CJRT - RCTR

Spring 2004, Volume 40 (1)

Features
- Coronavirus in Lung Tissue
- Nominees for CSRT Board of Directors
- CoARTE Update

On Air
- Gerald Ashford Winner
- Tracy Davis

Forum 2004 Preliminary Program
Celebrating 40 Years of Inspiration

SARS

The journal for respiratory health professionals in Canada
La revue des professionnels de la santé respiratoire au Canada
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CSRT membership inquiries / Questions concernant l’adhésion à la SCTR : 102 – 1785 Alta Vista Dr., Ottawa, Ontario, K1G 3Y6 1-800-267-3422 csrt@csrt.com www.csrt.com

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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
Photo Credit
Dr. Sherif Zaki/CDC
This photomicrograph reveals lung tissue pathology due to SARS.

This image shows pathologic cytoarchitectural changes indicative of diffuse alveolar damage, as well as a multinucleated giant cell with no conspicuous viral inclusions.

Advertiser’s Index

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Welcome to our Spring issue of the Canadian Journal of Respiratory Therapy! Spring is right around the corner — finally! The days are getting longer and warmer which I really appreciate. This also means that we should be thinking about the next CSRT Annual Educational Forum in Toronto — you’ll find the Preliminary Program for Forum 2004 along with the Forum Registration form inside. This promises to be a fantastic Forum!

In this issue, in the On Air section, we announce the Gerald Ashford Award winner and bid farewell to CoARTE Co-ordinator Patricia Haaland. You’ll find information on our nominees for various positions on the CSRT Board of Directors. As well, an update from our new Executive Director and of course Industry and Scientific news of interest to all members.

Last, but certainly not least, it is also membership renewal time. There are great benefits to CSRT membership — many of them listed in this issue. Watch for your renewal package in the mail or check “Membership” on our website. Remember, the CSRT has a monthly debit plan! The CSRT also accepts VISA and Mastercard for those who prefer this form of payment.

Allan Shemanko, RRT
President, CJRT
In Memoriam

Tracy Davis (nee Cracknell), RRT, RRCP, RDCS, CAE
1959–2003
Oakville, ON

It is with deep sadness that we announce the passing of Tracy Davis, a dedicated respiratory therapist, following a brave and hopeful fight against the sudden onset of cancer.

Tracy graduated from the Respiratory Program at Algonquin College in Ottawa before moving to Toronto and working at both St. Joseph’s Health Centre and Women’s College Hospital. She moved back to Ottawa with her husband Eric Davis a former CRTO member and worked at Queensway Carlton and then more recently returned to the Toronto area and worked at Joseph Brant Hospital in Burlington and Halton Healthcare in Oakville and Milton.

Tracy always strived to reinvent herself in her career; in addition to being an RRT she later qualified as a Registered Diagnostic Cardiac Sonographer and a Certified Asthma Educator. Whether Tracy was working with neonates or with adult patients she demonstrated the utmost respect and compassion with her patients. As the charge therapist in the NICU at Women’s College she mentored many of us “green” RTs and showed us how to handle those delicate neonates, perform radial stabs on the tiny wrists and at the same time be a good friend. Not only has the profession lost a wonderful therapist but patients have also lost a caring and dedicated health care professional.

Tracy will be sadly missed by all of her colleagues who had the good fortune and privilege to work with her over the years. She is survived by her husband Eric and their 2 daughters Daly, 15 years, Molly, 13 years and son Nick, 19 years. We offer our sincere condolences and sympathy to Tracy’s extended family and all of her friends on their loss.

Mary Bayliss RRT, RRCP, CAE
Professional Practice Advisor
College of Respiratory Therapists of Ontario

I Can…

I can sit in the silence and listen carefully.
I can be in the dark and see everything.
I can run in the dirt and be clean.
I can whisper in a noisy room and be heard.
I can lay in my bed and be standing.
I can cry and be happy.
I can lay in my casket and be living.
I can sing and live with all my heart and be dead.
I can yell at you with anger and still love you.
I can say it’s not okay and forgive you.
I can play in flowers and be sad.
I can watch my end come and be hopeful.
I can watch you leave forever and know
I’ll see you again.

Molly Davis
December 18, 2003
Congratulations to Jessica Belanger the 2003 Winner of The Gerald Ashford Memorial Award

Jessica was also co-valedictorian for the New Brunswick Community College in Saint John. In addition to winning the Gerald Ashford Memorial Award, Jessica also won an award for the Best Performance in Pulmonary Function Testing from Saint Joseph’s Hospital Foundation.

The Gerald Ashford Scholarship is awarded annually, through the Canadian Respiratory Therapy Foundation, to the graduating student at New Brunswick Community College, Saint John who has written the best research paper. Jessica’s paper, entitled “Preventing the Colonization of Pathogens: Reducing the Spread of Nosocomial Infections”, will be featured in a future Journal.

The faculty of NBCCSJ and the CSRT commend Jessica on her outstanding efforts. She is now working as staff Respiratory Therapist at Saint John Regional Hospital, New Brunswick while she completes her Bachelor of Health Sciences Degree at the University of New Brunswick.

The Gerald Ashford Memorial Scholarship was established by the RT Department of South East Health Care Corporation, in New Brunswick. The award was established to honour the memory of Gerald Ashford who passed away in 1991.

Donations to the fund may be forwarded to the Canadian Respiratory Therapy Foundation (CRTF), which manages the scholarship — 102-1785 Alta Vista Drive, Ottawa, ON, K1G 3Y6.

July Sitting of the CSRT National Exam

The deadline for registration of applications for the July 5, 2004 CSRT National Certification Exam is April 30, 2004. Please check Certification on our website for details.
ON AIR NUGGETS

CSRT Membership Renewal Time

Check your mail for Membership renewal information. For your convenience, you have the option of using the CSRT Debit Plan to pay CSRT fees, as well as professional association membership and related fees. You can arrange to have monthly installments for your membership deducted directly from your bank account.

For CRTO and CARTA members who wish to take advantage of CSRT Membership, renewals must be received no later than February 15, 2004.

For more information please contact the CSRT office (1-800-267-3422) or visit the Membership page on our website to download the Membership Renewal Form.

Membership renewals are due March 31, 2004

Patricia Haaland Retires

Patricia, who retires in March as Accreditation Consultant for CoARTE, has been instrumental in the development of our accreditation process, necessitated when the CMA terminated their relationship with the CSRT. She guided us from the drawing board to implementation and operationalizing what has become an accepted and respected accreditation process utilized by schools across Canada. It was only through Patricia’s expertise, integrity and work ethic that CoARTE has gone from a concept on paper to the completion of five school visits.

On behalf of the CSRT, we thank Patricia for her invaluable contribution to our profession and to wish her a healthy and happy retirement.

Tracy Davis

The CSRT is saddened to hear of the untimely passing of Tracy Davis. Tracy was a member of the respiratory therapy community in Ontario and was well known and respected as a colleague and friend to many. Our condolences go out to her husband Eric Davis and their children. The CSRT would like to thank the RTSO for making a donation to the Canadian Respiratory Therapy Foundation in memory of Tracy.

Sputum Cup Competition

This year our Forum Social Committee is going to up the ante! The Sputum competition will be based on that home-grown Canadian board game — Trivial Pursuit. The categories will include:

- History
- Geography
- Science
- Entertainment
- Leisure
- People and Places

Have you got a question you would like to submit — however vaguely related to the respiratory therapy profession? Send it to us at CSRT@CSRT.com. Please supply the answer too! Help make Cup Competitors put on their thinking caps!

