, RRCP, RRT, CAE is a COPD Educator and the Team Leader at the Regional Respiratory Rehabilitation Program of Lakeridge Health. She also works part-time in acute care at the Ajax-Pickering Health Centre.



Enzyme May Play Unexpected Role in Asthma

In a finding that could have important implications for the millions who suffer from asthma, researchers funded by the National Institute of Allergy and Infectious Diseases (NIAID) have discovered novel sets of genes possibly involved in the disease. This study has also revealed what the scientists believe is a key role for the enzyme arginase in causing asthmatic symptoms. The research, led by Marc E. Rothenberg, M.D., Ph.D., of Cincinnati Children's Hospital Medical Center, opens the possibility of developing new anti-asthma drugs to block arginase activity.

Asthma is on the rise and causes thousands deaths a year. Although the subject of intense study, the condition remains poorly understood at the fundamental level. Dr. Rothenberg and his colleagues used mouse models of asthma along with "gene chip" technology to probe the underpinnings of asthma. "We've identified nearly 300 mouse genes, which we call asthma signature genes, that appear to be involved in asthma pathogenesis," notes Dr. Rothenberg. "This gives us an unprecedented insight into the orchestration of the large number of genes that give rise to asthma."

The findings, published in the current issue of *Journal of Clinical Investigation*, appear to apply in humans as well, says Dr. Rothenberg. If confirmed through further study, the new knowledge could lead to asthma treatments tailored to an individual patient's disease.

"NIAID has long supported both basic research into asthma and the translation of such basic knowledge into more effective treatment and prevention strategies," says NIAID Director Anthony S. Fauci, M.D. "This finding is an important step towards understanding the pathogenesis of asthma, and it provides new leads to interventions that could reduce the burden of this debilitating and sometimes deadly disease."

In their quest to identify the critical genes involved in asthma, Dr. Rothenberg and his colleagues induced asthma in mice, then analyzed lung tissue with gene chips to see which genes were most active following the attacks. Two strains of asthmatic mice were evaluated following two different methods of asthma

induction. A set of 496 genes was activated in the lungs of one mouse strain, while 527 genes "turned on" in the lungs of the second strain. Of these, 291 were same in both groups. The investigators called the shared genes "asthma signature genes."

The large number of genes involved in asthma-more than 6 percent of the mouse genome-came as some surprise, say lead authors Nives Zimmerman, M.D., and Nina King, Ph.D. Even more surprising, according to Dr. Rothenberg, was strong expression of genes involved in amino acid metabolism, in particular the gene encoding the enzyme arginase. Previously, arginase was thought to be limited primarily to the liver, where it helps process the amino acid arginine. "We've learned that arginase is involved in asthma regardless of the specific allergen used to induce the attack," says Dr. Rothenberg.

To learn whether arginase plays a role in human asthma as well, the scientists analyzed fluid and tissue samples from the lungs of asthmatic people and from non-asthmatic control subjects. No arginase was detected in the control samples, but significant amounts were found in the asthmatic lung. Importantly, arginase appears to be the molecule that "kicks off" the chain of action leading ultimately to asthmatic symptoms. Thus, it makes an attractive target for drug intervention. "We hope to come up with a treatment for asthma by targeting arginase," says Dr. Rothenberg.

Reference

N Zimmerman et al. Dissection of experimental asthma with DNA microarray analysis identifies arginase in asthma pathogenesis. *The Journal of Clinical Investigation*. 111:1863-74 (2003). doi: 10.1172/JCI200317912.

Reprinted

NIAID is a component of the National Institutes of Health (NIH). NIAID supports basic and applied research to prevent, diagnose, and treat infectious and immune-mediated illnesses, including HIV/AIDS and other sexually transmitted diseases, illness from potential agents of bioterrorism, tuberculosis, malaria, autoimmune disorders, asthma and allergies.
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