June 25, 2018

CTS INSPIRATIONS

CTS NEWS

President's Message

I enjoyed seeing many of you at the American Thoracic Society International Conference in San Diego. It was a memorable conference with many highlights. A personal highlight was introducing Dr. Joseph Lynch for the California Outstanding Clinician Award. Many of you were there, and I thank you for your show of support.

With the ATS International Conference now behind us, CTS is focusing its energy on our Southern California Annual Educational Conference which will take place at the Hilton Irvine on September 21-22, 2018. Review the brochure at: **https://calthoracic.org/wp-content/uploads/2018/06/CTS-FALL-2018-BROCHURE.pdf**

We are very excited about the superb agenda and faculty list assembled by our planning committee, led by Shazia Jamil. The two-day conference, good for over 14 CME credits, will feature lectures, case presentations and expert panel discussions in an intimate, collegial setting. Day 1 will target a multidisciplinary audience and will feature ***Advancing Multidisciplinary Care in COPD and Interstitial Lung Disease***. Day 2 will feature a deep dive into two important topics: ***Pulmonary Hypertension*** and ***Asthma***. Attendees will have the option of registering for one or both days.

Registration is now open at:

https://calthoracic.org/events/2018-fall-annual-educational-conference/

We hope to see you in Orange County this Fall!

Philippe Montgrain, MD
President, California Thoracic Society

CTS at ATS 2018—HIGHLIGHTS

Phil Montgrain (CTS President)

A workshop on immunotherapy-related pneumonitis (will result in a research statement in blue journal)

A great RAPiD poster session on biomarkers in lung cancer….Introducing Joe Lynch as recipient of California OCA….Introducing Vish Nair as recipient of the Thoracic Oncology Assembly Early Career Achievement Award….Networking and connecting in general!

Chris Garvey (Immediate Past President)

Initial work on development of an ATS Guideline on Oxygen that will outline the evidence and recommendations for oxygen use. CTS is well represented in the international writing group with Susan Jacobs as a chair of this greatly needed work.

Shazia Jamil (Co-chair, CTS Ed committee) and Tisha Wang (Chair, CTS Nominating committee) running the Sleep Core Curriculum sessions

The Usage of Positive Expiratory Pressure Devices

Douglas Li, MD, and the CTS Pediatric Committee (DJ Kaley, RN, MSN, CPN, Carmen Reyes, RN, Joann Blessingmoore, MD. Allergy/Pediatric Pulmonology, Gwynne Church, MD. Pediatric Pulmonology/Sleep Medicine Mary Anne Tablizo, MD. Pediatric Pulmonology/Sleep Medicine, Ronald Ferdman, MD. Allergy/Immunology, Daniel Lesser, MD. Pediatric Pulmonology, Cheryl Lew, MD. Pediatric Pulmonology, Matthew Dartt, RCP, RRT-ACCS)

Mechanism of Action

Positive expiratory pressure (PEP) devices create resistance during expiration through usage of a one-way valve (Elkins, 2006). This may improve clearance of mucus by preventing airway collapse during expiration, increasing air volume distal to secretions through collateral ventilation, creating a pressure gradient across mucus, and increasing functional residual capacity (Darbee, 2004). In specific populations with increased sputum viscosity such as cystic fibrosis, there may be an effect on the sputum viscoelasticity (App, 1998). PEP therapy can be combined with high frequency oscillations that are theorized to displace secretions from airways through vibrations and creation shear forces in the airway.

A case report by Ehrlich in 1999 described a single case of an adult male with C3 injury who after using PEP therapy, had a modest improvement in lung function and frequency of respiratory infection (Ehrlich, 1999).

There is not strong evidence to date that PEP improves mucus clearance in patients with severe restrictive lung disease due to neuromuscular conditions, likely due to combined ventilatory muscle weakness and difficulty forming a mouth seal with the device. Insufflation/exsufflation devices remain the mainstay of chest clearance strategies in this population. PEP devices may have benefit for inspiratory muscle training in this population (LoMauro, 2015).

Due to the limited research done in this area, it is not possible to comment on the safety or efficacy of PEP devices in this population.

