ABSTRACTS

Poster abstracts from the 2014 Conference of the Canadian Society of Respiratory Therapists

The 50th annual Canadian Society of Respiratory Therapists (CSRT) Education Conference was held in Montreal (Quebec) on May 22 to 24, 2014, hosted by the CSRT in collaboration with l’Ordre professionnel des inhalothérapeutes du Québec (OPIQ). Over the course of the three-day conference, posters were displayed in the exhibit hall in two separate competitions: one for respiratory therapists (RTs) and one for students. We had a record number of applications this year, with eight student posters and 17 RT posters being presented. The winning RT poster was from Kathleen Spurr et al, “Creation of a tool for assessing evidence-based decision-making knowledge and use in respiratory therapists”. The winning student RT poster was from Madeline Turkula from the University of Manitoba (Winnipeg, Manitoba) for her poster, “Effectiveness of inpatient smoking cessation programs.”

As evidenced by the abstracts reproduced below, the work of our colleagues in 2014 highlighted current research and practice innovations led by RTs. The editorial board looks forward to receiving these manuscripts for consideration for publication in the Canadian Journal of Respiratory Therapy. Please note that these abstracts have not been peer-reviewed.

RT POSTER ABSTRACTS

COMPETITION WINNER

RTP01 CREATION OF A TOOL FOR ASSESSING EVIDENCE-BASED DECISION-MAKING KNOWLEDGE AND USE IN RESPIRATORY THERAPISTSK Spurr1,2, G Dechman3, K Lackie4, R Gilbert1
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INTRODUCTION/OBJECTIVES: For more than a decade, healthcare professionals have learned the process of using research evidence to inform clinical decision-making (known as evidence-based decision making (EBDM)). Lack of knowledge of the EBDM process or failure to incorporate it into the practice setting may lead to the delivery of suboptimal or even ineffective treatment, poor patient outcomes, cost-ineffectiveness in the provision of services, and ultimately decreased quality of life1,2. While EBDM is included in respiratory therapy curricula and our National Competency Profile3, and is recognized as important to the provision of best care, a tool for assessing EBDM competency is essential. Currently no tool exists for evaluating practicing healthcare providers’ competency in all components of EBDM. Objectives for this study were: 1) To create a tool to measure HCP’s knowledge and skills to make evidence-informed decisions, and 2) To use this tool to evaluate the current level of registered respiratory therapists’ (RRTs) proficiency to make evidence-informed decisions.

METHODOLOGY: The Delphi technique was used to develop an assessment tool for measuring healthcare providers’ competency in EBDM. The Delphi technique is a quantitative research method commonly used to obtain feedback from a group of experts in order to facilitate decision-making6. In this study, a three-tiered Delphi technique was used to generate, develop and evaluate multiple-choice questions for an EBDM Capacity Assessment tool. Questions were categorized into five domains reflective of the EBDM process. Upon development of the assessment tool, a pilot study was conducted to evaluate practicing healthcare providers’ knowledge and use of EBDM. An invitation to participate in the pilot study was sent via respective Colleges/Associations to all active practicing clinical psychologists, occupational therapists, physiotherapists, registered nurses, respiratory therapists, and social workers in Nova Scotia. Using Opinion survey software, participants were asked a series of demographic questions and to complete the EBDM Capacity Assessment tool. Data collected were collated, and profiles of specific areas of strength and weakness in relation to the EBDM process were identified for each profession. Descriptive statistics, and multivariate mixed models were used to evaluate individual survey responses in total, as well as within each EBDM domain.

RESULTS: The assessment tool consisted of 26 multiple-choice questions that evaluated knowledge and/or skills in five different competencies of EBDM (Table 1). 12,884 healthcare providers were invited to participate in the study. 873 (6.8%) people started the assessment. 471 completed all questions, including 32 respiratory therapists. The mean overall score was 17.7 (out of 26; 68%). There was no significant difference (p>0.10) among professions in overall score on the assessment. The mean score on Domain 5 (applying evidence to clinical practice) was significantly less than the others, with an average score of only 52%.

There was a significant difference between all education levels in overall performance (p<0.001). As the year of completed education went up (more recent), the overall assessment score increased significantly (p<0.0001). This data suggests that RRTs could benefit from skill development in all EBDM domains, with particular need in Domain 5, applying evidence to clinical practice.

CONCLUSION: This study created a tool that can be used to measure respiratory therapists’ EBDM knowledge and skills. Information gained from using this validated assessment tool will allow us to identify areas in need of development and direct the creation of programs to enhance EBDM skills in respiratory therapists.

TABLE 1

The assessment tool consisted of 26 multiple-choice questions that evaluated knowledge and/or skills in five different domains of EBDM

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Defining a clinical question</td>
</tr>
<tr>
<td>2</td>
<td>Performing a strategic search</td>
</tr>
<tr>
<td>3</td>
<td>Identifying sources of evidence</td>
</tr>
<tr>
<td>4</td>
<td>Appraising the literature/evidence</td>
</tr>
<tr>
<td>5</td>
<td>Applying evidence to clinical practice</td>
</tr>
</tbody>
</table>

REFERENCES:

RTP02
PEDIATRIC HIGH ACUITY SUPPORT TEAM (PHAST): INITIAL PHASES AND IMPLEMENTATION WITHIN A SMALL URBAN PEDIATRIC HEALTH CENTRE

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INTRODUCTION: Rapid response teams (RRTs) are comprised of specialized healthcare professionals who deliver high acuity care to the bed-side of inpatients experiencing a significant deterioration in clinical status (Massey, Aitken, & Chaboyer, 2010; Wolf, 2007). The structure of the RRT varies between hospitals, but the common competencies include the ability to provide critical care outside of the ICU via: 1) obtaining central venous access, 2) providing advanced airway management, and 3) the prescription and delivery of medications and diagnostic therapies (VanVoorhis & Willis, 2009). The ultimate goal of the RRT is to improve quality of care and health outcomes through the reduction of morbidity and mortality (Massey, Aitken & Chaboyer, 2010; Safer Healthcare Now! The Quebec Campaign, 2009).

OBJECTIVE: At the present time the IWK Health Centre in Halifax, Nova Scotia has not yet implemented a RRT, despite active care delivery to critically ill children. The IWK is restructuring their pediatric critical care program to achieve excellence and improve their healthcare delivery. At the heart of this redevelopment is the formation of a Pediatric High Acuity Support Team (PHAST) Committee to work toward the implementation of a RRT.

