Grand Rounds Speaker
Dr Rodney Breau
Associate Scientist
Clinical Epidemiology Program
Ottawa Hospital Research Institute
Research Chair in Urological Oncology
Clinical Research Lead — Department of Surgery

- Theatre A -
Bannatyne Campus — University of Manitoba

Keynote Speaker
Dr Deepak Dath
Professor of Surgery
General Surgery — McMaster University
Clinician Educator — CanMEDS Office
Royal College of Physicians
& Surgeons of Canada

Research Day Program
Wednesday, January 18, 2017
RESEARCH DAY SPONSORS

The Surgery Research Day 2017 Planning Committee gratefully recognizes the contributions of the sponsors for the Annual Surgery Research Day:

Department of Surgery GFT Surgeons

The Wayne Beecroft Western Surgical Lectureship Fund

ACKNOWLEDGEMENTS

The Surgery Research Day 2017 Planning Committee greatly appreciates the support from the Pan Am Clinic Foundation and Department of Surgery Research Advisory Committee members in the planning of our Annual Surgery Research Day 2017.
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Dr. Rodney Breau is a Surgical Oncologist, an Assistant Professor of Urology at the University of Ottawa, and an Associate Scientist at the Ottawa Hospital Research Institute.

He attended medical school at Dalhousie University and Urology residency at the University of Ottawa. He completed his Urologic Oncology and Robotic Surgery Fellowship at Mayo Clinic in Rochester, MN and received a Master of Science in Clinical and Translational Research from Mayo School of Graduate Medical Education.

Dr. Breau is a founding member of the International Evidence-Based urology Group and serves on the American Urological Association steering committee for Evidence-Based Reviews in Urology.

He is a member of the Society of Urologic Oncology and has been recognized nationally and internationally for research contributions in prostate, kidney and bladder cancer.

Dr. Breau holds the Department of Surgery Research Chair in Urologic Oncology and is the lead of Clinical Research in the Department of Surgery. He currently holds several CIHR operating grants for multicenter clinical trials.
Dr. Deepak Dath is a Laparoscopic hepatobiliary Surgeon and Professor of Surgery at McMaster University in Hamilton where he has practiced for 15 years.

He currently works at the Juravinski Hospital and Cancer Centre. He also holds a position as a Clinical Education in the CanMEDS Office at the Royal College of Physicians & Surgeons of Canada in Ottawa.

Dr. Dath attended medical school at the University of Western Ontario and completed a residency in general surgery at McMaster University. He then pursued a Master of Education at the Ontario Institute for Studies in Education (OISE), a Fellowship in Surgical Education at the Centre for Research in Education and a Fellowship in Hepatobiliary Surgery, all at the University of Toronto.

Dr. Dath’s research centres on teaching the CanMEDS Intrinsic roles in daily practice, teaching in challenging situations and introducing inter-professional education to our system. His medical education work involves developing the Leader Role in CaMEDS 2015 for Canadians and in other jurisdictions abroad where CanMEDS is used.
JUDGES

Dr Rodney Breau  
Associate Scientist  
Department of Surgery, University of Ottawa

Dr Deepak Dath  
Professor  
Department of Surgery, McMaster University

Dr Sebastian Launcelott  
Vascular Surgery Resident  
Department of Surgery, University of Manitoba

SURGERY RESEARCH DAY 2017 PLANNING COMMITTEE

Dr April Boyd, Co-Chair
Dr Eric Saltel, Co-Chair
Dr Richard Keijzer, Thorlakson Chair in Surgical Research
Dr Rebecca Whitley, Resident Representative
Mary Brychka, Administrator

RESEARCH DAY 2017 OBJECTIVES

At the end of the Department of Surgery Annual Research Day, participants will be able to:

- Discuss the current research developments conducted in the various surgical specialties in the Department of Surgery at the University of Manitoba with colleagues and translate knowledge into clinical practice, patient care and academic teaching.

- Review the risk of blood transfusion during major surgery; methods to reduce blood transfusion; and the need for randomized surgical trials of peri-operative interventions.

- Discuss leadership and professionalism as key values and competencies in surgery and perform as leaders in teaching.
CONFLICT OF INTEREST DISCLOSURE

Before each presentation, speakers will disclose on their first slide any significant relationships that may be a perceived or apparent conflict of interest to the subject of the proposed CME/CPD activity.

Each member of the Research Day 2017 Planning Committee were asked to disclose any significant relationships with the manufacturer of any commercial product that may have a direct or indirect conflict of interest in the program content. All members reported no conflicts.

CONTINUING PROFESSIONAL DEVELOPMENT

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of The Royal College of Physicians and Surgeons of Canada and approved by the CPD Medicine Program, University of Manitoba for a maximum of 5.25 credits.

*Participants should only claim credit for the actual number of hours attended.*

The University of Manitoba CPD Medicine Program is fully accredited by the Committee on Accreditation of Continuing Medical Education (CACME).

E-PROGRAM NAVIGATION

For quick navigation—click the *green* typeface located on the various pages within the Program.
### PROGRAM — MORNING

**7:45**  **RESEARCH DAY CONTINENTAL BREAKFAST**  
Joe Doupe Atrium—Basic Medical Sciences

**8:00**  **DEPARTMENT OF SURGERY GRAND ROUNDS SPEAKER**  
Dr Rodney Breau, University of Ottawa  
*Prevention of blood loss during radical cystectomy*  

Introduction—Dr Eric Saltel (Co-Chair, Research Day 2017 Planning Committee)

**9:15**  **OPENING REMARKS - Dr April Boyd (Co-Chair, Research Day 2017 Planning Committee)**

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<tr>
<td>9:30</td>
<td>TELESCOPE-CS: ThE long tErm SuCcess Of Prolonged intEnsive care patients after Cardiac Surgery</td>
<td>Dr Anna Shawyer</td>
<td>Kyla Barrie* Cardiac Surgery</td>
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<tr>
<td>9:42</td>
<td>Normalizing miR-200b expression in vivo improves nitrofen-induced lung hypoplasia in the rate model of congenital diaphragmatic hernia</td>
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<td>Naghmeh Khoshgoo* Pediatric Surgery</td>
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<td>Ted Tufescu Orthopedic Surgery</td>
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<td>A prospective study of the rate of contamination of bedside patient privacy curtains</td>
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<td>Kevin Shek* General/Plastic Surgery</td>
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<td>Geographic disparities in the surgical management of hemifacial spasm in Canada</td>
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<td>Mohamed Somji* Neurosurgery</td>
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<td>High-risk prostate cancer tends in lieu of the 2012 U.S. preventative services task force against PSA screening</td>
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<td>Premal Patel* Urology</td>
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**10:42**  **COFFEE BREAK**

### PLENARY SESSION  
**Moderator: Dr Jasmir Nayak**

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<td>Shannon Stogryn* General/Bariatric Surgery</td>
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<td>Elevated MMP-9 activity at sites of intraluminal thrombus deposition in human abdominal aortic aneurysms</td>
<td>Annie Ducas* Vascular Surgery</td>
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<td>Effect of operating room extubation on post-operative delirium after cardiac surgery</td>
<td>Ricky Muller Moran* Cardiac Surgery</td>
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<td>Establishment of a tissue bank for human fetal lungs of congenital diaphragmatic hernia patients</td>
<td>Lojine Ayoub* Pediatric Surgery</td>
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<tr>
<td>11:45</td>
<td>The changing face of thyroid cancer in the Province of Manitoba</td>
<td>Natasha Klemm* Head &amp; Neck Oncology</td>
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<td>11:57</td>
<td>Iron deficiency in bariatric surgery patients – A single centre experience over 5 years</td>
<td>Bryce Lowry* General/Bariatric Surgery</td>
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**12:10**  **LUNCH**

* Speaker eligible for a presentation award
PROGRAM — AFTERNOON

1:10  AWARDS CEREMONY
Resident Research Awards & 2016 Surgery GFT Research Awards
Presented by:
Dr Jack McPherson, Head and Dr Richard Keijzer, Thorlakson Chair in Surgical Research

1:30  KEYNOTE SPEAKER
Dr Deepak Dath, McMaster University
The Surgeon Teacher
Introduction—Dr Rebecca Whitley (Research Day 2017 Planning Committee)