Asthma

PEP has been studied to a limited extent in patients with asthma and has been hypothesized to prevent distal airway collapse particularly in the outpatient setting. Studies have been small and generally show minimal to no clinical improvement.

When used five times a day, Girard and colleagues demonstrated improved FEV1, FVC and PEF expiratory flow in the majority of patients with asthma over a 1-month study period (Girard, 1994).

A small study by Navanandan tested 52 children in the emergency department with acute asthma exacerbations (Navanandan, 2017). A positive benefit to short term usage of PEP in this population was not demonstrated.

Due to the limited research done in this area, it is not possible to comment on safety or efficacy of PEP devices in this population.

Device specifics

PEP devices generally have a one-way valve connected to an orifice or an adjustable expiratory resistor. A manometer is included to measure the expiratory pressure. Tightening the expiratory resistor increases expiratory pressure.

PEP therapy can include an oscillatory device. The transmission of oscillations to the airways decreases the viscoelastic properties of mucous. This in combination with the increased expiratory airflow helps to mobilize secretions. There are PEP multiple devices including the “Flutter” device, “Acapella”, “Aerobika”, and the “Metaneb” system.

Device Time Cost

Time cost includes approximately 10-15 minutes per treatment excluding other adjunct therapies such as huff cough.

Summary

In summary, PEP therapy seems to be a well-tolerated strategy for improving forced expiratory flow in patients with lung disease. This improved flow translates into variable clinical efficacy depending on the patient population studied. The data most strongly supports regular usage in patients with cystic fibrosis. In patients with cystic fibrosis, PEP devices demonstrated improvement in lung function and decreased pulmonary exacerbations, and compared favorably to other mucociliary clearance techniques. In adults with non-CF bronchiectasis, PEP devices have shown to improve cough symptoms and the amount of mucus expectorated. However, data is lacking regarding an impact on health outcomes such as lung function or pulmonary exacerbations. The safety and efficacy of PEP in patients with asthma and neuromuscular weakness is not yet known due to the small sample sizes and small number of trials completed.

Research Supporting Utility

Cystic Fibrosis

The majority of studies in PEP therapy have focused on patients with cystic fibrosis (CF). Generally, PEP therapy in CF has been shown to be effective and safe in children and adults, with likely benefits including improved lung function and reduce pulmonary exacerbations. Several studies of patients with CF compared PEP therapy to other airways clearance techniques.

In 1998, App conducted a study of 14 child and adults with CF, comparing flutter vs autogenic drainage over a 1-month period, and found that sputum viscoelasticity was significantly lower ($p<0.01$) in PEP vs autogenic drainage groups (App, 1998).

In CF infants, Costantini showed that PEP therapy was well tolerated over a 1-year study period (Costantini, 2001).

McIlwaine compared PEP therapy to percussion and postural drainage in 40 children for a study period of 1 year (McIlwaine, 1997). FVC ($p = 0.02$), FEV1 ($p = 0.04$) had significant improvement in the PEP treatment group (FVC, +6.57; FEV_1, +5.98) while declines were seen in all parameters in the postural drainage group.

In a 2013 study of 107 children and adults with cystic fibrosis by McIlwaine and colleagues, PEP therapy resulted in a significant reduction in number of pulmonary exacerbations and a longer time to the first pulmonary exacerbation in outpatients compared to those who received high frequency chest wall therapy (McIlwaine, 2013).

In 2015, McIlwaine performed a Cochrane Review of 26 studies comparing PEP therapy to active cycle breathing, autogenic drainage, oscillating PEP, and high frequency chest wall oscillation in children and adults (McIlwaine, 2015). The primary endpoint of FEV1 showed no significant treatment difference between PEP and other techniques over 3 months. However, there was a lower respiratory exacerbation rate in PEP compared to other techniques over the course of 1 year. Participants did report preference for PEP therapy in 10 studies where preference was measured.

Thus, PEP is a safe and effective therapy for children and adults with CF, with likely effects of improving lung function and reducing pulmonary exacerbations. It has also been demonstrated as a safe therapy for infants with CF.