PLAN: Through the use of “Getting Started Kit: Rapid Response Teams How-to Guide” (Safer Healthcare Now! The Quebec Campaign, 2009) and additional literary resources, eight steps have been developed to implement PHAST:
1) Identification of a gap in current clinical care provided
2) Formation of an interdisciplinary, collaborative research group
3) Literature review; Family and staff survey; Benchmarking; Obtain staff support
4) Compile data
5) Identify need for PHAST
6) Presentations to key stakeholders
7) Staff the team; Development of policies; Education; Allocation of resources
8) Roll out: activating and evaluating PHAST

FUTURE GOALS: Recently a six-month pilot has been approved by upper level management at the IWK, which will be funded by Pediatric Critical Care. The pilot project will provide an opportunity to collect data, assess and evaluate the function of PHAST at the IWK Health Centre. This is an evidenced-based project with the end goal of providing the best possible care to patients and families.

REFERENCES:

RTP03
COMPLICATIONS INCREASE WITH GREATER THAN ONE ENDOTRACHEAL INTUBATION ATTEMPT: EXPERIENCE IN A CANADIAN ADULT TERTIARY CARE TEACHING CENTRE

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This prospective review/poster was undertaken to better understand out-of-operating room endotracheal tube intubations (ETI) at our hospital. A multi-disciplinary designed collection card was used to record complications of intubations over a 13-month period. Respiratory therapists recorded, collected and analyzed these data cards. From this review, greater than 1 attempt at ETI was associated with a 4.5-fold increase in severe complications, and a 4-fold increase in total complications. This information is mapping a change in practice and a multidisciplinary team initiative to improve patient care and safety.

Figure 1

RTP04
STANDARDIZING THE USE OF INHALED NITRIC OXIDE IN NICU: EARLY RESULTS FROM A QUALITY IMPROVEMENT INITIATIVE

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BACKGROUND: The primary objective of this study is to compare the use of inhaled nitric oxide (iNO) and common associated neonatal outcomes in our Neonatal Intensive Care Unit (NICU) two years before and one year after implementation of a standardized iNO administration guideline. Implementation of new evidence-based guidelines standardizing the indications, methods of administration, evaluation of response and weaning of iNO in our NICU has resulted in significant reduction in its use without any adverse effects on patient outcomes.

INTRODUCTION: Prompted by unexpectedly high usage, the policy on the use of iNO was revamped in our Neonatal Intensive Care Unit NICU in July 2012. While the indications and dosing of iNO remained unchanged, new policy focused on ‘patient optimization’ prior to initiating therapy, promoted use of functional echocardiography for diagnosis, and developed strict criteria for establishing response to therapy and its subsequent weaning. A year after implementation, data were collected to review the impact of new policy on iNO utilization and overall patient-related outcomes.

METHODOLOGY: All infants treated with iNO at our NICU 4 years before (epoch 1-1st June 2008-31st May 2012) and 1 year after (epoch...
2-1st September 2012-31st August 2013) introduction of the new policy were included. Treatment duration of iNO was extracted from our unit’s iNO database. Patient demographic and outcomes data were extracted from Canadian Neonatal Network (CNN) database. Overall population characteristics and outcomes for our unit were also compared. Primary outcomes were indices of iNO utilization while common associated neonatal morbidities were considered as secondary outcomes.

**RESULTS:** During epoch 1, a yearly average (range) number of infants treated and duration on iNO use was 27 (21-36) and 1500 (946-2764) hours respectively vs. 21 infants and 581 hours for epoch 2. The yearly median (IQR) iNO use as hours/patient was 36 (13,64), 19 (5,48), 33 (4,90) and 29 (14,79) during epoch 1 vs. 7 (3,22) for epoch 2. In spite of lower iNO utilization during epoch 2, the major patient outcomes remained unaffected. Our unit’s overall population characteristics and outcomes also remained unchanged.

**CONCLUSIONS:** Standardization of the use of iNO in NICU is feasible and may result significant reduction in its use and associated healthcare costs without any worsening of related patient outcomes. iNO therapy should be used judiciously in a manner that is safe, cost-effective and beneficial to patient outcomes.

**RTP05**

**IMPROVING PATIENT CARE BY USING SIMULATION TO EMPOWER HEALTH PROFESSIONAL PRECEPTORS AND MENTORS TO PRACTICE COLLABORATIVELY: A HEALTH WORKFORCE ACTION PLAN (HWAP) PROJECT**

**Methods:** Recruited from three zones in Alberta (Calgary, Edmonton and South Zone), professionally diverse staff and physicians (n=75-100) working at medical-surgical units will participate in two 4.5 hour IP simulation workshops. A pilot study (n=21) took place at the Foothills Medical Center Unit 44 (Trauma) from January-February 2014. A pre-post study design will evaluate changes to the three competency measures using validated questionnaires (Teamwork Attitudes Questionnaire, Mayo High Performance Teamwork Scale, McMaster-Ottawa TOSCE) and a developed knowledge test.

**Sunderland:** A pilot study (n=21) took place at the Foothills Medical Center Unit 44 (Trauma) from January-February 2014. A pre-post study design will evaluate changes to the three competency measures using validated questionnaires (Teamwork Attitudes Questionnaire, Mayo High Performance Teamwork Scale, McMaster-Ottawa TOSCE) and a developed knowledge test.

**Objectives:**

- To verify if the use of an HME interferes in maximal inspiratory pressure measurements performed with manovacuometer and ventilometer in healthy adults.
- To assess if the presence of an HME interferes in maximal inspiratory pressure measurements performed with manovacuometer and ventilometer in healthy adults.
- To determine if the presence of an HME interferes in maximal inspiratory pressure measurements performed with manovacuometer and ventilometer in healthy adults.

**Methods:** To verify if the use of an HME interferes in maximal inspiratory pressure measurements performed with manovacuometer and ventilometer in healthy adults.

**Results:**

- No significant difference was found between the values pre- and post-HME use in vital capacity measurements: (3878.8±202.2 mL vs 3925.5±206.0 mL; p=0.116). The same was observed regarding respiratory muscle strength measures MIP (~99.0±8.9 vs ~95.5±9.0 cmH2O; p=0.149) and MEP (92.5±7.5 vs 92.5±7.7 cmH2O; p=1.0).

**Conclusion:** The results from the pilot study will inform the HWAP curriculum and data collection phase, which will take place from March-August 2014. We anticipate that the results from this study will inform the creation of a provincial wide IP curriculum.