Survey Winner

Thank you to all our members who took the time to fill out the CSRT Membership Services Survey. We received concrete, positive feedback and will now take some time to review the responses and comments. We expect the end result will be a more effective Head Office that offers the services and information that our membership is looking for. The winner of a free CSRT membership for one year is Kathy Walker of Ottawa.
The Canadian Society of Respiratory Therapists

CSRT Annual Educational Forum 2004

Celebrating 40 Years of Inspiration!

Sheraton Centre
Toronto, Ontario
May 28–30, 2004
# Annual Educational Forum — Preliminary Program 2004

## Friday May 28

### Morning

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:30 – 9:30</td>
<td>Exhibitors Breakfast</td>
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<tr>
<td>9:30 – 10:00</td>
<td>Opening Remarks: The Past, The Present and The Future of the CSRT</td>
</tr>
<tr>
<td>10:00 – 10:45</td>
<td>Professional Practice Issues: To Practice Professionally: What does it Mean?</td>
</tr>
<tr>
<td>10:45 – 11:30</td>
<td>Clinical Practice Guidelines: More than the Individual Parts</td>
</tr>
</tbody>
</table>

### Afternoon — Concurrent Sessions

#### MODULE 1: COMMUNITY

13:00 – 14:30

**Defining PAP Therapy Compliance: Research and Reality**
Nicholas J. Macmillan, AS, RRT, FAARC

#### MODULE 2: DIAGNOSTICS/ SLEEP

13:00 – 14:30

- **Nutrition in the Septic Patient**
  Heidi Nixdorf, RD, CNSD
  Clinical Dietician, Credit Valley Hospital, Mississauga, Ontario
- **Challenges in Meeting the Nutritional Needs of Preterm Infant**
  Andrea Nash, RD
  Perinatal Dietician, Sunnybrook and Women’s College Health Science Centre, Toronto, Ontario
- **Respiratory Therapist as the Cardiac Arrest Team Leader**
  Myron Steinmann RRT/RRCP, Bed
  Clinical Resource Therapist, London Health Science Centre, Victoria Campus, London, Ontario

#### MODULE 3: HOSPITAL / NUTRITION

13:00 – 14:30

- **Nutrition in the Septic Patient**
  Heidi Nixdorf, RD, CNSD
  Clinical Dietician, Credit Valley Hospital, Mississauga, Ontario
- **Challenges in Meeting the Nutritional Needs of Preterm Infant**
  Andrea Nash, RD
  Perinatal Dietician, Sunnybrook and Women’s College Health Science Centre, Toronto, Ontario
- **Respiratory Therapist as the Cardiac Arrest Team Leader**
  Myron Steinmann RRT/RRCP, Bed
  Clinical Resource Therapist, London Health Science Centre, Victoria Campus, London, Ontario

14:00 – 14:30

### Saturday May 29

**MORNING**

- 7:30 – 8:30: Exhibits Sheraton Hall
- 8:00 – 9:00: Poster and Paper Presentations
- 9:00 – 9:30: Coffee Break

17:00 – 18:30: PRESIDENT’S RECEPTION AND AWARDS CEREMONY

Please visit our website for updates to the Forum Program at www.csrt.com
## MODULE 1
### EDUCATION: PATIENTS

### Morning — Concurrent Sessions

#### 9:30 – 11:30
Counselling for Behavioural Change
Andrea White-Markham, RRT/RRCP, CAE

**Education at the Bedside**
Paula Burns, RRT

**RT To Go**
Monique Ouellette, RRT
Anson General Hospital, Iroquois Falls, Ontario

### MODULE 2
### MANAGEMENT/LEADERSHIP

#### 9:30 – 09:35
Opening Comments

#### 9:35 – 10:15
The Road to Evidence Based Practice: Research Opportunities for Respiratory Therapists
John Andruschak, RRT, MHA

#### 10:15 – 10:55
How to Construct a Business Case
John Andruschak, RRT, MHA

#### 10:55 – 11:30
Winnipeg Regional Health Authority ABC Project
Neil Johnston, RRT
Profession Leader of Respiratory Therapy and Manager of Cardiology Technology Services at the Salvation Army Grace General Hospital, Winnipeg.

### MODULE 3
### ANAESTHESIA

#### 9:30 – 11:30
The Role of Conscious Sedation
Dr. David Bevan and Dr. Rosa Braga-Mele

#### 10:15 – 10:55
How to Construct a Business Case
John Andruschak, RRT, MHA

#### 11:30 – 13:00
Lunch Break and Exhibits
Sheraton Hall

## MODULE 1
### EDUCATION: STUDENTS

### Afternoon — Concurrent Sessions

#### 13:30 – 15:30
Introduction and Overview
Paula Burns, RRT/RRCP, CAE, MAEd, PhD (c)

#### 13:45
Panel presentation What is Good clinical Teaching? The Student Perspective.
Participants will be clinical students from The Michener Institute’s program

#### 14:15
Innovations in Clinical Teaching
Robin Klages, RRT/RRCP
William Osler Health Centre
Faculty, QEII Dalhousie School of Health Sciences

## MODULE 2
### MANAGEMENT/LEADERSHIP

#### 13:30 – 14:10
An Accreditation Program for Professional Practice
TBA — Representative of the Canadian Physiotherapy Association

#### 14:10 – 15:30
Forming a National “Special Interest Group” for Respiratory Therapy Leaders
Gilbert Vergilio, RRT(A), MEd

#### 13:30 – 15:30
Debate about Pros and Cons of the two top selling gas machines in Canada
Datex Ohmeda & Brathwaites Olivier

#### 15:30 – 17:30
Annual General Meeting

#### 18:30
Fun Night

## MODULE 3
### ANAESTHESIA

#### 10:00 – 11:00
SARS Panel — Experiences in the Hospital
Respiratory Therapists will describe their department's experiences during the SARS outbreak.

Paula Cripps-McMartin, RRCP/RRT, CAE, CHT
Site Leader, Respiratory Therapy Toronto Western Hospital

Elizabeth Lalingo, RRT/RRCP
Co-ordinator, Respiratory Therapy Services Markham Stouffville Hospital

Bill Boyle, BSc, RRT/RRCP, CHT, MPA
Manager, Cardio Respiratory Neurology Services North York General Hospital

#### 11:00 – 11:45
Filter Panel
John Traill, RRT/RRCP
Clinical Instructor, Respiratory Therapy Mount Sinai Hospital, Toronto, Ontario

#### 13:30 – 15:30
Debate about Pros and Cons of the two top selling gas machines in Canada
Datex Ohmeda & Brathwaites Olivier

#### 15:30 – 17:30
Annual General Meeting

#### 18:30
Fun Night
Highlights — Forum 2004

EXHIBITORS BREAKFAST
Join us for an Exhibitor Breakfast on Friday morning 7:30 to 9:30 am in the Sheraton Hall. Mingle with exhibitors over a morning coffee and continental breakfast. Have a look at some of the great exhibitor booths — you will find a full spectrum of suppliers, educators and manufacturers on hand, ready to discuss the most current information and technology on the market.

PRESIDENT’S RECEPTION
This reception gives RTs the opportunity to recognize award winners and network with others in the profession. It will be held May 28 from 17:30 to 19:30.

PATIENT EDUCATOR DINNER
This annual event, hosted by GlaxoSmithKline, has been standing-room only in the past. This year will be no different. RT Patient Educators are invited to attend this dinner meeting on May 27. While there is no charge for this dinner, space is limited. Seating is on a first-come basis. Please contact the CSRT National Office to reserve your place — csrt@csrt.com or 1-800-267-3422.