BRIEF SESSION  Moderator: Dr Ryan Mitchell

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<td>Isolated capitated fractures: Case report and systematic literature review</td>
<td>Mina Aziz* Orthopedic/Plastic Surgery</td>
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<td>2:35</td>
<td>Establishing evidence-based care for children with gallstone pancreatitis: A systematic review</td>
<td>Hailey Hildebrand* Pediatric Surgery</td>
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<td>2:40</td>
<td>Long-term outcomes of survivors undergoing extracorporeal membrane oxygenation in Manitoba between 2007 and 2016</td>
<td>Summer Debreuil* Cardiac Surgery</td>
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<td>2:45</td>
<td>Congenital surgical anomalies long-term outcomes study</td>
<td>Matthew Levesque* Pediatric Surgery</td>
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<td>2:50</td>
<td>Arterial phase CT scan for localization of missed parathyroid adenoma on conventional imaging</td>
<td>Anupam Das* Head &amp; Neck Oncology</td>
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<td>2:55</td>
<td>Use of durepair porcine collagen matrix in repair of congenital diaphragmatic defects requires caution</td>
<td>Richard Keijzer Pediatric Surgery</td>
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<td>3:00</td>
<td>Estimating the accuracy of optic nerve sheath diameter measurement using a pocket-sized handheld ultrasound on a simulation model</td>
<td>Garrett Johnson* General Surgery</td>
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<td>3:05</td>
<td>Cruciate ligament reconstruction: A provincial epidemiological study</td>
<td>Yiyang Zhang* Orthopedic Surgery</td>
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<td>3:10</td>
<td>COFFEE BREAK</td>
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PLENARY SESSION  Moderator: Dr Biniam Kidane

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<td>Trigeminal neuralgia due to dolichoectatic vertebrobasilar artery compression: A 20-year experience</td>
<td>Michael Honey* Neurosurgery</td>
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<td>3:42</td>
<td>Long-term functional survival and re-hospitalization after surgical aortic and mitral valve replacements in a large provincial cardiac surgery centre</td>
<td>Weiang Yan* Cardiac Surgery</td>
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<tr>
<td>3:54</td>
<td>Mentorship in general surgery residency programs in Canada: Where are we and what do we need?</td>
<td>Megan Delisle* General Surgery</td>
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<tr>
<td>4:06</td>
<td>Analysis of short- and long-term outcomes of surgically treated left-sided infective endocarditis patients: A 10-year longitudinal follow-up study</td>
<td>Oksana Marushchak* Cardiac Surgery</td>
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<td>4:30</td>
<td>RESEARCH DAY RECEPTION &amp; PRESENTATION AWARDS</td>
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<td>Presented by: Dr Richard Keijzer, Thorlakson Chair in Surgical Research</td>
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<td>Come and celebrate with the winners of today’s top presentations</td>
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| 9:30 | **TELESCOPE-CS: The Long Term Success Of Prolonged Intensive Care Patients after Cardiac Surgery**  
Kyla Barrie¹,², Alexandra Cornick¹, Summer Debreuil¹,², Erika Lee¹, Brett Hiebert¹, Rizwan Manji¹,³,⁴, Joseph Bienvenu⁵, Rohit Singal¹,³,⁴, Rakesh Arora¹,³,⁴  
¹ Institute of Cardiovascular Sciences, St Boniface Hospital Research Centre  
² Max Rady College of Medicine, University of Manitoba  
³ Section of Cardiac Surgery, Department of Surgery, University of Manitoba  
⁴ Section of Critical Care, Department of Medicine, University of Manitoba  
⁵ John Hopkins School of Medicine, Baltimore, Maryland, USA |
| 9:42 | **Normalizing miR-200b expression in vivo improves nitrofen-induced lung hypoplasia in the rat model of congenital diaphragmatic hernia**  
Naghmeh Khoshgoop¹,²,³, Landon Falk¹,², Patricia Terra¹,⁴, Vinaya Kuma Siragam¹,², Barbara Iwasiow¹,², Richard Keijzer¹,²,³  
¹ Children’s Hospital Research Institute of Manitoba, University of Manitoba  
² Department of Surgery, University of Manitoba  
³ Department of Physiology and Pathophysiology, University of Manitoba  
⁴ Life and Health Sciences Research Institute, University of Minho, Portugal |
| 9:54 | **Creating a survey to identify “non-fracture” needs and their impact on the recovery of fracture patients**  
Ted Tufescu¹, Lori Wilkinson², Pallabli Battacharrya², Nigar Sultana³  
¹ Section of Orthopedic Surgery, Department of Surgery, University of Manitoba  
² Department of Orthopaedics, University of Manitoba |
| 10:06 | **A prospective study of the rate of contamination of bedside patient privacy curtains**  
Kevin Shek¹, Zeenib Kohja¹, Rakesh Patidar², Justin Gawaziuk³, Ayush Kumar², Sarvesh Logasetty⁴  
¹ Max Rady College of Medicine Program, Rady Faculty of Health Sciences, University of Manitoba  
² Department of Microbiology, University of Manitoba  
³ Health Sciences Centre & Manitoba Firefighters’ Burn Unit, Department of Surgery  
⁴ Manitoba Firefighters’ Burn Unit, Sections of General Surgery & Plastic Surgery, Department of Surgery, University of Manitoba |
| 10:18 | **Geographical disparities in the surgical management of hemifacial spasm in Canada**  
Mohamed Somji¹, Anthony Kaufmann²  
¹ Neurosurgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba  
² Section of Neurosurgery, Department of Surgery, University of Manitoba |
| 10:30 | **High-risk prostate cancer trends in lieu of the 2012 U.S. Preventative Services Task Force against PSA screening**  
Premal Patel¹, Darrel Drachenberg², Jasmin Nayak²  
¹ Urology Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba  
² Section of Urology, Department of Surgery, University of Manitoba |
TELESCOPE-CS: ThE Long tErM SuCcess Of Prolonged intEnSive care patients after Cardiac Surgery

Kyla Barrie$^{1,2}$, Alexandra Cornick$^1$, Summer Debreuil$^{1,2}$, Erika Lee$^1$, Brett Hiebert$^1$, Rizwan Manji$^{1,3,4}$, Joseph Bienvenu$^5$, Rohit Singal$^{1,3,4}$, Rakesh Arora$^{1,3,4}$

1 Institute of Cardiovascular Sciences, St Boniface Hospital Research Centre
2 Max Rady College of Medicine, University of Manitoba
3 Section of Cardiac Surgery, Department of Surgery, University of Manitoba
4 Section of Critical Care, Department of Medicine, University of Manitoba
5 John Hopkins School of Medicine, Baltimore, Maryland, USA

Introduction
Due to the aging demographic, increasing burden of heart disease and advances in medicine, cardiac surgery is being offered to older and more frail patients with multiple co morbidities. These patients often require a prolonged intensive care unit length of stay (prICULOS), yet little is know about their long-term health related quality of life (HRQoL) (i.e “survivorship”).

Methods
A prospective, observational pilot study was undertaken utilizing linked data from the Manitoba Cardiac Surgery (MaCS) and WRHA ICU databases. Eligible cardiac surgery patients with a prICULOS (ICU length of stay of ≥ 5 days) and matched controls with an ICU length of stay of < 5 days were recruited from May until December 2015. Enrolled patients underwent in-person clinical or telephone survey HRQoL assessments at 3-6 months and 1 year time points after their procedure.

Results
From January until August 2015, 682 cardiac surgeries were performed and 73 patients were identified as having a prICULOS (10.7%). 35 prICULOS patients and 35 non-prICULOS (control) patients were recruited. At the 3-6 month follow up the prICULOS patients were more frail with higher levels of weight loss, fear of falling, and driving deficits. At the 1 year follow up prICULOS patients had persistent functional deficits and required more assistance from family/home care. Additionally, they had more regret about having surgery.