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CONCLUSION: We conclude that the use of an HME does not significantly modify lung volumes and respiratory muscle strength, so they should be used in order to prevent the occurrence of pulmonary infection.

**RTP08 DEVELOPMENT OF THE ANESTHESIA ASSISTANT ROLE IN A COMMUNITY HOSPITAL**

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**INTRODUCTION/OBJECTIVE:** In 2012, Halton Healthcare Services (HHS) introduced the Anesthesia Assistant (AA) role to the surgical program. This poster depicts the value of the AA role in a community-based hospital in terms of increasing operating room (OR) efficiency and enhancing patient care.

**METHODOLOGY:** Data were collected using the INFOmed platform and OR Manager program. Trends were examined over a 3-year period for support of the demand for AAs in the peri-operative environment. Procedures performed by AAs on a daily basis post-implementation were analyzed. Anecdotal evidence was also collected from the interdisciplinarian team.

**RESULTS:** The results show the addition of the AA to assist the anesthetist has improved the OR efficiency in the areas of safety, patient flow, and availability of the anesthetist (Figure 1). In terms of monitored anesthetic care and pain management, the AA role allows the Anaesthesia Care Team (ACT) to focus on best practice regarding regional anesthesia, safe patient monitoring, and holistic patient care (Figure 2). The integration of the AA role into the evening shift has shown an overall positive effect on the ability of anesthesia to manage caseload afterwards in the OR and in Labor and Delivery (L&D) (Figure 3).

**conclusion:** The introduction of the AA role into the peri-operative environment has fostered improvements in efficiency and safety of patients by the AA acting as a clinical extender of the anesthetist.

**next steps:**
1) Continued workload collection of AA roles and responsibilities at HHS to provide a more robust data set for statistical analysis;
2) Expansion of the procedural sedation role outside of the surgical program;
3) Initiation of a regional block room to further facilitate best practice in pain management and improved efficiency of the OR.

**RTP09 RESPIRATORY THERAPESTS: DO WE MEASURE UP? EVALUATING OUR PRACTICE**

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**BACKGROUND:** The importance of utilizing a low tidal volume strategy in mechanically ventilated patients has been known since the landmark ARDS network study. Since that time numerous articles have identified barriers to implementing this lung protective strategy. In our critical care units, all ventilated patients are measured and ventilated to a target tidal volume of 6-8 mL/kg predicted body weight. A daily audit over three years was undertaken to see if this was being done. It was found to ensure the success and sustainability of this practice, it needs to be consistently and reliably tracked with reportable compliance data.

**INTRODUCTION/OBJECTIVE:** The quantify lung protective ventilation in our units and identify barriers to this practice.

**METHODOLOGY:** Compliance was measured daily, reviewed and tracked on a monthly basis. All ventilator flow sheets were reviewed. Data was collected for three years, from January 2010 to Jan 2013 from both sites within our organization.

**RESULTS:** Initial data reviewed a lower than expected compliance to measuring patients and ventilating to 6-8 mL/kg predicted body weight. Site-to-site fluctuation in compliance rates were noted, and linked to respiratory staff experience in years. Barriers were identified and subsequently addressed. Compliance rates have steadily increased over the three year audit, and now are consistently over 80%.

**Conclusions:** With monthly tracking and reporting of compliance data at department huddles, staff meetings, and corporate critical care quality meetings, best practice and adherence to standards is continually emphasized. We now track a number of quality indicators including cuff pressures, PaCO2/FiO2 ratios, etc. Evaluative practice has become an important part of our daily operation and has allowed us to be accountable for our practice. The department contribution to the delivery of high quality and safe patient care is clearly evident through our focus on continuous quality improvement.
RTP10
THE IMPLEMENTATION OF AN INTER-PROFESSIONAL MODEL OF PATIENT CARE IN AN ACADEMIC HEALTH SCIENCES CENTER: RESPIRATORY THERAPISTS AS INTEGRAL MEMBERS OF THE TEAM
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INTRODUCTION: With the increasing demand for healthcare services and the call for interprofessional collaboration and teamwork to address these needs, innovative approaches to care delivery are necessary. The Ottawa Hospital Inter-Professional Model of Patient Care (TOH IPMPC©) is one of four building blocks in TOH’s system redesign and appears to be the first of its kind. TOH IPMPC© is a set of guiding principles that are centred on concepts of collaborative leadership, shared decision-making, and interprofessional communication. They are flexible enough to be utilized in a variety of health care settings, patient populations, and inter-professional teams.

OBJECTIVES: 1) To share an innovative and unique Interprofessional model of patient care 2) To describe the involvement of respiratory Therapy in the development, implementation, and sustainability of TOH IPMPC©.

METHODS: TOH IPMPC© was created by patients and healthcare providers (HCPs), including respiratory therapists, and is guided by a steering group that has representation from across the disciplines. It has been implemented with 98 teams across a large academic health science center. Each team reflected on the guiding principles and decided on how these principles are actualized within the team. The team then developed an action plan encompassing the changes to be implemented to meet the guiding principles.

OUTCOMES: The model is being evaluated by a longitudinal study that is utilizing a mixed methods approach to assessing the impact of the model on specific indicators from the perspectives of patients and HCPs. The preliminary findings support an enhanced quality of patient care through improved inter-professional collaboration, staff well-being, and organizational climate.

CONCLUSION: Over 5000 HCPs, including respiratory therapists, have participated in the implementation. The sustainability of the model is being addressed through the continuing leadership of the steering group, dedicated facilitator roles, an interprofessional education program, and interprofessional unit councils.

RTP11
RESP ROUNDS: AN INITIATIVE TO INSPIRE COLLABORATION
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INTRODUCTION: Success in bridging the gap between knowledge and practice requires a means or framework by which knowledge can be translated into practice (1,2). Often, the focus of evidence based practice implementation is from a single profession. There is support however, that inter-professional education and collaborative efforts can enhance knowledge translation and improve evidence based practice (3). The Interprofessional Network Supporting Practice Initiatives in Respiratory Excellence (INSPIRE) is an example of a group of clinicians who recognize the added value of interprofessional education and collaboration. The group was recently established with the aim of improving the quality of respiratory care provided by clinicians involved in respiratory care practices (MDs, RTs, and others).