SPUTUM CUP
Gather up a team and test your knowledge! This year the competition will be based on the popular board game — Trivial Pursuit! Not only will teams of players from across the country be vying for bragging rights over the ownership of the Sputum Cup, but also over who is most trivial!

FUN NIGHT
Always a popular event for RTs to get out and let their hair down. Reserve Saturday night, May 29, for an evening of fun and entertainment with fellow delegates.

ACCOMMODATIONS
The Sheraton Centre Toronto is the site for CSRT Forum 2004. Located in the heart of Toronto, at 123 Queen Street West, the Sheraton will host the Forum as well as provide accommodation at a preferred rate for Forum attendees. 1-800-325-3535
Or check the CSRT website for on-line reservations.

ANNIVERSARY GIFT
Registered delegates for Forum 2004 will receive a 40th Anniversary gift from the CSRT — a laser engraved pen in metallic blue with gold accents! A great, functional keepsake that serves as a thank you to our supporters and a reminder of 40 eventful years of CSRT service.

*Pre-registration deadline April 16, 2004

<table>
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<td>Members</td>
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<td>$355.00</td>
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<tr>
<td>Non-members</td>
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<tr>
<td>Student Members</td>
<td>$155.00</td>
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Full registration includes an Exhibitors Breakfast, all lectures and workshops, poster displays, exhibits, lunches, nutrition breaks, and the President’s Reception and Awards Presentations. Tickets for Fun Night are not included.

GST is included in the total #119220010 RT

Refunds: Refunds are subject to a $50.00 administration fee.

NAME

CSRT FILE #

EMPLOYER

POSITION (TITLE)

YOUR ADDRESS

CITY

PROVINCE

POSTAL CODE

HOME TEL

WORK TEL

EMAIL

METHOD OF PAYMENT

TOTAL PAYMENT $   

CARD NUMBER

EXPIRY DATE

SIGNATURE

PRINT NAME

Send to: CSRT 102 - 1785 Alta Vista Drive. Ottawa, Ontario K1G 3Y6

For more information please contact the CSRT at 1-800-267-3422 or (613) 731-3164 Fax: (613) 521-4314 E-mail: csrt@csrt.com
At the risk of repeating what you have already seen in your membership renewal package — we have been through a turbulent year in the health sector in Canada from SARS, forest fires and the ever evolving new strains of influenza. RT’s are continually on the front lines in these situations and continue to rise to the occasion with a high degree of expertise and ingenuity. This consistency of excellent service, over many years has earned the CSRT credential respect and recognition throughout Canada and internationally. The CRTO’s recent decisions to endorse CoARTE as the accreditation tool of choice for the Ontario RT programs and to accept the CSRT exam, as produced by the CBRC, for CRTO registration are two significant examples of that recognition.

Unfortunately excellent work and commitment to quality patient care are not always enough to maintain the profile and presence of our profession in the many and varied arenas where decisions that can impact on our future are made. One of the main purposes of the CSRT is to advocate for Respiratory Therapy with federal and provincial bodies and to continually present ourselves as a dynamic and evolving profession committed to the highest quality standards. For example, our seat at the National Alliance table has ensured that the CSRT has had full representation on the development of the National Competency Profile and the Mutual Recognition Agreement. As another example, discussion with officials from the NBRC at the recent AARC Congress resulted in a mutual extension of our current reciprocity agreement for one year and set the groundwork for future discussions regarding reinstatement of full reciprocity.

In addition to these efforts the CSRT continues to providing as much in the way of value added benefits to our members as possible. This journal, the website, CSRT listserves, access to liability insurance, and the debit plan are some examples of those benefits. The recent survey on membership services is further evidence of our desire to listen to the membership and provide what you find important. The membership services focus group will be reviewing the results of that survey and formulating recommendations to the Board of Directors. Many thanks to the over 300 members who sent in their surveys.

Your CSRT Executive, Board of Directors, Head Office staff and a host of volunteers continue to put forward concerted efforts in providing the above and many other services to you, our members. It is, however, only through your continued membership that we will have the resources to continue this work and only through increased membership that we can implement new and improved services. I would like to offer my thanks to all of you who so faithfully support the CSRT with your membership renewals and to put forward a personal challenge for each of you to be an ambassador for the CSRT to your colleagues who are not members. Please share with them why you consider it important to support the national society. If each of you were able to persuade just one other RT to become a member we would double our membership and be in that much better a position to provide even more services to you, our members.

Once again, thank you for you ongoing support.

Jim Winnick, RRT
CSRT President
I would like to thank all of the CSRT members that have called and offered their kind words of support and encouragement as I settle into my new position with the CSRT. The opportunity to contribute to one’s chosen profession at this level does not present itself often and I plan to make the most of it. I would like to thank the CSRT Executive Council for giving me this opportunity.

There has been substantial change within the CSRT office and I would like to acknowledge the efforts of President, Jim Winnick in maintaining productivity in the office and for continuing to forward the goals and mission of the CSRT. This, of course, would not have been possible without the extraordinary efforts of the CSRT office staff, Sylvia Stiehl, Rita Hansen, Robin Ballance and Anne Dorion.

The CSRT continues to be an ever changing and evolving entity. In 2001, the CoARTE accreditation program was born. It has become an absolute success story despite the odds. Anyone associated with this program, respiratory therapist or not, should be extremely proud of what they have accomplished. It is with great regret that we accept Patricia Haaland’s announcement that she will be retiring this spring. Without her incredible efforts, CoARTE would not have been possible. I am happy to announce that, because of Patricia’s dedication to CoARTE, she has gone to great lengths to help us find a replacement. I am proud to welcome Michelle Kowlessar to the CSRT team as the Accreditation and Education Manager.

In staying with the theme of change, the CSRT will soon be looking for a dedicated volunteer to take on the leadership role with the *Canadian Journal of Respiratory Therapy*. Allan Shemanko, President of the *CJRT* has indicated that he would like to begin the search for his replacement. The corporate structure of the *CJRT* is changing so there will be no need for a President. The new position will be called Editor-in-Chief of the *CJRT* and Forum Coordinator, but there are also many committee positions available as well. Many people are hesitant to inquire about these positions because they feel that they don’t have the required experience. To that I would respond that there is only one way to get that experience and that is to go out and try one of these positions. As a volunteer your efforts will always be appreciated and your activities will always be supported by the CSRT head office team. I encourage every CSRT member to consider enhancing their professional portfolio by participating as a CSRT volunteer.

Again I would like to thank everyone that has helped me orient myself in my new position and I look forward to my future interactions with the membership.

Sincerely,

Douglas Maynard BSc, RRT, MBA
Executive Director, CSRT
CoARTE Update
Patricia Haaland, Consultant for CoARTE

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

Farewell
With retirement fast approaching, my thoughts turn to the conception, birth and evolution of the CoARTE accreditation program.

Conception
In May 2000, the CSRT members gave direction to the CSRT Board of Directors to develop their own accreditation program for respiratory therapy in Canada. To that end I was hired as a consultant, being known for my work coordinating the Canadian Medical Association’s (CMA) conjoint accreditation program for ten health professions, including respiratory therapy, for a number of years.

Gestation
I began by seeking input from the CSRT members, educators in particular, at the 2000 Forum in Vancouver to find out what they wanted in their accreditation program. Next I mounted a national task force of respiratory therapists. We conducted extensive research on other health professions’ accreditation programs: governance models, accreditation requirements and accreditation procedures. Throughout, the accrediting body for respiratory therapy in the USA, the Committee on Accreditation for Respiratory Care (CoARC), was most supportive and offered free use of all their accreditation documents.