Conclusion
This study confirms the need and demonstrates the feasibility of a “survivorship” clinic for the cardiac surgery patient with a prICULOS who was found to have a poorer mid and long-term HRQoL.
Normalizing miR-200b expression in vivo improves nitrofen-induced lung hypoplasia in the rat model of congenital diaphragmatic hernia

Naghmeh Khoshgoo1,2,3, Landon Falk1,2, Patricia Terra1,4, Vinaya Kuma Siragam1,2, Barbara Iwasiow1,2, Richard Keijzer1,2,3
1 Children’s Hospital Research Institute of Manitoba, University of Manitoba
2 Department of Surgery, University of Manitoba
3 Department of Physiology and Pathophysiology, University of Manitoba
4 Life and Health Sciences Research Institute, University of Minho, Portugal

Introduction
MicroRNAs are small, non-coding RNAs that regulate gene expression analogous to light dimmers: instead of turning genes on and off, microRNAs cause temporary changes in the expression of hundreds of genes. We have previously discovered that microRNA miR-200b expression in early lung development is lower in nitrofen-induced hypoplastic lungs. In this study we test the hypothesis that normalizing miR-200b expression improves lung development in the nitrofen rat model for congenital diaphragmatic hernia (CDH).

Methods
We induced pulmonary hypoplasia and CDH by gavaging pregnant Sprague-Dawley rats with 100 mg/ml nitrofen in olive oil. Control rats were treated with olive oil alone. Immediately after this treatment, we injected the pregnant nitrofen-treated rats with 5 mg/kg miR-200b mimics in normal saline or oligo negative control in normal saline alone. Pups were euthanized at embryonic (E) 21 or one hour after birth. We used mean linear intercept and surface density for morphometric analysis.

Results
We observed a 70% CDH incidence in the nitrofen pups treated with normal saline. This was reduced to 23% in the nitrofen rats treated with miR-200b mimics. The majority of the nitrofen pups treated with saline did not survive longer that 10 minutes, whereas all pups treated with miR-200b mimics survived up to when they were euthanized at one hour. Mean linear intercept significantly increased and tissue surface density significantly decreased in miR-200b treated group.

Conclusion
Normalizing miR-200b expression in pregnant rats treated with nitrofen improves lung development in the offspring clinically and morphologically. Translational studies in larger animal models should reveal if these promising results can eventually be translated to human clinical trials.
Creating a survey to identify “non-fracture” needs and their impact on the recovery of fracture patients

Ted Tufescu¹, Lori Wilkinson², Pallabl Battcharrya², Nigar Sultana¹
¹Section of Orthopedic Surgery, Department of Surgery, University of Manitoba
²Department of Sociology, University of Manitoba

Introduction
Injured patients cared for in a fracture clinic may have associated social and economic unmet needs, which impact their recovery. The objective was to create a survey that can be administered to fracture patients and reliably measure the impact of non-fracture needs on patient recovery in a clinic setting.

Methods
The survey is based on social determinants of health, which influence population health. Ethics approval was sought. Structured, recorded interviews were held with recognized experts in the field (a trauma orthopaedic surgeon and three social workers in acute patient care). The process was guided by a trauma orthopaedic surgeon, and a social scientist with experience in the field and in survey development. Themes were extracted and guided survey question creation. Survey questions were open-ended as well as closed-ended.

Ethics review was renewed prior to piloting the survey with a convenience sample of 54 patients. The survey was self-administered while timed and supervised. Data was cleaned and formatted in SPSS. Answers for closed-ended questions were converted to numerical values based on a Likert scale. Open-ended questions were coded into themes. The survey was modified based on the analysis.

Results
The resulting tool has 28 items and requires 12 minutes for administration. It appears to be feasible and appropriate for most literacy levels. The tool has face validity as it was developed with input from experts, and with supervision from an experienced clinician and social scientists in the field. Content validity was ensured by comparing with the items in the DiPCare-Q tool, and themes of the social determinants of health.

Conclusion
The tool appears feasible for use in a clinic, and valid. The immediate future direction for research is to establish internal consistency reliability. Distant goals are to apply the tool and establish its predictive validity.
A prospective study of the rate of contamination of bedside patient privacy curtains

Kevin Shek\textsuperscript{1}, Zeenib Kohja\textsuperscript{1}, Rakesh Patidar\textsuperscript{2}, Justin Gawaziuk\textsuperscript{3}, Ayush Kumar\textsuperscript{2}, Sarvesh Logsetty\textsuperscript{4}

\textsuperscript{1} Max Rady College of Medicine Program, Rady Faculty of Health Sciences, University of Manitoba
\textsuperscript{2} Department of Microbiology, University of Manitoba
\textsuperscript{3} Health Sciences Centre & Manitoba Firefighters’ Burn Unit, Department of Surgery
\textsuperscript{4} Manitoba Firefighters’ Burn Unit, Sections of General Surgery & Plastic Surgery, Department of Surgery, University of Manitoba

Introduction
Healthcare-associated infections (HAIs) are a growing concern due to their associated mortality, morbidity and cost. Patient privacy curtains can be contaminated with infectious bacteria, are frequently contacted, and therefore pose a high risk for cross contamination and potentially causing HAIs. It is therefore important to know the rate and degree of contamination on curtains in order to make informed decisions about the frequency and type of cleaning required to reduce the risk of cross contamination. This goal of this study was to determine the level and trajectory of contamination of privacy curtains.

Methods
All curtain positions were replaced with freshly laundered curtains on day 1 of the study. Curtain samples were then collected from the inside surface near the edge hem using DEN Rodac contact plates on days 1, 3, 7, 10, 14, 17 and 21 and grown to determine the level of contamination and the presence of MRSA. Anonymous cultures of the corresponding patient wound, if present, were taken by swab and linked to the curtain culture.

Results
The total number of colony forming units (CFUs) and CFU/cm\textsuperscript{2} consecutively increased over the study time period. The mean CFU/cm\textsuperscript{2} for the patient privacy curtains was 0.6 on day 1 (n=10), 1.2 on day 3 (n=9), 1.5 on day 7(n=9), 1.7 on day 10 (n=9), 1.7 on day 14 (n=9), 1.9 on day 17 (n=7), and 4.6 on day 21 (n=5).

Conclusion
The results of this study demonstrate increasing levels of patient privacy curtain contamination over time.
Introduction

Hemifacial spasm (HFS) is a condition characterized by unilateral, intermittent twitching of the facial muscles. It can lead to embarrassment, social stigma, and in severe cases functional blindness of the affected eye. Contemporary therapy for HFS includes serial botulinum toxin therapy and surgery in the form of microvascular decompression (MVD). We aimed to explore geographic variation in the use of MVD for HFS across Canada.

Methods

The Canadian Institute of Health Information (CIHI) database was searched from 2004 to 2014, for a combination of diagnostic code “hemifacial spasm” and procedure code “Repair, cranial nerves using an open (craniotomy/ craniectomy) approach.” A spreadsheet was populated including location of procedure, number of procedures performed per year, and length of stay. Descriptive statistics were generated in order to explore the geographic variation in number of procedures performed and length of stay.

Results

Twenty sites in Canada were identified to perform MVD for HFS over the study period. The mean cases performed per year ranged from 1 to 20.3. A skewed distribution was identified with two sites – Health Sciences Center Manitoba and Vancouver General Hospital – accounting for 61.9% (n=297/480) of total cases performed. Average length of stay over the study period was 2.0 days at the Health Sciences Center, 2.8 days at Vancouver General Hospital, and 3.8 days at the remainder of Canadian institutions.

Conclusion

A large geographic disparity was identified in the use of MVD for the treatment of HFS across surgical institutions in Canada. Volume of cases appeared to be related to length of stay. Based on these findings, procedure related morbidity and mortality may be speculated to differ across geographical domains. We propose further research in order to determine the incidence related utilization rates and relative cost effectiveness of microvascular decompression for HFS.
High-risk prostate cancer trends in lieu of the 2012 U.S. Preventative Services Task Force against PSA screening

Premal Patel1, Darrel Drachenberg2, Jasmir Nayak2
1 Urology Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
2 Section of Urology, Department of Surgery, University of Manitoba

Introduction
In 2012 the U.S. Preventative Services Task Force (USPSTF) recommended against routine prostate-specific antigen (PSA) screening based on their review of the literature suggesting no mortality benefit for PSA screening. Although low risk prostate cancer often follows an indolent course, patients with high-risk localized prostate cancer have been shown to benefit from treatment and may still benefit from PSA screening. We sought to evaluate the number of patients who are diagnosed with high-risk prostate cancer before and after the USPSTF recommendation. We hypothesized that there would be an increased incidence of high-risk disease after the USPSTF recommendations were made.