Non-Cystic Fibrosis Bronchiectasis

Non-cystic fibrosis bronchiectasis is a disease process more prevalent in the adult population, and PEP has been studied as a treatment for this diagnosis with benefits mostly being sputum weight expectorated. This data is limited to the adult population.

In 2009, Murray studied 20 adult patients in a crossover trial comparing oscillatory PEP and no chest physiotherapy. Endpoints included the Leicester Cough Questionnaire (LCQ), sputum volume, and measures of lung function (Murray, 2009). There was a statistically significant improvement with modest effect size in the LCQ (1.3 units) and sputum volume (2ml over 24 hour period).

In 2007, Eaton studied 36 adult patients with non-cystic fibrosis bronchiectasis, comparing efficacy and tolerability of oscillatory pep therapy, active cycle of breathing technique, and postural drainage (Eaton, 2007). Sputum wet weight was significantly improved in patients using active cycle breathing over the other 2 techniques.

Neuromuscular Weakness

Literature supporting usage in pediatrics remains minimal, with possible physiologic benefits, but no demonstrated clinical benefit.

Indications

PEP therapy is indicated in patients with cystic fibrosis as part of an airways clearance regimen.

PEP therapy is not yet indicated in patients with asthma and neuromuscular disease due to lack of data supporting improved clinical outcomes in these groups.

PEP therapy has been used in adults with non-cystic fibrosis bronchiectasis but is not supported for usage in children.

Complications/Contraindications

The only reported adverse event was in a study where infants performing either PEP or postural drainage with percussion experienced some gastro-oesophageal reflux. This was more severe in the postural drainage with percussion group.

The only re ported adverse event was in a study where infants performing either PEP or postural drainage with percussion experienced some gastro-oesophageal reflux. This was more severe in the postural drainage with percussion group.

PEP therapy is generally well tolerated with low risk of pulmonary complications.

a) The only re ported adverse event was in a study where infants performing either PEP or postural drainage with percussion experience;
b) some gastro-oesophageal reflux. This was more severe in the postural drainage with percussion group.

Future Research Needs

a) Evaluation of PEP therapy in pediatric patients with larger studies non-cystic fibrosis bronchiectasis, asthma, and neuromuscular disease with clinical outcomes. Outcomes suggested include oxygenation, frequency of illnesses/antibiotic usage, respiratory quality of life, and measures of lung function.
b) Evaluation of PEP therapy for use in hospitalized pediatric patients with bronchiectasis, chronic infections, asthma and neuromuscular disease – include documentation of change in work of breathing indices, oxygenation and or portable pulmonary function tests before and after use, change in chest radiograph findings.

Announcements:

In Memoriam: Dr. Nick Anas

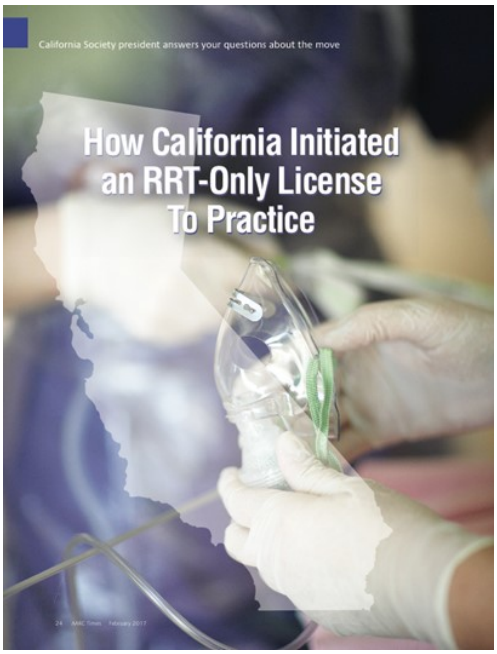
Former CTS member Dr. Nick Anas, passed away on April 3, 2018. Dr. Anas was a nationally recognized pediatric intensivist. Among his many accomplishments, he served as president of the Children's Special Care Coalition, which is a non-profit advocacy group based in Sacramento whose mission is to guarantee access for care to pediatric specialists throughout California. Tributes to Dr. Anas can be found at:

https://tinyurl.com/ycumeo2b

https://www.choc.org/video/remembering-dr-nick-anas/

CSRC Corner

The question has been asked if Registered Respiratory Therapist is required?