I also consulted with ISO representatives in Canada; ISO is the International Organization for Standardization. After reviewing ISO 9000 documents we sought permission to base the CSRT’s accreditation requirements on the ISO quality management principles. Through a contractual arrangement, we were allowed to include reproduced text from ISO documentation in the CSRT Accreditation Handbook.

As the developmental stage proceeded, we circulated draft documents to all the schools and regulatory bodies as well as to interested CSRT volunteers for review and comment.

In early December 2000, after a very intense six months of labour, I forwarded all accreditation documents to the CSRT Board of Directors for approval. The CSRT Accreditation Task Force was sunset and the Council on Accreditation for Respiratory Therapy Education (CoARTE) was formed. The Council was initially comprised of three CSRT members plus a physician, senior educational administrator and a public member.

Birth
January 1, 2001 was the magic day. We proudly announced the birth/implementation of CoARTE. All schools and regulatory bodies outside Ontario and Quebec came on board with the CoARTE national accreditation program.

Infancy
The accreditation program continued to evolve and thrive despite incredible obstacles.

I gave workshops for schools on how to apply for CoARTE accreditation and to volunteers wishing to serve as program reviewers. We started to build a roster of program reviewers comprised of respiratory therapists, physicians and senior educational administrators. Then, accreditation site visits began. To see the process come to fruition was indeed exhilarating for all of us: CoARTE members, program review teams, schools, the CSRT Board of Directors and other CSRT members.

Gradually, schools in Ontario and Quebec sought CoARTE approval. After objectively assessing accreditation programs, the College of Respiratory Therapists of Ontario (CRTO) elected not to renew its contract with the CMA. Instead, the CRTO signed a contract with the CSRT for CoARTE accreditation services. Shortly thereafter, all the Ontario schools attained CoARTE Approval Status and site visits have been scheduled. In Quebec, Vanier College has Approval Status and the site visit is scheduled for October 2004. The four French language schools are moving in the direction of seeking CoARTE Approval.

Weaning
I have administered the accreditation program for CoARTE from its inception. The program has reached a level of maturity; it is now well established, highly
regarded and financially sound. This gives me tremendous satisfaction and the confidence to pass on the responsibility of the Accreditation Secretariat to a CSRT staff person. I am optimistic that following my retirement at the end of March 2004, the accreditation program will continue to be well managed.

CSRT’s Accreditation Manager
The CSRT has hired Michelle Kowlessar to fill the position. Most recently Michelle was the National Communications and Programmes Coordinator for the Canadian Breast Cancer Network. To promote a smooth transition for all stakeholders, Michelle will work under my guidance, gradually taking over various components of the position before assuming full responsibility on April 1, 2004.

Final words
Against great odds, the CSRT has succeeded in implementing its own accreditation program, a dream of many other national health professional associations. CSRT members can be very proud of this accomplishment and confident in knowing that CoARTE operates above the political level in the interest of patients and students. Respiratory therapists’ support of their national professional organization made the development and implementation of the accreditation program possible.

The CSRT’s accreditation program could not have survived without the dedication of highly professional and competent volunteers, too many to mention by name. My deepest gratitude goes to all the CSRT members, physicians, educational administrators and regulatory body representatives who have supported my endeavours.
CSRT Membership Renewal

It's membership renewal time! CSRT Members are reminded that yearly memberships are due by March 31, 2004. As the national organization, representing the interests of the respiratory therapy profession, the CSRT is pleased to continue to supply support, information, funding and direction to RTS in their many areas of health care. Please see the Membership section on our website for details.

Take Advantage of Our Debit Plan!
CSRT Members have the option of using the CSRT Debit Plan to pay their CSRT fees, as well as their professional association membership and related fees. You can arrange to have monthly installments for your membership deducted directly from your bank account. Check your renewal form for this option.

Benefits of Membership to the CSRT

Liability Insurance
This comprehensive liability insurance is tailored to respiratory therapists. Managed by ENCON Insurance Managers, the policy is provided by insurance companies know for their vast experience in the medical field, as well as their long-term commitment to professional liability programs.

Errors and Omissions Liability Insurance

■ Covers individual respiratory therapists for damages caused by error, omission or negligent act in the course of providing professional services as defined by the Registration Regulation of the Respiratory Therapy Act, 1991, (Ontario). The policy includes a sexual abuse rider that covers victim therapy and counseling up to $10,000 per victim.

■ A Claims Only policy that covers you for any claim filed at the time the policy is in effect, no matter when the incident giving rise to the claim occurred. All active and inactive members of the profession are eligible for coverage.

■ Insurance covers all costs incurred by the insurers to investigate, defend, settle, arbitrate or litigate a claim covered by this policy. These include costs and fees for hiring investigators, adjusters, experts, consultants, arbitrators, mediators and lawyers, as well as court and arbitration costs and expenses for arranging the attendance of witnesses.

■ It includes $10,000 coverage for legal representation and advice in cases in which the insured has received a letter from the regulatory body, as a result of a complaint and a $1,500 coverage if a therapist is subpoenaed to appear as a witness in an incident relating to the practice of respiratory therapy.

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<tr>
<td>$2 million</td>
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Mortgage
Excellent mortgage rates are available through CSRT membership. Through an arrangement with HLC Group Mortgage Plan, the CSRT is pleased to introduce the Group Mortgage Plan with value added benefits available to ALL members, including discounted interest rates, flexible terms, increased consumer choice and over 300 product options. CIBC, First Line Mortgages, President’s Choice (PCF), MCAP and National Bank are just some of the lending institutions in this plan. HLC is Canada’s leading provider of mortgage benefit programs with over 300 participating corporations and associations.

Benefits include:

■ Guaranteed discounted interest rates without negotiation

■ fully open mortgages below prime

■ Up to 5% cash back option for first time home buyers to help with unforeseen expenses (some conditions apply)

■ Choice of over 30 lenders

■ Choice of over 100 mortgage products
Total convenience, same day mortgage pre-approval:
- Appraisal fees paid
- Home warranty protection
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**Awards**
The CSRT offers a number of awards and fellowships. Please check for details on our website under Foundation.

- Education Awards for Advanced Respiratory Practice
- Research Fellowship
- CSRT Research Award
- Robert Merry Memorial Award
- Summit Award for Respiratory Excellence