Methods
Clinicopathological data from patients undergoing transrectal ultrasound guided prostate biopsies were obtained from January 2009 to December 2015 at the Manitoba Prostate Centre. Only first time biopsies were included to exclude patients on active surveillance. According to the D’Amico risk classification criteria, high risk patients were defined as those with a PSA>20 at diagnosis, clinical stage T2c (bilateral palpable disease) or Gleason score 8 or higher on biopsy.

Results
4,888 patients were found to have undergone a prostate biopsy during the study period. A substantial decrease in biopsies was demonstrated during the study period from 873 in 2009 to 507 in 2015. The likelihood of high-grade disease on a positive biopsy three years prior to and three years after the 2012 USPSTF recommendation was 39% and 55%, respectively, p = 0.0001.

Conclusion
Since 2009 there has been a substantial decline in the number of annual first time biopsies being performed at the Manitoba Prostate Centre. There has been an increase in the detection of high-risk disease over time, which may be associated with the USPSTF recommendations. High-risk disease carries a substantial risk of prostate cancer mortality, and understanding ways to identify this population is urgently needed.
10:57—12:10   PLENARY SESSION
Moderator: Dr Jasmir Nayak
Section of Urology

Time     Abstract
10:57     Synoptic operating reporting: Assessing the completeness, accuracy,
          reliability and efficiency of synoptic reporting for roux en Y gastric bypass
          Shannon Stogryn, Krista Hardy, Michael Mullan, Jason Park, Christopher Andrew, Ashley
          Vergis
          Section of General Surgery, Department of Surgery, University of Manitoba

11:09     Elevated MMP-9 activity at sites of intraluminal thrombus deposition in human abdominal aortic aneurysms
          Annie Ducas¹, Richard Lozowy², David Kuhn², April Boyd³
          ¹ General Surgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health
          Sciences, University of Manitoba
          ² Department of Mechanical Engineering, University of Manitoba
          ³ Section of Vascular Surgery, Department of Surgery, University of Manitoba

11:21     Effect of operating room extubation on post-operative delirium after cardiac surgery
          Ricky Muller Moran¹, Doug Maguire², Stephen Kowalski², Eric Jacobsohn², Scott
          Mackenzie³, Hilary Grocott², Rakesh Arora³
          ¹ Cardiac Surgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences,
          University of Manitoba
          ² Department of Anesthesia, University of Manitoba
          ³ Section of Cardiac Surgery, Department of Surgery, University of Manitoba

11:33     Establishment of a tissue bank for human fetal lungs of congenital diaphragmatic hernia patients
          Lojine Ayoub¹, Daisy Liu¹, Camelia Stevanovic¹, Barbara Iwasiow⁴, Phillip Snarr³, Drew
          Mulhall⁵, Matthew Levesque¹, Richard Keijzer⁴
          ¹ Department of Physiology & Pathophysiology, University of Manitoba
          ² Department of Pathology, University of Manitoba
          ³ Children’s Hospital Research Institute of Manitoba
          ⁴ Section of Pediatric Surgery, Department of Surgery, University of Manitoba

11:45     The changing face of thyroid cancer in the province of Manitoba
          Natasha Klemm¹, Richard Nason², K. Alok Pathak²
          ¹ Undergraduate, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of
          Manitoba
          ² Section of General Surgery, Head & Neck Surgical Oncology, Department of Surgery, University of
          Manitoba

11:57     Iron deficiency in bariatric surgery patients—A single centre experience over 5 years
          Bryce Lowry¹, Ashley Vergis², Krista Hardy²
          ¹ General Surgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health
          Sciences, University of Manitoba
          ² Section of General Surgery, Department of Surgery, University of Manitoba
Synoptic operating reporting: Assessing the completeness, accuracy, reliability and efficiency of synoptic reporting for roux en Y gastric bypass

Shannon Stogryn, Krista Hardy, Michael Mullan, Jason Park, Christopher Andrew, Ashley Vergis
Section of General Surgery, Department of Surgery, University of Manitoba

Introduction
Synoptic reporting (SR) is one solution to improve the quality of operative reports. However, SR has not been investigated in bariatric surgery despite an identified need by bariatric surgeons. SR for Roux en Y gastric bypass (RYGB) was developed using quality indicators (QIs) established by a national Delphi process. The objective of this prospective cohort study was to assess the completeness, accuracy, reliability, and efficiency of SR versus narrative operative reports (NR) in RYGB.

Methods
A NR and SR were completed on 104 consecutive RYGBs. Two evaluators independently compared the reports to QIs. Completeness and accuracy measures were determined. Reliability was calculated using Bland-Altman plots and 95% limits of agreement (LOA). Time to complete SR and NR was also compared.

Results
The mean completion rate of SR was 99.8% (+/-SD 0.98%) compared to 64.0% (+/-SD 6.15%) for NR (t=57.9, p<0.001). All subsections of SR were >99% complete. This was significantly higher than for NR (p<0.001) except for small bowel division details (p=0.530). Accuracy was significantly higher for SR than NR (94.2% +/-SD 4.31% versus 53.6% +/-SD 9.82% respectively, p<0.001). Rater agreement was excellent for both SR (0.11, 95% LOA -0.53 to 0.75) and NR (-0.26, 95% LOA -4.85 to 4.33 ) (p=0.242), where 0 denotes perfect agreement. SR completion times were significantly shorter than NR (3:55min +/-SD 1:26 min and 4:50min +/-SD 0:50min respectively, p=0.007).

Conclusion
The RYGB SR is superior to NR for completeness and accuracy. This platform is also both reliable and efficient. This SR should be incorporated into clinical practice.
Elevated MMP-9 activity at sites of intraluminal thrombus deposition in human abdominal aortic aneurysms

Annie Ducas¹, Richard Lozowy², David Kuhn², April Boyd³
¹ General Surgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
² Department of Mechanical Engineering, University of Manitoba
³ Section of Vascular Surgery, Department of Surgery, University of Manitoba

Introduction
Abdominal aortic aneurysm (AAA) rupture has a mortality rate of 90%. Aortic size as the primary criterion for repair is imperfect, as it fails to address AAA that rupture below size thresholds. Currently, there is no truly reliable way to evaluate the susceptibility of particular AAA to rupture. Our laboratory has previously demonstrated that AAA rupture occurs in zones of flow recirculation where intraluminal thrombus (ILT) deposition is increased. Matrix metalloprotease-9 (MMP-9) is a collagenase that breaks down aortic collagen and is considered to be the most important MMP in the pathogenesis of AAA formation and growth. The purpose of this study was to examine regional differences in MMP-9 levels, if any, in human aortic tissue; with the ultimate goal of comparing these levels with predicted pulsatile aortic blood flow.

Methods
At the time of open AAA repair, redundant aortic tissue and ILT samples were harvested in a sterotyped manner at various locations. Aortic tissue, ILT and plasma were assessed for MMP-9 levels using a cytokine array assay (Eve Technologies). All tissues were harvested with ethics approval.

Results
Twenty-three patients (79% male and 21% females) were enrolled. There was a significant regional heterogeneity in MMP-9 levels in aortic tissues, with preliminary data showing AAA regions of ILT deposition having high levels of MMP-9. Interestingly, this preliminary data also shows that ILT has higher levels of MMP-9 than aortic tissues.

Conclusion
MMP-9 was in greatest abundance in AAA tissues compared with MMP-1,2,3,8,10,12, and 13. There were significant regional differences in MMP-9 levels in human aortic tissue. ILT showed the highest levels of MMP-9 suggesting a pathologic role of ILT in AAA formation and growth. Ultimately, these regional MMP-9 differences will be correlated with aortic elastin and collagen content, as well as with predicted pulsatile blood flow hemodynamics.
Effect of operating room extubation on post-operative delirium after cardiac surgery

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Introduction
“Fast track” cardiac anesthesia seeks to achieve extubation in the intensive care unit (ICU) within 6-12 hours following cardiac surgery. Conversely, “ultra-fast track” cardiac anesthesia seeks to achieve extubation in the operating room (OR) itself, prior to ICU admission. Although other groups have previously reported the benefits of early extubation on length of stay (LOS) and complication rates after cardiac surgery, it remains unclear what the effects may be on the occurrence of post-operative delirium. We sought to determine whether OR extubation was associated with lower rates of delirium when compared to other techniques.