The National Board for Respiratory Care, https://www.nbrc.org/, promotes excellence in respiratory care by awarding credentials based on high competency standards. The RRT credential demonstrates the highest level of professional achievement and competency for a respiratory care practitioner. While in most States achieving the RRT is discretionary, in California it is mandated. The California Society for Respiratory Care, https://www.csrc.org/, is largely responsible for Assembly Bill 1972 being signed into law, effective as of January 2015, establishing the RRT credential as the minimum requirement for candidates seeking licensure in California. This is just one example of the results of many years of hard work to help ensure higher quality respiratory care. Together, CTS and CSRC are making a difference for California's patients.

Click on the following link to read about "The Journey to an RRT License Minimum in California."

https://calthoracic.org/csrc-the-journey-to-an-rrt-license-minimum-in-california/

BREATHE LA warmly invites you to a screening of The Forgotten Plague Tuberculosis in America. Enjoy a reception with hors d'oeuvres and cocktails among medical professionals. Following the film, participate in an engaging discussion with our distinguished panelists: Chana Gazit, Filmmaker, Dr. Julie Higashi and Dr. Yossef Aelony, TB Specialists. Concluding the event will be a special recognition from the National TB Controllers Association of Dr. Robert Kim-Farley for his advocacy in TB.

"In 2016, the World Health Organization reported 10.4 million people were diagnosed with TB and 1.7 million died from the disease making it one of the top 10 causes of deaths worldwide."
~ World Health Organization

BREATHE LA is committed to increasing public awareness on lung-related diseases in Los Angeles County. Only with your support, can we continue our mission to promote clean air and healthy lungs through research, education, advocacy, and technology. Join BREATHE LA's effort in taking action against TB today!

WHEN: Wednesday, June 27, 2018
WHERE: 5757 Wilshire Boulevard, Penthouse #1, Los Angeles, CA 90036
EVENT TIMELINE: 6PM Cocktail Reception & Exhibition Hall | 7:05PM Film Screening | 8:10PM Panel Discussion | 8:30PM Advocacy Award Honoring Robert Kim-Farley

2018 FILM SERIES

Wednesday, June 27, 2018
The Forgotten Plague
Tuberculosis In America
Produced by Chana Gazit

Location: 5757 Wilshire Blvd., Penthouse #1, Los Angeles, CA 90036

6:00 PM Reception | 7:05 PM Film Screening

8:10 PM Panel Discussion | 8:30 PM Advocacy Award Honoring Dr. Robert Kim-Farley

For more information, contact
Christina Correia, Director of Events & Sponsorships
PH: (323) 935-8050 Ext. 231 | EMAIL: CCorreia@breathela.org

Film presented by:

BREATHE CALIFORNIA of Los Angeles County®

www.BREATHELA.org

Photo Credit: Screen shot from The Forgotten Plague Tuberculosis In America

Wednesday, June 27, 2018

2018 FILM SERIES

Film: The Forgotten Plague Tuberculosis In America
Location: 5757 Wilshire Blvd., Penthouse #1, Los Angeles, CA 90036
Time: 6:00 PM Reception | 7:05 PM Film Screening | 8:10 PM Panel Discussion | 8:30 PM Advocacy Award Honoring Dr. Robert Kim-Farley
Presented by: BREATHE California of Los Angeles County

ABOUT THE FILM

By the dawn of the 19th century, the deadliest killer in human history, tuberculosis, had killed one in seven of all the people who had ever lived. The disease struck America with a vengeance, ravaging communities and touching the lives of almost every family. The battle against the deadly bacteria had a profound and lasting impact on the country. It shaped medical and scientific pursuits, social habits, economic development, western expansion, and government policy. Yet both the disease and its impact are poorly understood: in the words of one writer, tuberculosis is our "forgotten plague."