METHODS: One of the first initiatives of the INSPIRE group was to identify practice gaps, and provide a forum for knowledge translation and practical learning: Respiratory Education Supporting Practice (RESP) Rounds. Subject matter experts are recruited to speak and lead discussion about a particular topic. Sessions are intended to be interactive with questions, discussions and general sharing of experience and information. They are broadcast through the Ontario Telemedicine Network (OTN) and can also be attended onsite (in person) at St. Michael’s Hospital. Sessions are also archived and available online for one year. Rounds are advertised through email notification to RT groups at various institutions and to Critical Care Staff and Fellows through the University of Toronto Interdepartmental Division of Critical Care. Attendance sign-in forms and evaluations with 5-point Likert scaled questions are distributed along with the email, as well as to onsite attendees. Evaluation forms are divided into 5 areas to assess learning objectives and content, the speaker, the presentation and subject area, and the overall effectiveness of the session. There is an area for comments and for subject suggestions for future rounds.

RESULTS: To-date, there have been two sessions of RESP Rounds. The topic of these events and the number of attendees is indicated in Table 1. The onsite attendees consisted of MDs (attending physicians and fellows) and RRTs. No other allied health or nursing disciplines were present. RESP Rounds 1 had 72% of onsite attendees (N=13) complete the evaluation form (see Table 2). In RESP Rounds 2, 67% of onsite attendees (N=11) completed the evaluation. All respondents, 100% (N=24), from both sessions agree or strongly agree that RESP Rounds in an effective means to engage in education and collaboration (Figure 1). Most, 95.8% (N = 23) of the total respondents agree or strongly agree that the presentation enhanced their knowledge of the subject area. The remaining 4.2% answered neutral (Figure 2). When asked about whether the presentation would initiate change in practice 86.9% (N=20) agree or strongly agree. The remaining 13.1% (N=3) answered neutral (Figure 3). Of those that responded, 87.5% (N=14) expressed interest in revisiting and further discussing that topic at a future event.

TABLE 1
RESP Rounds Summary

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic and speaker</th>
<th>Total sites</th>
<th>On-site attendees</th>
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<tbody>
<tr>
<td>RESP Rounds 1</td>
<td>27 Jan 2014</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>RESP Rounds 2</td>
<td>1 April 2014</td>
<td>6</td>
<td>17</td>
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TABLE 2
RESP Rounds On-site Attendees

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<th>RESP Rounds</th>
<th>MDs</th>
<th>RTs</th>
<th>Other</th>
<th>Total On-site Attendees</th>
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<tr>
<td>RESP Rounds 1</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>RESP Rounds 2</td>
<td>11</td>
<td>6</td>
<td>0</td>
<td>17</td>
</tr>
</tbody>
</table>

Figure 1
The presentation enhanced your knowledge of the subject area

The presentation will initiate change in your professional/clinical practice

DISCUSSION: RESP Rounds has served as a means to eliminate the silos in which clinicians operate. It has brought clinicians who are involved in respiratory care practices in the same room to discuss very specific practice issues. RESP rounds has and will continue to serve as an interactive session with questions, discussion and general sharing of experiences and information. With the identification and discussion of practice gaps, focused working groups have formed to further facilitate closing the gaps.

CONCLUSION: Through the INSPIRE group, practice gaps are identified. RESP Rounds serve as a favourable platform to discuss a particular knowledge–practice gap. This initiative is ongoing and will serve as an excellent opportunity for interprofessional education and collaboration.

FUTURE GOALS:
1) Capture off-site attendee’s attendance and evaluation
2) Be more inclusive to allied health disciplines and nursing groups
3) Develop more focused interprofessional working groups

REFERENCES:
3. Zwarenstein M, Reeves S. Knowledge Translation and Interprofessional Collaboration: Where the Rubber of Evidence-Based Care Hits the Road of Teamwork. The Journal of Continuing Education in Health Professions 2006;26(1):46-54

ACKNOWLEDGEMENTS: RESP Rounds 1 and 2 were graciously sponsored by the Health Disciplines Professional Practice group at St Michael’s Hospital.

RTP12
DEVELOPMENT OF A TRACHEOSTOMY STOMA CARE QUICK REFERENCE GUIDE AND ALGORITHM USING A QUALITY IMPROVEMENT METHODOLOGY
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INTRODUCTION: With advances in medical therapies and surgical techniques in the last 20 years, we are seeing increased survival and medical complexity in our infant and pediatric patients, including more patients receiving tracheostomies. Our objective was to generate a quick reference guide for clinicians that would outline the stoma care products available within the hospital and their indications for use. In addition, we also aimed to generate an algorithm to standardize stoma care therapies and products for optimal stoma health.

METHODOLOGY: We decided to use the Model for Improvement, a quality improvement methodology, in our approach to generating a quick reference guide and algorithm for tracheostomy care. Our quality improvement (QI) team, comprised of RTs working in all areas of the hospital, completed 4 PDSA cycles (plan, do, study, act) to generate the guide and algorithm. We collected qualitative data based on surveying bedside RTs and their response to the quick reference guide and algorithm.

RESULTS: Surveys showed an overall positive response to the quick reference guide and algorithm. We used feedback from clinical RTs in PDSA cycle 4 in order to generate our current quick reference guide and algorithm.

CONCLUSIONS: Our next PDSA cycle will involve using the quick reference guide and algorithm at the bedside. We will continue to gather qualitative data in the form of feedback from clinicians and use it to further modify the tool. QI framework allows us to engage clinical RTs in developing bedside tools to provide care. This methodology is also advantageous because it allows for continuous changes and evaluation in order to optimize care.

RTP13
KNOWLEDGE TRANSLATION OF EVIDENCE-BASED MEDICINE IN RT: ATTITUDES, KNOWLEDGE, PRACTICE AND PERCEIVED BARRIERS
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INTRODUCTION/OBJECTIVE: Evidence Based Medicine (EBM) is defined as the process in which clinicians systematically evaluate the most recent research to address questions encountered in clinical practice. The use of EBM largely relies on the clinician’s ability to critically evaluate the quality and validity of research, and the suitability of findings for implementation in current practice/patient population. Very few studies regarding RTs’ understanding and views towards EBM have been conducted. As barriers are context dependent, the implementation of strategies to bridge research and practice must be tailored according to the specific barriers identified and their context. Hence, the objectives of the current study were to identify attitudes, beliefs, knowledge and understanding of research, and perceived barriers to implementation of EBM amongst RTs in Ontario.