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### CALENDAR OF EVENTS

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<td>Society of Cardiovascular Anesthesiologists 9th Annual Cardiopulmonary Bypass Meeting Snowmass, Colorado <a href="http://www.scahq.org">www.scahq.org</a></td>
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<td>March 19, 2004</td>
<td>60th Annual Meeting of the American Academy of Allergy, Asthma and Immunology San Francisco California <a href="http://www.aaaai.org">www.aaaai.org</a></td>
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<td>April 3, 2004</td>
<td>Toronto Anesthesia Symposium 2004 Toronto, Ontario <a href="mailto:Julie.Nigro@uhn.on.ca">Julie.Nigro@uhn.on.ca</a></td>
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<td>April 22 – 24, 2004</td>
<td>4th Annual FOCUS Conference Baltimore, Maryland <a href="http://www.focus.com">www.focus.com</a></td>
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<td>April 25 – 29, 2004</td>
<td>Canadian Association of Emergency Physicians Montreal, Quebec <a href="http://www.caep.ca/">http://www.caep.ca/</a></td>
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<td>April 25 – 28, 2004</td>
<td>84th Annual Meeting of the American Association for Thoracic Surgery Ontario Canada <a href="mailto:aats@prri.com">aats@prri.com</a></td>
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<td>May 1 – 2, 2004</td>
<td>If You Can’t Breathe, You Can’t Function Lecture and Lab Calgary, Alberta <a href="http://www3.telus.net/rehabforthefuture/">http://www3.telus.net/rehabforthefuture/</a></td>
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<td>May 6 – 9, 2004</td>
<td>National Research Forum For Young Investigators in Circulatory and Respiratory Health Winnipeg, Manitoba <a href="http://www.yiforum.ca">www.yiforum.ca</a></td>
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<td>June 2, 2004</td>
<td>6th International Symposium on Memory and Awareness in Anaesthesia Hull UK <a href="http://www.maa6.com">www.maa6.com</a> email: <a href="mailto:B.J.Leak@hull.ac.uk">B.J.Leak@hull.ac.uk</a></td>
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<td>June 5 – 8, 2004</td>
<td>European Society of Anaesthesiologists - Euroanaesthesia 2004 Lisbon, Portugal <a href="http://www.euroanaesthesia.org">www.euroanaesthesia.org</a></td>
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<td>June 18 – 22, 2004</td>
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<td>June 19, 2004</td>
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<td>September 4 – 8, 2004</td>
<td>14th European Respiratory Society Annual Congress Glasgow, Scotland <a href="mailto:info@ersnet.org">info@ersnet.org</a></td>
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<td>September 15 – 18, 2004</td>
<td>7th Asia Pacific Conference on Tobacco or Health Gyeongju, Republic of Korea <a href="http://www.apact2004.org/">http://www.apact2004.org/</a></td>
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CSRT News

CSRT Board of Directors Nominees

**Nominee — CSRT President-Elect**

Sue Jones, RRT RPSGT

I am honored to have the opportunity to put my name up for nomination for President-Elect of the CSRT. I feel volunteering in organizations such as the CSRT is key to the success of our profession.

Having been a respiratory therapist for the past 20 years, and being in the middle of my career, I would like to become more formally involved in the CSRT as part of the board.

My past is littered with only three major employers. Most recently I have been employed with Royal Victoria Hospital in Barrie. In October 1986, I became a staff respiratory therapist. After four and a half years I took the position as the charge respiratory therapist. Prior to this I was employed at Women’s College Hospital, Toronto from January 1984 to September 1986 working primarily in the NICU. My first position after graduation in 1983 was with York County (now known as Southlake Regional Hospital) in Newmarket.

I graduated from the only 3-year program at the time, at Algonquin College, in Ottawa with only 11 other classmates. Although my career displays stability, which may portray someone who can be stagnant, this is far from the truth as evidenced by my tenure with the RTSO during the negotiations with the CRTO. I am always interested in a challenge or making changes to better our profession. I strive in my position at work to raise the profile of the respiratory therapist whenever the opportunity presents itself. As a result I have become skilled in diplomacy and negotiation. I am a very good listener, but can make decisions as needed.

I have experience in organizing conferences, being a speaker on several occasions. I am a BCLS instructor (1991), NRP Instructor/Trainer (1991), and the co-ordinator for the NRP program here at RVH, Barrie. I am the Clinical Co-ordinator for the students in 3rd year from North Bay.

I am confident that I can provide quality leadership while learning from the other members of the board. I hope you will provide me with this opportunity in May at the AGM.

**Nominee — Director of Professional Advocacy**

Wrae Hill BSc RRT

After training as a Respiratory Therapist in Toronto I gained clinical experience in neonatal, pediatric and adult critical care in British Columbia and Saudi Arabia until 1998. My work in professional advocacy began early in my career and has intensified through my work as Clinical Educator and Department Head.

Throughout my career, wherever it has taken me and my family, I have taken my responsibility of active participation in my National Professional Association seriously — as a member and contributor. Having held Senior RRT leadership positions in Riyadh, Toronto and now in Edmonton, I am aware more than ever of the need for clarity of direction and focused advocacy for our changing profession. This must happen at both the Provincial and National levels. We need to move forward with the complex task of re-inventing the CSRT within the “new normal” of a profession characterized by nationally linked, provincial and territorial RRT self regulation.

Having international experience, I know that the Canadian RRT credential is the “gold standard” among our peers. We must further develop this important credential by working together. The CSRT, National Alliance of Respiratory Therapy Regulatory Bodies Educators, RRT Administrators, RRT community service providers, RT equipment suppliers and frontline staff RRTs are all essential to developing an excellent competency based exam process. While we get our regulatory house in order, we must build a nationally unified and simple strategy to advocate for the interests of RRTs and our patients, at all levels of government.

In the last year, the selfless care of patients by frontline RRTs during SARS, forest fires and other recent challenges, have brought RRTs into a long overdue spotlight. Still many of our patients and the public are unaware of the level and complexity of care provided them by RRTs. As the CSRT Director of Professional Advocacy I would work hard to change that.
CSRT Board of Directors Nominees

Nominee — CSRT Director of Education and Curriculum Standards
Ray Hubble, RRT MMEd.

Fifteen years, 3 provinces and 2 coasts. Perhaps qualifications better suited for a middle-aged hitchhiker than a prospective member of the CSRT Board of Directors.

My coast to coast career as a Respiratory Therapist, educator and volunteer has given me a desire to constantly challenge the norm, improve educational standards and always look for ways to enhance patient care.

I present myself as a nominee for the position of Director of Education and Curriculum Standards with 12-plus years of experience as a clinical educator, 7 years of experience with the CSRT Education Committee and my current role as an executive member of our national accreditation body, CoARTE.

I hold a Master’s of Medical Education degree from the University of Dundee’s (UK) School of Medicine and continue to teach in the class and at the bedside on a daily basis at the New Brunswick Community College, Saint John, New Brunswick.

As Respiratory Therapy evolves, there are both national needs and jurisdictional considerations for regulatory practices in many provinces.

I am confident that my experiences and my background will allow me to work with all concerned parties to balance the needs of our profession while respecting regulatory needs where they exist.

Nominee — Director of Membership Services
Colya Kaminiarz, RRT

I am excited to be nominated for the position of Director of Membership Services as the CSRT makes its transition to a new board structure.

I became involved with the CSRT in 2000 with the creation of the CSRT Anesthesia Assistant Special interest group. This group is working towards the development of a national standard for anesthesia assistants. I was elected as a CSRT Director-at-Large in 2002. My time working with, and as a member of, the CSRT board has allowed me to develop an understanding of how the CSRT functions.

Our profession has faced various struggles over the past few years. Despite the challenges, it continues to be very motivating to see RTs from every province working hard to address issues facing our profession. On a provincial, national and international level, RTs are tackling issues, large and small, with energy, innovation and perseverance.

When I initially read the position summary, and responsibilities of Director of Membership Services, I was a little daunted by its scope. There is no doubt in my mind that the road ahead will not be free of bumps, but I will make it my aim to maximize the communication we have with our membership, and at all times keep an open mind for suggestions on how we ensure the CSRT is responsive to our professions needs.

I thank you for your support, and only leave you with one request. If there is something that you think can make our profession stronger, or make the CSRT more relevant to yourself, don’t hesitate to get in touch!
**CSRT Board of Directors Nominees continued**

**Nominee — Director of National and Provincial Relations**  
Scott LeMessurier

I received my education and trained in Ottawa at Algonquin College. I graduated and registered with the CSRT in 1980. I have been a member in good standing since and am a long-standing advocate for CSRT.