To RSVP for the film screening, please contact Andrea Oriza at (323) 935-8050 Ext.247 or AOriza@breathela.org

For Exhibitor information, please contact Christina Correia at (323) 935-8050 Ext.231 or CCorreia@breathela.org

The event is complimentary. RSVP is required. Theater seating is limited and is subject to availability.

BREATHE CALIFORNIA of Los Angeles County®

www.BREATHELA.org

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Photo Credit: Screen shot from The Forgotten Plague Tuberculosis In America

Southwestern Journal of Pulmonary and Critical Care Medicine

Volume 16							
Title (Click on title to open the manuscript, **CME in Bold**)	**Journal Section**	**First Author**	**Year**	**Vol**	**Issue**	**Pages**	**Date Posted**
Tobacco Company Campaign Contributions and Congressional Support of Tobacco Legislation	Pulmonary	Robbins RA	2018	16	4	232-6	4/30/18
Kiss Up, Kick Down in Medicine	Editorial	Robbins RA	2018	16	4	230-1	4/30/18
Medical Image of the Week: Mediastinal Lipomatosis	Imaging	Borg B	2018	16	4	228-9	4/25/18
Medical Image of the Week: Dobhoff Tube Placement with Roux-En-Y Gastric Bypass	Imaging	Ali H	2018	16	4	226-7	4/18/18
Medical Image of the Week: Atypical Deep Sulcus Sign	Imaging	Ali H	2018	16	4	224-5	4/11/18
Airway Registry and Training Curriculum Improve Intubation Outcomes in the Intensive Care Unit	Critical Care	Malo J	2018	16	4	212-23	4/9/18
Social Media: A Novel Engagement Tool for Miners in Rural New Mexico	Pulmonary	Wigh S	2018	16	4	206-11	4/6/18
April 2018 Imaging Case of the Month	**Imaging**	**Viggiano RW**	**2018**	**16**	**4**	**194-205**	**4/5/18**
Medical Image of the Week: Headcheese Sign	Imaging	Adial A	2018	16	4	192-3	4/4/18
April 2018 Critical Care Case of the Month	**Critical Care**	**Singarajah C**	**2018**	**16**	**4**	**183-91**	**4/2/18**
April 2018 Pulmonary Case of the Month	**Pulmonary**	**Garrett AL**	**2018**	**16**	**4**	**174-82**	**4/1/18**

Southwestern Journal of Pulmonary and Critical Care Medicine

Volume 16, Issue 5							
Title (Click on title to open the manuscript, **CME in Bold**)	**Journal Section**	**First Author**	**Year**	**Vol**	**Issue**	**Pages**	**Date Posted**
Fatal Consequences of Synergistic Anticoagulation	Critical Care	Sen P	2018	16	5	289-95	5/31/18
Medical Image of the Week: Elemental Mercury Poisoning	Imaging	Boivin M	2018	16	5	287-8	5/30/18
Medical Image of the Week: Thoracic Splenosis	Imaging	Gardner G	2018	16	5	285-6	5/23/18
What the Supreme Court Ruling on Binding Arbitration May Mean to Healthcare	Editorial	Robbins RA	2018	16	5	283-4	5/22/18
Medical Image of the Week: Valley Fever Cavity with Fungus Ball	Imaging	Robbins RA	2018	16	5	281-2	5/16/18
Medical Image of the Week: Recurrent Sarcoidosis Resembling Malignancy	Imaging	Zeid F	2018	16	5	279-80	5/9/18
May 2018 Imaging Case of the Month	**Imaging**	**Gotway MB**	**2018**	**16**	**5**	**254-78**	**5/3/18**
Medical Image of the Week: Cardiac Magnetic Resonance Imaging Findings of Severe RV Failure	Imaging	Wickstrom K	2018	16	5	252-3	5/2/18
May 2018 Critical Care Case of the Month	**Critical Care**	**Gagnon L**	**2018**	**16**	**5**	**245-51**	**5/2/18**
May 2018 Pulmonary Case of the Month	**Pulmonary**	**Sakata KK**	**2018**	**16**	**5**	**237-44**	**5/1/18**