METHODOLOGY: An advertisement placed in the Fall 2013 College of Respiratory Therapists of Ontario (CRTO) and Respiratory Therapy Society Ontario newsletters introduced the study to RTs and provided a link to the self-administered study questionnaire. All RTs registered with the college and employed in Ontario (n = 1808) who received the newsletter were eligible to participate. The BARRIER scale questionnaire from Jette DU et al (2003) and Funk SG et al (1995) was adapted so as to be specific for RT practice. Data were collected from three domains: attitudes and beliefs EBM, perceived barriers to implementation of EBM, and RT background knowledge and understanding of research. Responses to questions regarding subject demographics were computed as frequency counts for categorical data or as means ± standard deviations for continuous data. For these questions using Likert scales, percentage responses for each category were calculated. Responses to open-ended questions were analyzed by the research team to identify any trends/themes.
RESULTS: Of the 294 respondents, the vast majority (76.3%) were females from the Greater Toronto area (54.1%), working full time (76.6%) for an average of 16.2±10.3 years primarily in teaching hospitals (78.4%). There was an equal representation of respondents whose highest level of education was a diploma (44.5%) or bachelor's degree (47.2%). With respect to attitudes regarding EBM, the majority of respondents agreed (59.0%) or strongly agreed (47.5%) that EBM is necessary in the practice of RT and that it improves the quality of patient care (89.6% agreed or strongly agreed) and helps clinicians making decisions about care (79.8%). However, the majority (73.6%) of respondents identified that they need to increase the use of EBM in their daily practice. Barriers to implementation of research could be categorized (from greatest to lowest extent) as: characteristics of the organization (settings, barriers, limitations); characteristics of the adopter (RTs values, skills and awareness); characteristics of the communication (presentation and accessibility); and characteristics of the innovation (quality of the research). The findings from the open-ended questions in the BARRIER scale questionnaire investigating the greatest barriers correlate with the findings from the barriers scale. The top four barriers identified are items that are included in the characteristics of organization: settings, barriers and limitations. Results showed that the majority of RTs hold positive attitudes toward applying EBM in their daily practice. Barriers to remaining updated and applying EBM were identified as was lack of time and skills to gather and analyze information from the literature, and a lack of support from management and other members of the healthcare team to implement new ideas into practice.

CONCLUSION: Identifying factors influencing the knowledge translation of EBM into practice can potentially facilitate development and implementation of appropriate strategies to capitalize on facilitators and address barriers to promote application of EBM in the clinical setting. Intervention(s) can be tailored to address the needs in specific context and collaborative effort would be explored among different institutions, community, regulatory body and education facilities.

RTP14

DOES PRESSURE MATTER? A COMPARISON OF CPAP VS NO VENTILATORY SUPPORT IN THE MEASUREMENT OF RAPID SHALLOW BREATHING INDEX

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INTRODUCTION: Of the predictors used to assess weaning readiness, the rapid shallow breathing index (RSBI) has been shown to have the best predictive value. While many intensive care units (ICUs) use the RSBI to identify patients to undergo spontaneous breathing trial (SBT), practice likely varies in the methods used to measure the RSBI. We reviewed our practice in measuring the RSBI using CPAP 5 cmH2O to determine whether it may be providing misleading (lower) RSBI values.

METHODOLOGY: We conducted a prospective observational study to ascertain whether differences in paired RSBI measurements existed. For each critically ill, mechanically ventilated patient, we performed paired RSBI measurements: one with CPAP 5 cmH2O and one with no ventilator support (PS 0/PEEP 0 cm H2O).

RESULTS: Of 49 total paired RSBI measurements, 37 measurements occurred in unique patients with average age 59±16 years, including 41.0% females. Average RSBI measurements were 75.1±41.2 and 75.7±45.3 using CPAP 5 cmH2O and no support, respectively. While RSBI measurements only differed by 0.2±20.1, 58.3% of RSBI measurements on CPAP 5 cmH2O were higher than RSBI measurements made on no ventilator support. On average, when RSBI measurements on CPAP 5 cmH2O were higher than no ventilator support, they were higher by 15±9.2. Conversely, when RSBI measurements on CPAP 5 cmH2O were lower than no ventilator support, they were lower by -11±7.2. In all patients, except one, both measurements were either above or below the threshold value of 105.

CONCLUSIONS: While differences exist in RSBI measurements, we did not find the differences to be clinically important in our small quality assurance project. In all but one case, decision-making would not have changed as a result of the differing RSBI measurements obtained using CPAP 5 cmH2O and no ventilator support.

RTP15

ASSESSING THE UTILIZATION OF THE AIR QUALITY HEALTH INDEX (AQHI) BY VULNERABLE POPULATIONS IN A “LOW RISK” REGION: A PILOT STUDY

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INTRODUCTION: A number of studies have shown a relationship between exposure to outdoor air pollution and adverse health effects, and people with specific chronic diseases appear to be particularly vulnerable. An important opportunity exists for respiratory therapists to inform at-risk clients, especially those with lung disease, about outdoor air pollution and its role in self-management. The Air Quality Health Index (AQHI), a national program led by Health Canada and Environment Canada, is intended to inform individuals about the level of health risk associated with air pollution in Canadian communities, and to provide a tool to manage those risks.

The main purpose of this study was to assess the utilization of the AQHI by vulnerable populations in a “low risk” (AQHI of 3 or less) region. The specific objectives were: 1) to develop and evaluate an AQHI education strategy; 2) to investigate if awareness of the AQHI impacts self-management in vulnerable populations in low risk regions; and 3) to identify enabling factors and/or barriers concerning use of the AQHI by both healthcare professionals and their patients.

METHODOLOGY: A pilot study was conducted using a small convenience sample of clients/patients and educators at respiratory clinics across Nova Scotia. A short educational activity on the utility and application of the Air Quality Health Index (AQHI) was incorporated into their regular disease management plans and surveys were administered pre- and post-educational intervention.

RESULTS: Twenty-one clients from three respiratory clinics consented to participate in the study and received the AQHI education program. Using a Wilcoxon signed-rank test with paired data, five of six survey questions had statistically significant changes in response to pre- and post-education.

Some common themes that emerged from qualitative data collected included: limited access to the Internet; lack of its reporting in the media; confusion with other indices; and relevancy of the AQHI in Nova Scotia, a “low risk” region.

CONCLUSION: An AQHI educational program improved knowledge and utilization of the AQHI reported by respiratory clinic patients. Respiratory educators reported the AQHI education program was relatively simple to implement into their chronic disease education plan. A larger scale study involving participants living in a moderate or high-risk region is recommended.
METHODOLOGY: A multidisciplinary steering committee guided adult and pediatric expert content working groups in developing an Adult (A) and Pediatric (P) EDACP. Key priorities guiding deliberations were: assessment of exacerbation severity, evidence-based treatment, patient education prior to discharge, comprehensive discharge instructions, and follow-up arrangements. Following pilot implementation in 2006, the A-EDACP was disseminated across Ontario from 2008-2011. To incorporate new evidence, the A-EDACP was revised in 2012. Development of (P) EDACP began in 2009, with pilot implementation commencing in late 2012.