I initiated a new department in Grand Falls-Windsor Newfoundland in 1981, which has grown steadily. I now manage a Cardio-Respiratory Department, including Respiratory Services, Non-Invasive Cardiology and Diagnostic Neurophysiology. Some of my involvements for Respiratory Therapy include;

- President NLART 1996–1998, Member CSRT Board.
- Involved in all occupational profile reviews.
- Chairperson, Provincial MIS committees for Respiratory Therapy and Electrodiagnosis.
- Chairperson, Advisory committee for Respiratory Therapy program, College of the North Atlantic.

I believe that the national fabric and strength of the CSRT is important, including entry to practice standards and mobility nationally and internationally.

**Nominee — CSRT Director of Human Resources**  
Cliff Seville, RRT

Since graduating as a Respiratory Therapist from the Northern Alberta Institute of Technology in 1978, I have worked in Edmonton. I began at the Royal Alexandra Hospital in NICU, then on to Misericordia Hospital and most recently with the Caritas Health Group. My clinical career progressed from clinician to supervisor, to clinical instructor and co-ordinator. I sat on executive council for HSAA. My experience and skills have helped equip me for leadership roles. I am currently manager of Therapeutic Programs and Services for the Caritas Health Group. I am now responsible for respiratory care, physical therapy, occupational therapy, speech/language pathology, and audiology.

My strengths lie in designing and implementing innovative programs to meet changing needs in the patient community, and developing strong cross-functional teams. I have been instrumental in starting specialized programs, including the hyperbaric oxygen unit, wound care program, asthma care, respiratory sleep diagnostics, and several rehabilitation programs.

I have a strong presence in the health care community. I am frequently invited to speak at meetings of health professionals from various disciplines. I have served on the CSRT strategic planning task force and the Canadian board for respiratory care. I have strong interpersonal and labour relations skills as evidenced by being the national employer representative during the federal occupational analysis of respiratory therapy. I am also a member of the Caritas research steering committee, sit on the College of Physicians and Surgeons advisory committee for pulmonary function labs and am a member of the PHAA (Provincial Health Authorities Alberta) professional/technical advisory committee. My wife Janis is a Respiratory Therapist and daughter Chrysten is currently taking Respiratory at NAIT.

I am currently the chairperson of the NAIT advisory committee. My interest in medical publication is evidenced by a 6 year tenure as co-editor and then editor-in-chief of CJRT (The Canadian Journal of Respiratory Therapy), and I have published more than 35 articles and editorials.

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Early Clinical Predictors of Severe Acute Respiratory Syndrome in the Emergency Department

W.N. Wong, MBBS, MRCS,* Antonio C.H. Sek, MBBS, MRCP,* Rick F.L. Lau, FHKAM, FRCSEd, MRCP;† K.M. Li, FHKAM, FRCSEd, MRCP;‡ Joe K.S. Leung, MD, FRCSEd;* M.L. Tse, FHKAM, FRCSEd, MRCP;§ Andy H.W. Ng, FHKAM, FRCSEd, MRCP;§ Robert J. Stenstrom, MD, PhD

*Medical officer, †Chief of Service, ‡Consultant, and §Senior MO, United Christian Hospital Emergency Department, Hong Kong; Department of Emergency Medicine, St. Paul’s Hospital, and University of British Columbia, Vancouver, BC All authors except Dr. Stenstrom are members of the United Christian Hospital Accident & Emergency Department Research Team.

ABSTRACT

Objectives: To assess the association of diagnostic predictors available in the emergency department (ED) with the outcome diagnosis of severe acute respiratory syndrome (SARS).

Methods: This retrospective cohort study describes all patients from the Amoy Garden complex who presented to an ED SARS screening clinic during a 2-month outbreak. Clinical and diagnostic predictors were recorded, along with ED diagnoses. Final diagnoses were established independently based on diagnostic tests performed after the ED visit. Associations of key predictors with the final diagnosis of SARS were described.

Results: Of 821 patients, 205 had confirmed SARS, 35 undetermined SARS and 581 non-SARS. Multivariable logistic regression showed that the strongest predictors of SARS were abnormal chest x-ray (odds ratio [OR] = 17.4), subjective fever (OR = 9.7), temperature >38°C (OR = 6.4), myalgias (OR = 5.5), chills and rigors (OR = 4.0) and contact exposure (OR = 2.6). In a subset of 176 patients who had a complete blood cell count performed, the strongest predictors were temperature >=38°C (OR = 15.5), lymphocyte count <1000 (OR = 9.3) and abnormal chest x-ray (OR = 5.7). Diarrhea was a powerful negative predictor (OR = 0.03) of SARS.

Conclusions: Two components of the World Health Organization case definition — fever and contact exposure — are helpful for ED decision-making, but respiratory symptoms do not discriminate well between SARS and non-SARS. Emergency physicians should consider the presence of diarrhea, chest x-ray findings, the absolute lymphocyte count and the platelet count as significant modifiers of disease likelihood. Prospective validation of these findings in other clinical settings is desirable.

Correspondence: Dr. Wong Wing Nam, Accident & Emergency Department, United Christian Hospital, Hong Kong; fax 852-23795801, wingnam@email.hkuspace.com

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Absolute Association of Coronavirus in Lung Tissue from Fatal Cases of Severe Acute Respiratory Syndrome

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Corresponding author: Kevin Kain, MD, Tropical Disease Unit, EN G-224, Toronto General Hospital, 200 Elizabeth Street Toronto, Ontario M5G 2C4, Tel. 416-340-3535, Fax. 416-595-5826, Email: kevin.kain@uhn.on.ca
*Contributed equally to this manuscript.

Abstract
Efforts to contain SARS have been limited by the lack of a standardized, sensitive and specific test for SARS-associated Coronavirus (CoV). In this study we used a standardized RT-PCR assay (Artus) to detect SARS-CoV in lung samples obtained from well-characterized patients who died from SARS compared to those who died from other reasons. SARS-CoV was detected in all 22 post-mortem lung tissues (to 109 viral copies/g) from 11 patients with probable SARS but was not detected in any of the 23 lung control samples (sample analysis was blinded). The sensitivity and specificity (95% CI) was 100% (84.6%–100%) and 100% (85.1%–100%), respectively. Viral loads were significantly associated with a shorter course of illness but not with the use of ribavirin or steroids. CoV was consistently identified in the lungs of all patients who died from SARS but not in controls supporting a primary role for CoV in fatal outcomes.

Coronavirus in Lung Tissue
From its origins in November 2002 in Guangdong province, China, severe acute respiratory syndrome (SARS) has become an emerging infectious disease that has spread to numerous regions of the world including Hong Kong, Vietnam, Singapore, Taiwan, and Canada.1 Although there remains some controversy over the etiology of SARS, a newly described virus known as the SARS-associated Coronavirus (SARS-CoV) has been declared by the World Health Organization as the cause of SARS.2 This has led to a rapid proliferation of a number of different in-house laboratory tests aimed at detecting either SARS-CoV-specific antibodies or SARS-CoV nucleic acid in clinical specimens. The Centers for Disease Control and Prevention definition for a confirmed case of SARS includes the results of these laboratory tests.3 However, due to the numerous different assays being used and the lack of standardization, it has been difficult to compare the results reported from different centers. As well, the inability of these non-standardized tests to detect SARS-CoV in all cases has led to speculation that there may be other agents associated with SARS. Some have suggested that in patients who progress to respiratory failure and ultimately death, this may not be associated with uncontrolled viral replication, but rather may be the result of an immunopathological process.4 In a recent report of 6 fatal cases of SARS, SARS-CoV was detected by reverse transcriptase polymerase chain reaction (RT-PCR) in post-mortem lung tissue in only 4 patients.5

The purpose of this study was to use a standardized, commercially available RT-PCR assay to test for the presence of SARS-CoV RNA in lung tissue obtained at autopsy from well-characterized patients with SARS who died during the outbreak.
in Canada, compared to lung samples obtained at autopsy from patients without SARS who died during the outbreak and lung samples from patients during a period predating the outbreak.