Methods
A retrospective review of all consecutive cardiac surgery patients from 2009 to 2015 was conducted (n = 6976). Patients were grouped according to extubation status; OR (n = 1988), within 6 hours of ICU admission (n = 2562), between 6-24 hours of ICU admission (n = 1704), and beyond 24 hours of ICU admission (n = 722). Baseline demographics, pre-operative comorbidities, intra-operative data and post-operative data were collected for all patients.

Results
The overall OR extubation rate was 28.5%. Occurrence of post-operative delirium was inversely proportional to extubation time (7% and 9% in the OR and <6 hour extubation groups, compared to 16% and 44% in the 6-24 hour and >24 hour extubation groups, P<0.001). In-hospital complication rates, ICU LOS, and overall hospital LOS were all significantly reduced by early extubation.

Conclusion
To date, this is the largest report of outcomes following ultra-fast track cardiac anesthesia. In addition to the known benefits of early extubation on LOS and complication rates, our findings suggest that the occurrence of post-operative delirium can be greatly reduced using ultra-fast track cardiac anesthesia. We recommend broader implementation of this technique in order to take advantage of the multiple benefits associated with early extubation after cardiac surgery.
Establishment of a tissue bank for human fetal lungs of congenital diaphragmatic hernia patients

Lojine Ayoub1, Daisy Liu3, Camelia Stevanovic2, Barbara Iwasiow4, Phillip Snarr3, Drew Mulhall3, Matthew Levesque3, Richard Keijzer4
1 Department of Physiology & Pathophysiology, University of Manitoba
2 Department of Pathology, University of Manitoba
3 Children’s Hospital Research Institute of Manitoba
4 Section of Pediatric Surgery, Department of Surgery, University of Manitoba

Introduction
Congenital diaphragmatic hernia (CDH) is a developmental defect of the diaphragm and is associated with abnormal lung development. The molecular pathophysiological cause of the disease is unknown. Our laboratory investigates the role of microRNAs in abnormal lung development and CDH. We have mainly used animal model studies and the aim of this project was to establish a tissue bank with human CDH lung tissues coupled to the clinical information to validate our findings from animal studies.

Methods
We reviewed the pathology records of all deceased patients with CDH from 1980 till 2016. We stratified our patients into different groups, according to associated anomalies. A patient with an isolated CDH would be preferable to a patient with a syndrome, or chromosomal abnormality. We then evaluated the paraffin lung tissue blocks of these patients and confirmed their tissue quality by Hematoxylin & Eosin staining. We have started to analyze the expression of miR-200b through in situ hybridization experiments.

Results
We have identified a total of 45 CDH patients, 24 of those are isolated CDH cases and the remaining are non-isolated. In the isolated group, the majority of the patients were full term (75%), males (62%), with a mean age 2.43 days ± 4.5 SD. Most of the patients (66.7%) have died within the first day of life due to pulmonary complications.

Conclusion
CDH is a common and fatal disease. Understanding the molecular biology of the disease will lead to better treatment options. The establishment of this unique biobank will help us validate our findings from animal studies.
The changing face of thyroid cancer in the province of Manitoba

Natasha Klemm¹, Richard Nason², K. Alok Pathak²
¹ Undergraduate, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
² Section of General Surgery, Head & Neck Surgical Oncology, Department of Surgery, University of Manitoba

Introduction
Thyroid cancer is the most commonly observed malignant endocrine tumor, representing a diverse group of cancers with variable outcome. In North America, the incidence of thyroid cancer is increasing by over 6% per year.

Methods
We studied the trends and factors influencing thyroid cancer incidence, its clinical presentation, and treatment outcome during 1970-2015 in a population based cohort of 3065 consecutive thyroid cancers in Canada. Disease specific survival and disease free survival were estimated by the Kaplan-Meier method and the independent influence of various prognostic factors was evaluated by Cox Proportional Hazard models. Cumulative incidence of deaths resulting from thyroid cancer was calculated by competing risk analysis. A p-value <0.05 was considered to indicate statistical significance.

Results
The age standardized incidence of thyroid cancer by direct method increased from 2.52/100,000 (1970) to 13.56.37/100,000 (2015). Age at diagnosis, gender distribution, tumor size and initial tumor stage did not change significantly during this period. The proportion of papillary thyroid cancers increased significantly (p<0.001) from 58% (1970-1980) to 87.7% (2011-2015) while that of anaplastic cancer fell from 5.7% to 1.5% (p<0.001). Ten year disease specific survival improved from 85.4% to 95.6%, and was adversely influenced by anaplastic histology, male gender, TNM stage IV, incomplete surgical resection and age at diagnosis.

Conclusion
There was a five-fold increase in the incidence of thyroid cancer in Manitoba with a marked improvement in the thyroid cancer specific survival that was independent of changes in patient demographics, tumor stage or treatment practices, and is largely attributed to the declining proportion of anaplastic thyroid cancers.
Iron deficiency in bariatric surgery patients—A single centre experience over 5 years

Bryce Lowry¹, Ashley Vergis², Krista Hardy²
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²Section of General Surgery, Department of Surgery, University of Manitoba

Introduction
As the prevalence and severity of obesity increases in Canada, so too has the demand for bariatric surgery; our study set out to determine the effect of increasing BMI in our program on post-operative weight loss and the incidence of iron deficiency and anemia.

Methods
Patients undergoing bariatric surgery at Victoria General Hospital from 2010 to 2014 were included in the analysis. Data that was captured included age, gender, date of surgery, BMI pre- and post-operatively (3, 6, and 12 months), iron and ferritin pre- and 12 months post-operatively, and hemoglobin pre- and 12 months post-operatively. Data was analyzed with t-tests and standard analysis of variance (ANOVA), as well as latent trajectory analysis.

Results
A total of 399 patients were included. The maximum operable BMI increased with time from a mean pre-op BMI of 42.1 in 2010 to 46.1 in 2014, reflecting the increase in maximum BMI accepted by the program. Using latent trajectory analysis, it was demonstrated that the rate and amount of weight loss over time was equal regardless of preoperative BMI, with a mean 12-month loss of 14 BMI units. This correlated well with the ANOVA model demonstrating an increase in BMI at 12 months post-operatively from 30.0 in 2010 to 32.3 in 2014 (p=0.01). Corresponding to an evolving perioperative nutrient regimen, both iron and ferritin levels at 12 months also increased during the same time period from 12.9 to 18.3 μmol/L (p=0.001) and 64 to 124 μg/L (p=0.001), respectively, with no statistically significant difference in the 12-month post-op hemoglobin levels.

Conclusion
Bariatric surgery performed for increasing maximum operable BMIs can be expected to obtain equal, but proportional, weight loss without an increase in iron deficiency or anemia in the setting of a perioperative nutrient regimen.
BRIEF SESSION
Moderator: Dr Ryan Mitchell
Section of Orthopedic Surgery

Time | Abstract
--- | ---
2:30 | Isolated capitate fractures: case report and systematic literature review
Mina Aziz, Jeff Leiter, Jennifer Giuffre
1 Orthopedic Surgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
2 Pan Am Clinic Foundation, Winnipeg Manitoba
3 Section of Plastic Surgery, Department of Surgery, University of Manitoba

2:35 | Establishing evidence-based care for children with gallstone pancreatitis: A systematic review
Hailey Hildebrand, Suyin Lum Min
1 Undergraduate, Department of Biochemistry, University of Winnipeg
2 Section of Pediatric Surgery, Department of Surgery, University of Manitoba

2:40 | Long-term outcomes of survivors undergoing extracorporeal membrane oxygenation in Manitoba between 2007 and 2016
Summer Debreuil, Kyla Barrie, Alex Cornick, Erika Lee, Brett Hiebert, Shelley Ziero, Rizwan Manji, Joseph Bienvenu, Rakesh Arora, Rohit Singal
1 Institute of Cardiovascular Sciences, St. Boniface Hospital Research Centre, Winnipeg, Manitoba
2 Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
3 Section of Cardiology, Department of Medicine, University of Manitoba
4 Section of Cardiac Surgery, Department of Surgery, University of Manitoba
5 Section of Critical Care, Department of Medicine, University of Manitoba
6 John Hopkins School of Medicine, Baltimore, Maryland