RESULTS: EDACP tools include: pre-printed physician orders, medication guidelines, education checklists, and discharge instructions. To address treatment delays noted during the A-EDACP implementation, both pathways now include a medical directive to authorize administration of bronchodilators and systemic corticosteroids prior to physician assessment.

CONCLUSIONS: Evidence-based ED pathways for pediatric and adult asthma have been designed to promote best practice in any ED setting. Hospital leads and stakeholder organizations are being engaged to pursue a comprehensive strategy to guide dissemination and implementation support for both pathways.

For more information and to access the Pathways please go to www.on.lung.ca/edacp.

RTP17
COMPARISON OF THE SET AND MEASURED PRESSURES WHEN USING THE NEOtech™ RAM CANNULA IN A NEONATAL TEST LUNG MODEL
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BACKGROUND: Many different devices have been developed and used to deliver continuous positive airway pressure (CPAP) to the neonate. Currently, the variable flow generator (Sipap) is the primary device of choice over Heated High Flow Nasal Prongs (HHFNP), since they do not have a mechanism to monitor or regulate the generation of excessive positive airway pressure. A new interface, the Neotech RAM Cannula, is now available to use as a nasal CPAP device for our neonates. It is suspected that the design of the Neotech RAM Cannula may have an increase in resistance to gas flow resulting in the attenuation of set CPAP and flow rate delivered to the patient.

OBJECTIVES: There have been many centers trialing the Neotech RAM Cannula with limited evidence supporting this therapy. Little research has been done to quantify this attenuation in pressure and flow. The current study aims to shed light on actual flow rate and pressure delivered to the patient through a series of bench testing using a variety of neonatal ventilators available on the Canadian market. This poster presents the findings from the bench testing and aims to aid clinicians in clinical decision making when using the RAM Cannula interface in providing NCPAP with the use of a mechanical ventilator.

METHODS: Flow and pressure testing was performed with all three available sizes of Neotech RAM Cannula; the preemie size suggested for patients less than 1000 grams, the newborn size recommended for patients 1000-2500 grams, and the infant size for patients greater than 2500 grams. The inner and outer diameter of the tubing and the inner diameter of the prongs were measured for each RAM Cannula size. All three sizes were used and measurements were obtained from four different models of mechanical ventilators available to the research team at Surrey Memorial Hospital and BC Children's Hospital including: CareFusion Avea® Ventilator, Maquet Servo®-I® Ventilator, Heinen und Löwenstein Leoni Plus Ventilator and the Dräger Babylog® VN 500 Ventilator. The following pictures depict the flow measurement system (Figure 1) and pressure test lung system (Figure 2) developed.

RESULTS: Overall, with regards to the measured pressures, the combination of using the infant prongs with the Avea yielded the largest difference between the set and measured pressure, where the measured pressure was far lower than the set NCPAP. The mean pressure measured 0 cmH2O when set at 5 cmH2O up to a mean measured pressure of 1.33±0.58 cmH2O when set at 10 cmH2O. On the other hand, the combination of using the newborn sized prongs with the Servo-I ventilator showed the smallest discrepancy between set and measured pressures. The mean pressure measured 3.00±0 cmH2O at a set pressure of 5 cmH2O up to a mean measured pressure of 8.00±0 cmH2O at a set pressure of 12 cmH2O. When comparing ventilators alone, the use of the Avea ventilator showed the greatest attenuation of pressure across all prong sizes while the Servo-I had the smallest attenuation in pressure. When considering prong sizes alone, the infant sized prongs yielded the greatest difference in pressure while the newborn sized prongs showed the smallest difference between set and measured pressures. (Figure 3 & Figure 4)
With respect to the actual flow exiting the RAM Cannula is far less than the displayed base flow on the ventilator. This was true with the use of all three available sizes of the RAM Cannula across three of the four ventilators in this study. As the size of the prongs increase the attenuation of flow decreased; that is, as the size of the prongs increase, a smaller difference between the measured and base flow was observed.

**Discussion:** As hypothesized, the attenuation of flow is likely attributed to the tapering of the inner diameter of the prongs from the 5 mm tubing to the prong openings, which are 4 mm in diameter. With respect to pressure measurements, the greatest discrepancy in pressure (across all prong sizes) was seen with the Avea ventilator while the smallest differences was observed with the Servo-I ventilators. When comparing between the size of the RAM Cannula, the infant sized prongs showed the largest decrease in pressure across all ventilators, while the Newborn sized prongs showed the smallest difference in set and measured pressures. The large difference in pressure seen in the Avea in combination with the infant prongs may be attributed to the sheer size of the infant prongs and the requirement of at least a 50% leak around the prongs for exhalation.

**Conclusion:** The results hint at the fact that patient selection might be a key factor in the success of RAM cannula use. The selection of the ventilator is key as well, seeing how each machine operates uniquely.

Limitations of this study include the following. Due to the design of the flow and pressure measurement systems, minute leaks may be present around the waterproof tape and Cannulaide used. However, these leaks are likely minimal and negligible and would not largely affect the results. Another limitation is that the current test lung system fails to mimic conditions during which the infants’ mouth is opened creating a large leak. Lastly, the digital pressure manometer used only offers measurements in whole integers, hence small pressure changes fail to be detected.

**Conclusion:** RAM cannula can be used effectively in neonates to provide CPAP if the limitations of the interface and the ventilator are understood. There is potential for a substantial loss in pressure and flow across all sizes of the RAM cannula, and it may be necessary to increase set pressures much higher than normal to achieve a desired measured CPAP. If the clinicians can understand these limitations and provide therapy within reasonable and patient-specific parameters, RAM cannula can be effective and possibly even more comfortable than conventional CPAP delivery devices.

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**SP01**

**EFFECTIVENESS OF INPATIENT SMOKING CESSATION PROGRAMS**

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**Background:** Smoking remains one of the major causes of cancer, respiratory diseases such as COPD, cardiovascular disease, and many other chronic health conditions, preventable diseases and death. Twenty percent of hospitalized patients are smokers. Hospital smoking bans and access to resources provide an opportune moment to implement in-patient cessation education programs.