Methods

Patients
All patients who met the current World Health Organization case definition of probable SARS and who underwent a post-mortem examination in Canada during the March to April 2003 outbreak were included in this study. Clinical details were extracted retrospectively using hospital records. Clinical descriptions of some of these cases have been published separately.6,7 As of May 14, 2003, there were a total of 24 deaths due to SARS all occurring in Toronto, Canada. Of these, autopsies were performed on 11 patients. Ante and post-mortem examination for routine bacterial and viral respiratory pathogens from these 11 patients, as described elsewhere, was negative.8

Lung Tissue Samples
A total of 22 discrete post-mortem lung samples collected from these 11 patients were included in this analysis. An additional 13 post-mortem lung samples from 7 patients who died during the SARS outbreak but whose deaths were attributed to other causes were also included. The attributed cause of death in these patients was as follows: 46 y/o female — Invasive Group A streptococcal infection; 93 y/o male — Congestive Heart Failure; 37 y/o male — Sudden death Cardiovascular disease; 74 y/o male — Amiodorone pulmonary toxicity; 78 y/o female — dementia and aspiration pneumonia; 47 y/o female — diabetes and congestive heart failure; and 81 y/o male — bladder cancer and aspiration pneumonia. As well, 10 lung samples from 10 different patients (4 females and 6 males; age range 54 to 75 years) with lung cancer collected in 1998, generously provided by Dr. Brendan Mullen, Department of Laboratory Medicine and Pathology, Mount Sinai Hospital, were also included as negative controls. All samples collected at the time of autopsy were snap frozen in a mixture of absolute ethanol and dry ice and subsequently stored at -70°C until tested. The samples were coded and then processed, subjected to RT-PCR analysis and interpreted before the identity of the samples was divulged. This study was approved by the research ethics boards at Mount Sinai Hospital and the University Health Network.

RT-PCR
Lung tissue samples were thawed and immediately homogenized in lysis buffer (Qiagen, Mississauga, Canada) using disposable tissue grinders (Kendall Precision™, Mansfield, USA). The homogenate was passed through QIA shredder columns (Qiagen) prior to RNA isolation using the RNeasy Mini Kit (Qiagen). The sample was eluted in 30 μl of RNase free water. The RT-PCR was carried out using the RealArt™ HPA-Coronavirus LC RT Reagents Assay (Artus GmbH, Hamburg, Germany) using a Lightcycler real-time platform (Roche Diagnostics, Laval, Canada). The HPA-Coronavirus master Mix contains reagents and enzymes for the specific amplification of an 80bp region of the SARS-CoV polymerase gene from 5 μl of RNA using the primer pairs published by the Bernhard-Nocht Institute (Hamburg, Germany) as posted on the World Health Organization website at http://www.who.int/csr/sars/primers/en/. Viral load was calculated from a standard curve based on four external positive controls (quantification standards) included in the RealArt™ HPA-Coronavirus LC RT Reagents Assay kit (Figure 1A and B). The standards were treated as previously purified samples and the same 5 μl volume was added per capillary. A standard preparation of SARS-CoV isolated from cell culture supernatants of VeroE® cells, generously provided by Dr. Doerr from the University of Frankfurt, Germany and Dr. Matthias Niedrig, Robert Koch-Institute, Berlin, Germany, was used as a calibrator in each run. In addition, the kit contains a second heterologous amplification system (i.e. an internal control) to identify either PCR inhibition exclusively, if added to the extracted RNA, or RNA isolation quality as well as PCR inhibition, if added during the RNA isolation procedure (Figure 1C).
Although the assay insert states that the primers and probes used in the assay were checked for possible homology to other pathogens by means of sequence comparison, 25 randomly chosen amplicons from our sample pool were independently sequenced to confirm SARS CoV specific amplification and detection.

Univariate Analysis
Univariate analysis comparing potential predictors of viral load (duration of illness, the use of ribavirin, the use of steroids) was completed using Fisher’s Exact Test. Two-sided p values 0.05 were considered significant.

Results
The clinical description and RT-PCR results for the 11 patients with probable SARS from whom post-mortem lung tissue samples were examined in this study are summarized in Table 1 (p. 26).

SARS-CoV was detected in all 22 post-mortem lung tissue samples collected from all 11 patients who died with a diagnosis of probable SARS. All thirteen post-mortem lung samples from the 7 non-SARS fatalities that occurred during the SARS outbreak were negative for SARS-CoV, as were all 10 lung tissue samples collected from patients with lung cancer 5 years prior to the outbreak (Table 2). The corresponding sensitivity and specificity of the RealArt HPA-Coronavirus LC RT Reagent assay are both 100% (95% Confidence Interval for sensitivity: 84.6%–100% and 95% Confidence Interval for specificity: 85.1%–100%) for the detection of SARS-CoV.
The SARS-CoV viral load in post-mortem lung tissue ranged from $2.7 \times 10^4$ copies/g tissue to $3.8 \times 10^9$ copies/g tissue. Higher viral loads (106 copies/g tissue) were significantly associated with patients who had a shorter duration of illness (21 days) ($p = 0.002$, Fisher’s Exact Test). The use of ribavirin or steroids was not significantly associated with viral load levels (Table 2).

Twenty-five randomly selected amplicons from the sample pool were sequenced to assess specificity and possible cross-reactivity to other pathogens. A BLASTN search performed against the SARS-CoV genomes in GenBank, EMBL, DDBJ and PDB on the NCBI website, indicated that all amplicon samples contained SARS CoV polymerase gene sequence.

**Discussion:**

Using a standardized RT-PCR assay, SARS-CoV has been unequivocally identified in the lung tissue of all patients who died with probable SARS but not in any of the controls. These observations support a primary role for this virus in patients with SARS who have fatal outcomes and provide additional and strong evidence to fulfill Koch’s postulates regarding SARS-CoV as the etiology of SARS. SARS-CoV was found in multiple different samples of lung in the same patient suggesting that there is widespread dissemination of the virus throughout the lung at the time of death. Previous studies suggested that progression of disease to respiratory failure may be primarily mediated by host immune response rather than viral replication. Although the presence of viral RNA in lung tissue does not necessarily indicate replicating virus, the presence of virus in multiple lung lobes, often in high copy number, at the time of death suggest that the SARS CoV may also be contributing to progression of disease. The fact that higher viral loads were significantly associated with patients with a shorter duration from onset of illness to death supports the role of viral replication as a contributor to death. Ten of the 11 patients had received therapy with ribavirin and six patients were treated with steroids. The failure to eradicate SARS-CoV despite ribavirin therapy, and the lack of association between the use of ribavirin and SARS-CoV viral load is consistent with in vitro data showing that ribavirin has no activity against this agent.

Global efforts to contain SARS have been severely impeded by the lack of a standardized, sensitive and specific diagnostic test for SARS-CoV. Different diagnostic strategies including culture, serologic assays, and molecular detection methods have been described but each of these tests has limitations. In-house RT-PCR assays have been associated with sensitivities as low as 50% in patients with SARS, raising uncertainty as to the role of CoV versus co-pathogens in mediating severe or fatal SARS. By contrast, the sensitivity and specificity of the RealArt HPA-Coronavirus RT-PCR assay for the detection of CoV in lung tissue appears to be excellent. In addition, with the real-time Lightcycler system, the assay generates quantitative results within one hour, which is much shorter than traditional PCR reactions.