2:45 | Congenital surgical anomalies long-term outcomes study
Matthew Levesque, Richard Keijzer, Suyin Lum Min, Melanie Morris
1 Undergraduate, Department of Science, University of Winnipeg
2 Section of Pediatric Surgery, Department of Surgery, University of Manitoba
<table>
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<tr>
<td>2:50</td>
<td>Arterial phase CT scan for localization of missed parathyroid adenoma on conventional imaging</td>
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<td>Anupam Das(^1), Vikram Wahdwa(^2), Alok Pathak(^3)</td>
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|       | \(^1\) Fellow, Head & Neck Surgical Oncology Fellowship, Department of Surgery, University of Manitoba  
|       | \(^2\) Department of Radiology, University of Manitoba                      |
|       | \(^3\) Section of General Surgery, Head & Neck Surgical Oncology, Department of Surgery, University of Manitoba |
| 2:55  | Use of durepair porcine collagen matrix in repair of congenital diaphragmatic defects requires caution |
|       | Mazen Zidan\(^1,2\), Su Yin Lim Min\(^3\), BJ Hancock\(^3\), Melanie Morris\(^3\), Richard Keijzer\(^2,3\) |
|       | \(^1\) Fellow, Pediatric Surgery Fellowship, Department of Surgery, University of Manitoba  
|       | \(^2\) Children’s Hospital Research Institute of Manitoba, University of Manitoba  
|       | \(^3\) Section of Pediatric Surgery, Department of Surgery, University of Manitoba |
| 3:00  | Estimating the accuracy of optic nerve sheath diameter measurement using a pocket-sized handheld ultrasound on a simulation model |
|       | Garrett Johnson\(^1\), Frederick Zeiler\(^2,3\), Bertram Unger\(^4\), Gregory Hansen\(^5\), Dimitrios Karakitsos\(^6\), Lawrence Gillman\(^2\) |
|       | \(^1\) Undergraduate, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba  
|       | \(^2\) Neurosurgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba  
|       | \(^3\) Clinician Investigator Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba  
|       | \(^4\) Section of Critical Care, Department of Medicine, University of Manitoba  
|       | \(^5\) Department of Pediatrics & Child Health, University of Manitoba  
|       | \(^6\) Department of Critical Care, keck Medical School, University of Southern California, USA |
| 3:05  | Cruciate ligament reconstruction: A provincial epidemiological study |
|       | Yiyang Zhang\(^1\), Jeff Leiter\(^2\), Peter MacDonald\(^3\)               |
|       | \(^1\) Orthopedic Surgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba  
|       | \(^2\) Pan Am Clinic Foundation, Winnipeg Manitoba                         |
|       | \(^3\) Section of Orthopedic Surgery, Department of Surgery, University of Manitoba |
# Isolated capitate fractures: case report and systematic literature review

**Mina Aziz**¹, Jeff Leiter², Jennifer Giuffre³

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² Pan Am Clinic Foundation, Winnipeg Manitoba  
³ Section of Plastic Surgery, Department of Surgery, University of Manitoba

## Introduction

Isolated capitate fractures have traditionally been thought to be rare injuries. However, due to the increasing use of advance imaging modalities such as MRI and CT, the medical community is starting to recognize the true incidence of this injury. This project seeks to highlight the unique features of this injury by presenting the case of a 27-year-old male with an isolated capitate fracture and the results of a systematic literature review. We hypothesize that missed capitate fractures result in increased risk of developing a non-union as well as avascular necrosis (AVN).

## Methods

A Literature review was conducted in the following databases; Ovid Medline, Ovid EMBASE, Web of Science and SCOPUS. Exclusion criteria were age less than 18 at time of injury, the presence of concomitant carpal bone fractures and non-English language articles. The data from the selected articles was extracted and their references were cross checked against our articles. Statistical analysis was conducted including relative risk as well as the Fisher exact test.

## Results

23 original articles meet our inclusion criteria, with a total of 29 individual cases (including our case). These articles consisted predominantly of case reports and case series. There were 5 females and 24 males patients with a mean age of 26 (range 18-42). Only eight cases representing 28% of fractures were recognized on initial presentation. 11 fractures resulted in a non-union with a relative risk of 2 (P 0.39). There were 4 cases of confirmed AVN and two more cases were suspected to have AVN with a relative risk 2.35 (P 0.62).

## Conclusion

There was a delay in the diagnosed of isolated capitate fractures in 72% of the cases. Increased awareness of this injury pattern will improve our understanding of the natural history of this injury and help guide future treatment plans.
Establishing evidence-based care for children with gallstone pancreatitis: A systematic review

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² Section of Pediatric Surgery, Department of Surgery, University of Manitoba

Introduction
Gallstone pancreatitis is increasingly common in children. The management of gallstone pancreatitis in adults has been extensively studied and guidelines published. However, the management of pediatric patients with gallstone pancreatitis has not been well studied and in Children’s Hospital management is not evidence-based. Our goal was to develop a guideline to manage pediatric patients with gallstone pancreatitis based on available studies in children and by extrapolating evidence from the adult literature.

Methods
We performed a literature search including clinical trials and systematic reviews. We searched the Cochrane database, PubMed, and ClinicalKey from 1988 to 2016. Our topics of interest included scoring systems for disease severity, ERCP, timing of cholecystectomy, nutrition, antibiotics, pain and fluid management. Two authors identified the studies included in our guideline.

Results
Our literature search yielded 64 studies with the evidence supporting the following changes to current practice.

- CT scan is not required to confirm the diagnosis.
- Current disease severity scoring systems are inadequate for pediatric patients.
- Antibiotics should not be administered unless infected necrosis is proven.
- Patients with mild or moderate pancreatitis can be fed if pain is not exacerbated.
- Patients with severe pancreatitis should receive enteral nutrition via nasogastric tube; parenteral nutrition and gut rest is not mandatory.
- Isotonic intravenous fluid should be infused at a maintenance rate.
- Morphine or fentanyl is appropriate for pain.
- Only patients with pancreatitis and concurrent cholangitis require urgent ERCP.
- Patients with mild or moderate pancreatitis should undergo cholecystectomy after resolution of the pancreatitis but prior to discharge.
- Patients with severe pancreatitis should have a delayed elective cholecystectomy.

Conclusion
The guideline remains under development and will be supplemented with a standardized order sheet and a management algorithm. This management package will enable us to provide pediatric patients standardized, evidence-based care and establish a framework for future studies in this patient population.
Long-term outcomes of survivors undergoing extracorporeal membrane oxygenation in Manitoba between 2007 and 2016

Summer Debreuil1,2, Kyla Barrie1,2, Alex Cornick1, Erika Lee1, Brett Hiebert1, Shelley Zieroth3, Rizwan Manji4,5, Joseph Bienvenu6, Rakesh Arora4,5, Rohit Singal4,5

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2 Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
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6 John Hopkins School of Medicine, Baltimore, Maryland

Introduction
Extracorporeal membrane oxygenation (ECMO) to treat severe cardiorespiratory illness has seen a marked increased in the last decade. Much of the data regarding this intensive therapy is short term in nature and focused on survival. There exists a need for assessment of long-term survival and health related quality of life (HRQoL) to improve our understanding of the benefits of this therapy.

Methods
A retrospective chart review of all 239 patients supported with ECMO in Manitoba between 2007 and 2016 was performed as well as a long-term HRQoL analysis of the survivors, who were invited to undergo detailed HRQoL assessments involving eight questionnaires and three clinical assessments. Fifty-one patients, 38 undergoing venoarterial-ECMO and 13 venovenous-ECMO, were interviewed.

Results
One hundred and eighty-four patients were supported with venoarterial-ECMO most commonly for cardiogenic shock (63%) where 30-day and 2-year survivals were 43.5% and 36.6% respectively. Fifty-five patients supported with venovenous-ECMO most commonly had acute respiratory distress syndrome (78%) where 30-day and 2-year survivals were 56.4% and 48.0% respectively. Two-year survival estimates for all patients surviving to hospital discharge were 85% for all patients. Twenty-nine percent of VA-ECMO and 43% of VV-ECMO patients reported having a low quality of life. Despite their younger age, VV-ECMO patients had greater deficits, including depression (23.1%), anxiety (38.5%), PTSD (38%) and low physical activity (53%).