**Objective:** The objective of this review is to determine the effectiveness of in-patient smoking cessation programs for hospitalized patients who smoke. It is believed that behavioral intervention initiated during the hospital stay increases smoking cessation rates, especially when combined with pharmacotherapy. In addition, more intensive behavioral intervention with follow-up support after discharge is more likely to increase smoking cessation rates in comparison to no intervention.

**Method:** A systematic literature review was conducted to evaluate the effectiveness of in-patient smoking cessation programs on hospitalized patients with varying admission diagnoses. Search strategies were limited to randomized control trials to minimize the risk of bias in data included. Interventions of interest were behavioral counselling, the use of pharmacotherapy, as well as follow-up support. The primary outcome of this review was increased smoking cessation rates at six months after initiation of intervention.

**Results:** The literature presents a strong relationship between the uses of in-hospital behavioral counselling with follow-up support and smoking cessation rates. This effect on smoking cessation rates is even more profound when combined with the use of pharmacotherapy.

**Conclusion:** For hospitalized patients who smoke, inpatient smoking cessation programs are effective (as represented by smoking cessation rates at six months compared to no inpatient smoking cessation programs).

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**SP02**

**LONG-TERM OXYGEN THERAPY AND CHRONICALLY HYPOXEMIC PATIENTS: A CRITICAL REVIEW**

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**Background:** Long-term oxygen therapy has long been considered the best treatment for extending life in patients with chronic hypoxemia. There is however, evidence that says it is not as effective as previously thought.

**Objectives:** The goal of this review was to find out if long-term oxygen therapy had an effect on survival time, as well as the number of hospitalizations in patients with chronic hypoxemia.

**Method:** A systematic literature search was performed and 5 RCTs were identified as fitting the criteria for inclusion in the review. These five articles were summarized and analyzed.

**Results:** The review found that long-term oxygen therapy increased survival time, but only in those patients with severe hypoxemia, and only if the oxygen is used continuously. Long-term oxygen therapy was not found to have a positive effect on patients with mild or moderate hypoxemia. It was also found that long-term oxygen therapy had no effect on the reduction of hospitalizations in patients with any degree of hypoxemia.
CONCLUSIONS: Long-term oxygen therapy programs have been proven to be cost effective as they increase survival time in some individuals. However, in order for the oxygen to have an effect, it must be used continuously on patients with severe hypoxemia.

SP03
EFFECTIVENESS AND COMPARISON OF NON-INVASIVE MECHANICAL VENTILATION THERAPY IN CARDIOPULMONARY EDEMA
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OBJECTIVE: To discuss the effectiveness of CPAP and NIPPV in the treatment of acute cardiogenic pulmonary edema, and the potential role of BNP in these two methods.

METHODS: A systematic review was conducted to evaluate the effectiveness of non-invasive mechanical ventilation therapy in the treatment of cardiogenic pulmonary edema, and to compare the differences between CPAP and NIPPV. A literature search was conducted using PubMed, EMBASE and Scopus, looking at results from the past 10 years (2004-2014) and using the following keywords: “short-term mortality”, “clinical trial”, “CPAP”, “NIPPV”, “Bipap”, “Bi-level”, “cardiogenic pulmonary edema”, “brain natriuretic peptides”, “heart failure”, “randomized controlled”, and “meta-analysis”.

RESULTS: A total of 33 RCT or meta-analysis articles were used in the review. The majority of the studies support non-invasive ventilation therapy as having the most benefit to patients. The evaluation indicators included short-term mortality, rate of endotracheal intubation and invasive ventilation, and length of hospital stay and ICU stay. The results differed when comparing CPAP and NIPPV. Most authors found no difference between the two methods, but some recent results showed NIPPV to have more benefits than CPAP. During the research it was noted that most of the studies lacked a biomarker as a prognostic indicator when analysing the difference between CPAP and NIPPV. Three studies showed the level of BNP continuing to increase as the ACPE progressed, and decreasing with remission of symptoms accompanied by the treatment, including non-invasive mechanical ventilation.

CONCLUSION: Most of the clinical research provided evidence to support the benefits of CPAP and NIPPV in the treatment of acute cardiogenic pulmonary edema. But whether NIPPV is advantageous in comparison with CPAP in ACPE remains uncertain. The blood BNP level might be a potential indicator in the further study of the comparison between CPAP and NIPPV.

SP04
BENEFITS AND COSTS OF HOME-BASED PULMONARY REHABILITATION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE
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INTRODUCTION: Pulmonary rehabilitation (PR) is an essential part of managing patients with chronic obstructive pulmonary disease (COPD). However, only a minority of individuals with COPD in Canada are able to participate. Home-based programs have been proposed in order to improve access to this imperative treatment. An emergent number of studies have been conducted in the past decade to determine whether home-based PR is as effective as hospital-based PR in COPD patients. The purpose of this study is to review the emerging studies and clinical literature related to home-based PR in COPD and to answer the question: should home-based PR be widely implemented for COPD patients?

METHODS: Articles were identified from Cinahl Plus, MedLine, PubMed Central Canada, and Health Source: Nursing/Academic Edition using an advanced search for English publications between the years 2004–2014. Citation tracking and intensive searching on Google Scholar was also done using the keywords “COPD”, “pulmonary rehabilitation”, “home-based pulmonary rehabilitation”, and “costs benefits”. Reference lists were also examined for any additional relevant studies not identified through the systematic search. The benefits of home-based PR, the practical aspects of its application, and its advantages and limitations are described. The few data on cost effectiveness of home-based PR are also discussed.

RESULTS: Recent studies found that home-based PR programs could cost-effectively improve parameters associated with quality of life for patients with COPD. Many studies suggested that home-based PR is a valid alternative for management of patients with COPD. Although results are promising, there are some issues that need to be considered before widespread adoption of home-based PR can be implemented. Nevertheless, evidence shows that home-based programs could achieve the same results as those based in hospitals under specific conditions. These findings should make PR for COPD patients more accessible in Canada.

SP05
THE IMPACT OF EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO) ON MORTALITY AND NEUROLOGICAL OUTCOMES FOR ADULTS IN CARDIOPULMONARY ARREST IN AND OUT OF HOSPITAL COMPARED TO CONVENTIONAL CPR
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BACKGROUND: Cardiopulmonary arrest is a major cause of death for adults with approximately 40,000 cardiac arrests occurring each year in Canada. The gold standard for cardiac arrest is cardiopulmonary resuscitation, but it has poor outcomes for many patients. The use of extracorporeal membrane oxygenation may help improve survival and outcomes.