It is important to note that the type of specimen tested, the timing of sample collection, (i.e. acute versus convalescent phase) the method of specimen collection, as well as the method of sample preservation may have a significant impact on the results obtained from a diagnostic test. The lower sensitivity of SARS CoV detection reported by Peiris et al may be a consequence of these confounding factors. Our study design examining lung biopsies from clearly defined patient populations overcame confounding issues such as sampling technique, non-specific case definitions, or possible undocumented exposure to SARS. Given the

<table>
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<th>Predictor</th>
<th>Viral Load $\geq 10^6$</th>
<th>Viral Load $&lt; 10^6$</th>
<th>Fisher’s Exact Test</th>
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<td>Short duration of illness (≤ 21 days)</td>
<td>5/5</td>
<td>0/6</td>
<td>p=0.002</td>
</tr>
<tr>
<td>Use of ribavirin</td>
<td>4/5</td>
<td>6/6</td>
<td>p=0.46</td>
</tr>
<tr>
<td>Use of steroids</td>
<td>1/5</td>
<td>5/6</td>
<td>p=0.08</td>
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*Table 2: Univariate analysis assessing predictors of high viral loads in post-mortem lung tissue.*
predominance of respiratory symptoms in patients with SARS, lung samples have perhaps the highest viral titers of all specimen types, yet in non-fatal cases, obtaining routine lung biopsies is not practical. Other respiratory tract specimens may be satisfactory substitutes to biopsies but further studies examining the prevalence of SARS-CoV in these other specimen types and in a larger population are needed. With the use of standardized commercially available assays, comparison of results from different centers may be facilitated.

**Contributors**

Tony Mazzulli, Gabriella A. Farcas, Susan M. Poutanen, Barbara M. Willey, Donald E. Low, Jagdish Butany, Sylvia L. Asa, and Kevin C. Kain jointly conceived and designed the study, and wrote the report. Gabriella A. Farcas performed the majority of the RT-PCR assays.

**Conflict of Interest Statement**

None of the authors has a conflict of interest in relationship to this study.

**Acknowledgements**

This study is supported by a grant from the Canadian Institute of Health Research (MT-13721 to K.C.K). K.C.K. is supported by a Career Scientist Award from the Ontario Ministry of Health and a Canada Research Chair. Artus GmbH provided assays for this study but neither they nor the sponsors of the study had any role in the study design, data collection, data analysis, data interpretation, or writing of the report.

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**Table 1:** Clinical description and SARS-CoV RT-PCR results for 11 patients who died with probable SARS.

<table>
<thead>
<tr>
<th>Sex/Age</th>
<th>Co-morbidities</th>
<th>Illness and Treatment Duration (days)</th>
<th>Post-mortem lung tissue description</th>
<th>RenArt HPA Coronavirus RT-PCR</th>
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<td>Illness</td>
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<td>Type II DM, HTN</td>
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<td>4</td>
<td>0</td>
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<tr>
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<td>11</td>
<td>4</td>
<td>6 (started on day 6 of illness)</td>
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<td>Type II DM, CAD, Hypercholesterolemia, chronic obstructive</td>
<td>8</td>
<td>5</td>
<td>&gt;=5 (started on day 4)</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
We would like to thank the Toronto Medical Laboratory and Mount Sinai Hospital Department of Microbiology; the Ontario Coroner’s Office; and the clinicians who were involved in caring for the patients described in this paper — all in Toronto, Ontario, Canada.

References
Table 1 continued: Clinical description and SARS-CoV RT-PCR results for 11 patients who died with probable SARS.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
<th>BMI</th>
<th>Hypcholesterolemia</th>
<th>RR (started on day 3 of illness)</th>
<th>RR (started on day 5 of illness)</th>
<th>SARS-CoV RT-PCR</th>
<th>Positive</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/44</td>
<td>29</td>
<td>18</td>
<td>17</td>
<td>18 (started on day 3 of illness)</td>
<td>RT Lang</td>
<td>Positive</td>
<td>7.6 x 10^4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M/77</td>
<td>32</td>
<td>29</td>
<td>18</td>
<td>18 (started on day 3 of illness)</td>
<td>RT Lang</td>
<td>Positive</td>
<td>4.1 x 10^8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F/79</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>11 (started on day 2 of illness)</td>
<td>RT Lang</td>
<td>Positive</td>
<td>2.7 x 10^7</td>
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</tr>
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</table>

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The CSRT is accepting applications for the volunteer role of Editor-in-Chief of the Canadian Journal of Respiratory Therapy. This position is appointed by the CSRT Board of Directors.

The Editor-in-Chief will be responsible for overseeing and improving the content of the CJRT, canvassing for submissions, and improving the overall marketability and image of the CJRT. The Editor-in-Chief will be responsible for creating and chairing any ad-hoc or standing committees specific to CJRT business.

The Editor-in-Chief will work with the CSRT head office through the CSRT PR and Communications Coordinator.

The applicant should expect to set aside, on average, 4 hours per week of their time. If you are an RT with an interest in the publishing industry, this is an excellent venue for expanding your knowledge of the print market, journalism and the information gathering process. Please contact CSRT Executive Director, Douglas Maynard (dmaynard@csrt.com) or call 1-800-267-3422.

Calgary Lecture

If You Can’t Breathe, You Can’t Function Integrating the Pulmonary, Neuromuscular and Musculoskeletal Systems

May 1–2, 2004, Foothills Medical Centre, Calgary, Alberta

This two-day lecture and lab is directed at Respiratory Therapists and Technicians, Physicians, Nurses, Physical Therapists and Assistants as well as Occupational Therapists and Assistants, Speech-Language Pathologists and Assistants. Students and other interested parties are also welcome.

Topics covered include: Breathing and Posture; Normal and Abnormal Chest/Truck Development and Function; Positioning Strategies; Integrating Systems Effectively.

There are 5 Contact Lab Hours that include: Facilitating Optimal Breathing Patterns; Airway Clearance; Thoracic Complex - Mobility Exercises and Techniques; Group Problem Solving.

For detailed information and registration visit http://www3.telus.net/rehabforthefuture/

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The CSRT has chosen Edmonton, Alberta to be the site of the 2005 CSRT Annual Education Forum and Annual General Meeting. The CSRT Annual Forum is a fantastic opportunity to gain national exposure for your region and to showcase provincial and/or local achievements. In the past, many organizers have used this event to promote local researchers or to highlight programs in the region that demonstrate respiratory therapists expanding capacity within the healthcare team. Others have used this event to bring in world renowned researchers and leaders in the industry. The CSRT provides the local organizing committee with the opportunity to tailor this event to reflect a local feel with a national appeal. Don’t miss this opportunity to show the rest of the RT’s in Canada what the RT’s in Edmonton can do!

The CSRT is currently looking for a qualified volunteer to fill the position of Forum Coordinator. This person will be located in the Edmonton area and will work in conjunction with CSRT head office to establish a Forum Organizing Committee. The Forum Coordinator and Committee will participate in site acquisition, academic program development, speaker acquisition, social program, sponsor relations and event marketing. The Forum Coordinator will also be responsible for providing periodic updates to the CSRT head office of planning progress. The Forum Coordinator will report to the CSRT Executive Director and will be responsible to the CSRT Board of Directors.

Interested in this challenge? Please contact the Executive Director, Douglas Maynard (dmaynard@csrt.com) or call 1-800-267-3422.
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