Conclusion
Survival, particularly of patients discharged from hospital, was reasonable on long-term follow-up but persistent issues with HRQoL were identified. This study provides better understanding of patient survival and issues post ECMO therapy, which may be used to counsel patients and families and identify areas for enhanced ongoing care.
Congenital surgical anomalies long-term outcomes study

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Introduction
It is estimated that 3–4% of children are born with a congenital anomaly, many of which are managed surgically. The aim of this study is to create a database of patients with one or more congenital anomalies managed surgically in Winnipeg, Manitoba. We will use the database to identify trends in patient presentation, management, and outcome.

Methods
We used REDCap as the platform to create the database. The anomalies being investigated are: congenital diaphragmatic hernia (CDH), biliary atresia, congenital lung lesion, gastrochisis, esophageal atresia, Hirschsprung’s disease, intestinal atresia, imperforate anus, and omphalocele. General demographic and disease-specific data was abstracted from patient charts. We expect to review about 1000 charts across all nine anomalies. To date, we have reviewed 47 CDH charts, 28 gastrochisis charts, and 58 Hirschsprung’s disease charts.

Results
Preliminary analysis of the CDH data revealed two significant negative prognostic factors: liver herniation and closure using a patch. We found that 35.0% of the 20 patients with herniated livers were deceased. In comparison, 14.8% of the 27 patients without herniated livers were deceased. Additionally, of the 15 patients with herniated livers who lived long enough to undergo initial closure, 53.3% required additional surgeries. In comparison, of the 24 patients without herniated livers who survived long enough to undergo an initial closure, 16.7% required additional surgeries. We observed similar surgical outcomes for patients who underwent patch repair; 57.1% of the 14 patients who underwent an initial patch closure required additional surgeries compared to 13.0% of the 23 patients initially closed without a patch.

Conclusion
The data captured demonstrate that disease variations and methods of surgical management play a role in patient outcomes. We plan to complete the chart review, identify factors affecting outcomes and consider management changes to improve patients’ prognoses.
Arterial phase CT scan for localization of missed parathyroid adenoma on conventional imaging

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2 Department of Radiology, University of Manitoba
3 Section of General Surgery, Head & Neck Surgical Oncology, Department of Surgery, University of Manitoba

Introduction
Primary hyperparathyroidism is the most common cause of hypercalcemia and primary surgical resection is the treatment of choice. Because more than 85% of patients with primary hyperparathyroidism have a single gland adenoma, accurate localization of the involved gland is of utmost importance for minimally invasive surgery. Ultrasound and parathyroid scan are frequently used for the purpose. Concordant ultrasound and findings were found only in 59% cases. 96% with concordant image finding had successful image guided parathyroidectomy. The objective is to evaluate the role of arterial phase computed tomography (CT) for the localization of parathyroid adenomas with non-localizing or discordant findings on ultrasound and 99mTechnetium Sestamibi parathyroid scan.

Methods
Fourteen adults with primary hyperparathyroidism who underwent preoperative arterial phase CT scan from March 2013 through March 2016 for non-localizing or discordant preoperative ultrasound and 99mTechnetium Sestamibi parathyroid scan.

Results
Fourteen patients (12 women and 2 men) were included with a mean age of 66 years (range, 37-83 years). Mean preoperative parathyroid hormone level was 136.92 pg/mL (range, 62-605 pg/mL), and calcium level of 2.77 mmol/L. Both Ultrasound and Parathyroid scan were non-localizing in 4 cases (28.5%), had discordant finding in 7 cases (50%) and rest three patient (21.42%) were undergoing second surgery for second adenoma missed on previous minimally invasive parathyroidectomy. Arterial phase CT was able to localize the adenoma in all of the cases. The mean percentage fall in the level of PTH after surgery was 69.84 %.

Conclusion
Arterial Phase CT scan provided a positive localization in all patients with non-localizing conventional imaging or discordant results and should be undertaken for minimally invasive parathyroidectomy prior to four gland exploration.
Use of durepair porcine collagen matrix in repair of congenital diaphragmatic defects requires caution

Mazen Zidan$^{1,2}$, Suyin Lim Min$^3$, BJ Hancock$^3$, Melanie Morris$^3$, Richard Keijzer$^{2,3}$

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$^3$ Section of Pediatric Surgery, Department of Surgery, University of Manitoba

Introduction
We report our experience with Durepair mesh used as a patch to repair large congenital diaphragmatic hernia defects in patients. Durepair is a bovine collagen matrix used in neurosurgical cases for repair of defects of the dura mater.

Methods
We reviewed all patients with congenital diaphragmatic hernia defects treated in our center during the last five years - 2011 to 2016. We collected demographic information on all patients and we evaluated defect size, requirement of a patch, the type of patch used and the number of recurrences of the diaphragmatic defect.

Results
Eleven out of fourteen patients required patches to close the diaphragmatic defect. Durepair was used as a patch to close the defect in five patients. Two patients repaired with Durepair had a recurrence of the diaphragmatic defect within six months of the original closure, and a third had an asymptomatic recurrence identified at two years of age. One child with a Durepair patch died of surgical complications one week after the closure; there was evidence of recurrence at the time of death. Polytetrafluoroethylene and polypropylene patches were used in the remaining six patients closed with a patch. Of these six, two recurred; one at ten months post-repair and one two years post-repair.

Conclusion
Durepair is similar to porcine collagen matrix patches used in the past to close large congenital diaphragmatic defects. However, our experience with this product should serve as a caution to others considering using this product to patch diaphragmatic defects.
Estimating the accuracy of optic nerve sheath diameter measurement using a pocket-sized handheld ultrasound on a simulation model

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² Neurosurgery Residency Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
³ Clinician Investigator Program, Max Rady College of Medicine, Rady Faculty of Health Sciences, University of Manitoba
⁴ Section of Critical Care, Department of Medicine, University of Manitoba
⁵ Department of Pediatrics & Child Health, University of Manitoba
⁶ Department of Critical Care, keck Medical School, University of Southern California, USA

Introduction
Ultrasound measurement of optic nerve sheath diameter (ONSD) appears to be a promising, rapid, non-invasive bedside tool for identification of elevated intracranial pressure. With improvements in ultrasound technology, machines are becoming smaller; however it is unclear if these ultra-portable handheld units have the resolution to make these measurements precisely. In this study, we estimate the accuracy of ONSD measurement in a pocket-sized ultrasound unit.

Methods
Utilizing a locally developed model of the eye, ONSD was measured by two expert observers three times with two machines and on five models with different optic disc sizes. A pocket ultrasound (Vscan) and a standard portable ultrasound (Sonosite) were used to measure the models. Data was analyzed by Bland-Altman plot and intra-class correlation coefficient (ICC).

Results
The ICC between raters for the Sonosite was 0.878, and for the Vscan was 0.826. The between machine agreement ICC was 0.752. Bland-Altman agreement analysis between the two ultrasound methods showed an even spread across the range of disc sizes, and that the Vscan tended to read 0.33mm higher than the Sonosite for each measurement on average, with a standard deviation of 0.65mm.

Conclusion
Accurate ONSD measurement may be possible utilizing pocket sized, handheld ultrasound devices despite their small screen size, lower resolution and lower probe frequencies. Further study in human subjects is warranted for all newer handheld ultrasound models as they become available on the market.
Cruciate ligament reconstruction: A provincial epidemiological study

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² Pan Am Clinic Foundation, Winnipeg Manitoba
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Introduction
Anterior cruciate ligament reconstruction (ACL-R) is one of the most common Orthopaedic procedures and is the subject of much discussion and research. To our knowledge, there have been no studies looking at the epidemiology of ACL-R in a provincial setting. Understanding the epidemiology of ACL injury and reconstruction may help identify areas that need improvement or further research. The goal of this study is to define epidemiological trends of ACL-R in a Canadian Province and compare to national and international trends.

Methods
This study is a retrospective review of the data stored in the Manitoba Center for Health Policy (MCHP). De-identified, individual-level administrative records of health service used for the entire population of Manitoba (approximately 1.1 million) were used. Codes for anterior cruciate ligament and cruciate ligament repair were searched back as far as the repository permitted (approximately 1979). Patient factors investigated included age, gender, geographic area of residence, and neighbourhood income quintile.

Results
A total of 7,195 ACL-R were found within the time parameters 1979 - 2012. Gender was predominantly male with 4,670 males versus 2,525 females. The mean age at ACL-R was 30 (SD 10). Ages 16-39 accounted for 82.63% of the total ACL-R. The largest percent of patients having ACL-R fell within the fifth income quintile (24.77%). The top two quintiles accounted for 44.81% of the ACL-R.