OBJECTIVES: To investigate if extracorporeal membrane oxygenation (ECMO) decreases mortality and improves neurological outcomes for adult patients in-hospital or brought into hospital (out-of-hospital) with cardiopulmonary arrest, compared to conventional cardiopulmonary resuscitation.

METHODS: Articles were searched through the electronic databases of PubMed and Scopus, which were restricted to English-only full texts.

Figure 1

RESULTS: Studies showed that survival and neurological outcomes were improved using extracorporeal membrane oxygenation in patients not responsive to conventional cardiopulmonary resuscitation. Outcomes (survival and neurological) were improved when cardiac arrest occurred in-hospital compared to out-of-hospital while using extracorporeal membrane oxygenation. However, there was inconclusive evidence to show that survival and neurological rates were improved when patients were responsive to conventional cardiopulmonary resuscitation compared to using extracorporeal membrane oxygenation.
CONCLUSIONS: The use of extracorporeal membrane oxygenation is supported by research when patients are unresponsive to conventional cardiopulmonary resuscitation in- or out-of-hospital. Further research is needed to determine if extracorporeal membrane oxygenation improves outcomes for patients responding to conventional cardiopulmonary resuscitation.

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<td>Patients responsive to CPR compared to patients treated with ECMO</td>
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SP06

METHODS OF TITRATING OPTIMAL PEEP IN ARDS PATIENTS

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BACKGROUND: Acute Respiratory Distress Syndrome (ARDS) is characterized by the acute onset of hypoxemia, bilateral infiltrates that are consistent with pulmonary edema, and no clinical evidence of left heart failure. In the patient population, mechanical ventilation can be a lifesaving intervention, but also has the potential to induce further lung injury such as barotrauma, volutrauma, atelectrauma, and biotrauma. Inappropriately set PEEP can result in increased deadspace, reduced compliance, hemodynamic compromise, inflammation, shear stress, overtirudension, and atelectasis.

OBJECTIVE: The ARDSnet Ventilation Protocol traditionally utilized an oxygenation goal to titrate a level of PEEP and fraction of inspired oxygen (FiO2) guided by a PEEP/FiO2 table. This method of titrating PEEP does not take into account individual patient lung mechanics and has the potential to worsen ventilator-induced lung injury (VILI) in some patients rather than provide benefit. This review’s purpose is to examine existing, recent literature regarding alternative optimal PEEP titration methods in ARDS patients and discuss a possible future PEEP trial.

METHODOLOGY: A total of 17 current (2007-present) scholarly, peer reviewed journal articles collected from November 2013 to March 2014 were reviewed.

RESULTS: Five alternative PEEP titration methods were discerned, including incremental and decremental PEEP titration based on optimization of deadspace and static respiratory system compliance, PEEP set corresponding to a stress index range of 0.9-1.1, PEEP set at the level of the expiratory limb inflection point of the pressure-volume (P-V) loop, and PEEP set to achieve a transpulmonary pressure of ≥0 cm by estimating pleural pressure on end expiration utilizing esophageal balloon manometry.

CONCLUSIONS: Although valuable physiologic data has been attained based on these PEEP trials, they lack external validity based on inadequate sample sizes. Due to the multitude of physiologic parameters PEEP has the capability to affect if inappropriately set, future large-scale randomized controlled PEEP trials are necessary to further investigate how to set optimal PEEP and demonstrate its potential benefit toward patient outcomes when set correctly.

SP07

PATIENT PRONATION: A LITERATURE REVIEW AND PROCEDURE DEVELOPMENT

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BACKGROUND: Patients who have entered ARDS or who have become severely hypoxic despite maximum ventilator support and pharmaceutical interventions may require an additional level of therapy. Proning is an evidence-based therapy respiratory therapists can use to optimize ventilation.

OBJECTIVE: The staff and students at Lakeridge Health Corporation (LHO) have utilized prone positioning effectively in ARDS management. Based on this success, a procedure to accommodate future patients and staff was created.

METHODOLOGY: Literature regarding the indications, contraindications, optimal body positioning, how to manage a prone cardiac arrest and what risks the patient may incur was reviewed. A learning workshop based on this literature review was conducted to verify understanding of pronation physiology and ICU patient management. Policy and procedures from hospitals across Canada were reviewed and corroborated with LHO respiratory therapists, nurse, dieticians, physiotherapists and physician experience with pronation.

RESULTS: Based on the literature and various allied health professional experience with pronation, a draft procedure was developed.

CONCLUSIONS: After the procedure has been finalized, it will be added to the site ARDS and severe hypoxia therapy algorithm.

SP08

CYSTIC FIBROSIS AND THE NEW DRUGS

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BACKGROUND: Cystic Fibrosis (CF) is a group of genetic disorders characterized by defective or absent chloride channels, which results in unusually viscous secretions and respiratory and gastrointestinal morbidity. Traditionally, a wide regimen of drugs has been used to treat individual symptoms. Now, genotyping and acknowledging the structure and function of the CF transmembrane regulator (the main chloride channel implicit in CF pathology) is enabling pharmaceutical developers to target the cause.

INTRODUCTION: To provide an overview of drugs used for treating cystic fibrosis as a channelopathy and their clinical efficacy, as well as their status as orphan drugs, concomitant costs, and the social justice issues associated with making them financially accessible to patients.

METHODOLOGY: The five classes of CF genetic mutations were reviewed, which correspond to altered function in the CF transmembrane regulator (CFTR, the primary chloride channel). Research was summarized on how different approaches are necessary to treat different CF genotypes (i.e. G551D only needs a potentiator to activate faulty chloride ion channels already present on the cell surface). Approaches still in development were also reviewed (upregulating alternative chloride ion channels, stop-codon inhibitors, protein stabilizers). Finally, the drug Ivacaftor was researched (approved Nov 2012 by Health Canada) including its clinical efficacy, and financial barriers to its use.

RESULTS: Randomized, double-blind, placebo-controlled, phase III clinical trials prove Ivacaftor to be effective in CF patients over 12 years of age who carry the G551D allele. It causes substantial increases in % predicted FEV1 and weight gain, and decreases in pulmonary exacerbations, hospitalization, and sweat chloride levels.

CONCLUSIONS: Ivacaftor is effective in treating patients with the G551D mutation, and stabilizes CF symptoms in patients whose bodies are already compromised by years of the disease. It has the further potential, pending pediatric trials, to prevent the CF disease process. It is available in many countries through public healthcare, but is only accessible in Canada through private insurance, making this a social equity issue that concerns us directly as respiratory clinicians.
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