Conclusion
The rate of ACL reconstruction has increased in frequency since 1979. In Manitoba, patients with ACL-R were more likely to be urban males in the upper income quintiles.
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Trigeminal neuralgia due to dolichoectatic vertebrobasilar artery compression: A 20-year experience

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Introduction
Trigeminal Neuralgia (TN) is rarely caused by a dolichoectatic vertebrobasilar artery (dVBA) compression of the proximal nerve root of CNV. These patients present a surgical challenge and little literature exists on their surgical treatment. We present a case series demonstrating the technique and outcomes of microvascular decompressive (MVD) surgery for these patients.

Methods
A retrospective chart review of patients who were surgically treated by the senior author between 1997 and 2016 with an admitting diagnosis of TN was performed. Patients with pre-operative neuroimaging demonstrating dVBA compression of their trigeminal nerve root were then identified. Details of surgical technique and outcomes were identified from a chart review.

Results
During the 20-year review, 552 patients underwent microvascular decompression for TN and 13 (2.4%) had dolichoectactic vertebrobasilar compressions. Of these, 12 (9 male, 3 female) had follow-up of at least 3 months and were included. A standard retrosigmoid approach was used and mobilization of the culprit vessel was initiated proximally, usually inferior to the vestibulocochlear nerve. Shredded Teflon implants were inserted between the vessel and brainstem to maintain decompression of the nerve. The average hospital length of stay was 2.8 days (Range 2-7) with no major complications. Two patients experienced transient diplopia resolving by post-operative day 2 and one experienced transient ipsilateral ataxia. The median follow-up was 17.7 months. Demographics and clinical comorbidities are presented. At their one-year follow-up: 6 had no pain with no medications (75%), 2 had persistent pain (25%) – one of which underwent a successful glycerol rhizotomy at 8 months, and 3 were lost to follow-up. Outcomes at 1-3 months and ‘long-term’ are also presented.

Conclusion
MVD for TN caused by a dVBA compression can be performed with a high rate of safety and success in the setting of a high case volume centre.
Long-term functional survival and re-hospitalization after surgical aortic and mitral valve replacements in a large provincial cardiac surgery centre

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Introduction
Long-term quality of life following open surgical valve replacement is an increasingly important outcome to patients and their caregivers. This study examines functional survival, defined as alive and not institutionalized, and re-hospitalization within our surgical aortic and mitral valve replacement populations as surrogate measures of quality of life.

Methods
A retrospective, single-centre study of all consecutive open surgical valve replacements between 1995 and 2014 was undertaken. Clinical data was linked to provincial administrative data for 3,219 patients who underwent surgical aortic valve replacement (AVR), mitral valve replacement (MVR) or aortic and mitral double valve replacement (DVR) with or without concomitant coronary artery bypass grafting (CABG). Functional survival was examined at up to 15 years through Kaplan-Meier survival analysis. Cumulative incidences of institutionalization and re-hospitalization were also examined over the same time period.

Results
Follow-up was complete for 96.9% of the 2,146 patients who underwent AVR±CABG (66.7%), 878 who underwent MVR±CABG (27.3%) and 195 who underwent DVR±CABG (6.0%). Overall functional survival was 35.4% at 15 years and the cumulative incidence of re-hospitalization was 34.4%, 63.2% and 87.0% at 1, 5 and 15 years respectively without significant differences between valve procedure cohorts (functional survival p=0.99, re-hospitalization p=0.06). Functional survival and cumulative incidence of re-hospitalization both improved in more recent eras despite increasing age and comorbidities.

Conclusion
Functional survival and re-hospitalization data for up to 15 years suggest sustained quality of life long after surgical aortic and/or mitral valve replacement. Continued improvements are seen in these metrics over the past two decades. This provides unique insight into quality of life after surgical valve replacement in the aging demographic with valvular heart disease.
Mentorship in General Surgery Residency Programs in Canada: Where are we and what do we need?

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Introduction
The benefits of mentorship on surgical residents have been well established. The current state of mentorship in General Surgery (GS) residency programs in Canada is unknown, making improvements challenging. The objectives of this study were to obtain GS residents’ and Program Directors’ (PD) perspectives on resident mentorship.

Methods
An electronic survey was developed, validated and distributed to all 601 GS residents in Canada in September 2015. Telephone interviews with PDs were conducted between December 2015 and August 2016.

Results
A total of 179 residents (30%) responded. The majority (97%) felt that mentorship was important for their training but only 67% identified a mentor. Two-thirds of residents identified more than one mentor, including an attending (86%), senior resident (26%), PD (12%) and fellow (6%). Only 53% identified mentorship infrastructure within their residency program. Most mentors (88%) did not have training in mentorship. The majority of residents (79%) were satisfied with their mentors. Mentee satisfaction was not significantly associated with having an established mentorship program (p=0.603) or having self-selected their mentor (p=0.892). Residents felt an ideal mentor works in GS or a GS subspecialty (93%) and does not have an influence on their academic training (62%). Residents (45%) favoured having a mentorship program that is required but not monitored by their residency program. A total of 11 PDs (65%) participated. The majority (55%) felt responsible for ensuring their residents had mentors and perceived themselves as their residents’ primary mentor. Most PDs (82%) were satisfied with current resident mentorship infrastructure.

Conclusion
While current mentorship is satisfactory, many residents who want a mentor cannot identify one. Given the known positive outcomes of mentorship, GS residency programs in Canada must invest time and resources in the development of structured programs.
Analysis of short- and long-term outcomes of surgically treated left sided infective endocarditis patients: A 10-year longitudinal follow-up study

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Introduction
Infective endocarditis is a bacterial or fungal infection of heart valves. This study aims to analyze survival, re-hospitalization and their predictors for surgically treated left-sided endocarditis in Manitoba.

Methods: Retrospective review of all 166 (114 native and 52 prosthetic) patients operated between January 2004 and March 2015 was performed. Long-term survival and re-hospitalization data for 134/166 patients was obtained via linked clinical databases with the Manitoba Centre for Health Policy. Kaplan-Meier estimates of survival and hospital re-admission and Cox multivariate regression analysis of factors influencing outcomes were performed. Survival was compared to the age-matched population life expectancy from Statistics Canada.

Results: Survival at 1, 5 and 10 years was 91.0%, 80.1% and 72.3%, respectively and major adverse prosthesis related event (MAPE) related re-hospitalization rates were 12.3%, 21.0% and 29.9%, respectively. Re-hospitalization due to endocarditis was 6.9%, 11.2% and 16.8% at 1, 5 and 10 years, respectively. Survival and re-hospitalization were similar for aortic and mitral valves. Survival after surgically treated endocarditis was lower than the age-matched life expectancy of the general Manitoba population. Viridans Streptococci was the most common organism in native valve endocarditis and culture negative endocarditis was most common in prosthetic valves. Prosthetic valve endocarditis (p<0.01) and preoperative dialysis (p=0.03), but not infectious etiology, size of vegetation, age, sex or presenting symptoms, were predictors of in-hospital mortality and post-operative adverse events. Diabetes and renal dysfunction were associated with poor survival, functional survival and re-hospitalization.

Conclusion
This analysis suggests that surgery remains a very effective tool in management of these complex patients in terms of survival and MAPE re-hospitalization.
EVALUATION & CERTIFICATE OF ATTENDANCE

As an accredited event, an evaluation of today’s Surgery Research Day 2017 must be completed at the end of the event. Your input is invaluable to help us know this event met your expectations and to enrich future Department of Surgery Annual Research Days for surgeons, fellows, residents, medical students, researchers and staff.

At the end of the on-line survey, a certificate of attendance will be available for you to save and print for your records. Instructions have been provided in the survey and on the Department of Surgery Research Day webpage. An email reminder will be sent to all participants following the event.

To complete the evaluation, please use this link:

www.surveymonkey.com/r/SurgeryResearch2017

The link will also be available through our website until the survey closes:

umanitoba.ca/faculties/health_sciences/medicine/units/surgery/research_day.html

The survey will close March 1, 2017

On behalf of the Surgery Research Day 2017 Planning Committee we appreciate your support and thank you for attending our event.
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