



Annual Report 2014



Department of Emergency Medicine Calgary Zone



Dr. Eddy S. Lang, MD
Clinical and Academic Department Head

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Executive Summary



Dr. Eddy S. Lang, MD
Clinical Department Head
Calgary Zone

Operations

2014 proved to be a challenging year for the Department of Emergency Medicine with levels of emergency inpatients that have not been seen since 2010. In a phenomenon that developed over the later summer months, access to hospital beds for those patients requiring admission has been particularly challenging. As a result, the Zone ED's have been severely hampered in their ability to care for new patients arriving by EMS or by other means. The resulting EMS offload delays and the need to evaluate and treat patients in cramped quarters or unconventional spaces that can compromise quality has been particularly acute. South Health Campus may be most challenged in this regard with inpatients occupying in excess of 95% of the ED's capacity. Despite this strain on working conditions and the team's ability to deliver care, a number of initiatives have been successfully undertaken by the Regional Department of Emergency Medicine as well as through site-based initiatives, to mitigate risk and improve efficiency and access.

On other operational fronts the Zone Department of EM has achieved a number of important gains under the leadership of Dr. Laurie-Ann Baker, Operational Lead. Physician staffing levels have stabilized with a full or near full complement of doctors at all sites achieved through years of effective recruitment and grooming of senior residents. With a focus on MD retention strategies to protect senior colleagues from the strains of shift work, our greatest contributors now have the option of reducing the less desirable element of their loads if they desire.

The Ebola experience offered a series of learnings and challenges that should be transposable to other similar threats. The operational teams at all sites achieved remarkable levels of preparedness while defining local protocols that were specific to the emergency perspective on patients with a potential exposure. Exposure procedures and multidisciplinary simulations translated into a state of 24/7 preparedness for all sites.

To improve our ability to meet our targets for patients not requiring admission, a distributed on call system has been in place since the summer but remains incompletely leveraged during high levels of EIP holding as activation triggers depend on available space to see new patients. Important gains in our department's ability to deliver evidence-based, effective and high quality care are highlighted by work by our new order set lead as well as tremendous gains in clinical informatics from the Zone's ED lead, Dr. Tom Rich. Improvements in our discharge interface and the automated uploading of ED visits into NetCare are hallmark changes that will improve the quality and continuity of care for the excess of 300 000 ED visits that Calgary receives annually.

Academics and Research Update

In only its second year as a full academic department at the Cumming School of Medicine, Emergency Medicine can be said to be punching above its weight class in academics. With only three GFTs, the department secured two Partnerships in Research and Innovation and Health Systems (PRIHS) grants. Both projects are multidisciplinary efforts with Radiology and Gastroenterology and aligned with Choosing Wisely, to safely increase care delivery while reducing resource consumption. Research activity is multifaceted with Dr. Andrew McRae leading to CIHR grants. One to validate metrics of ED crowding while the other, in collaboration with the APPROACH group to define the impact of high sensitivity troponin on ED care delivery of patients with suspected acute coronary syndromes. We also

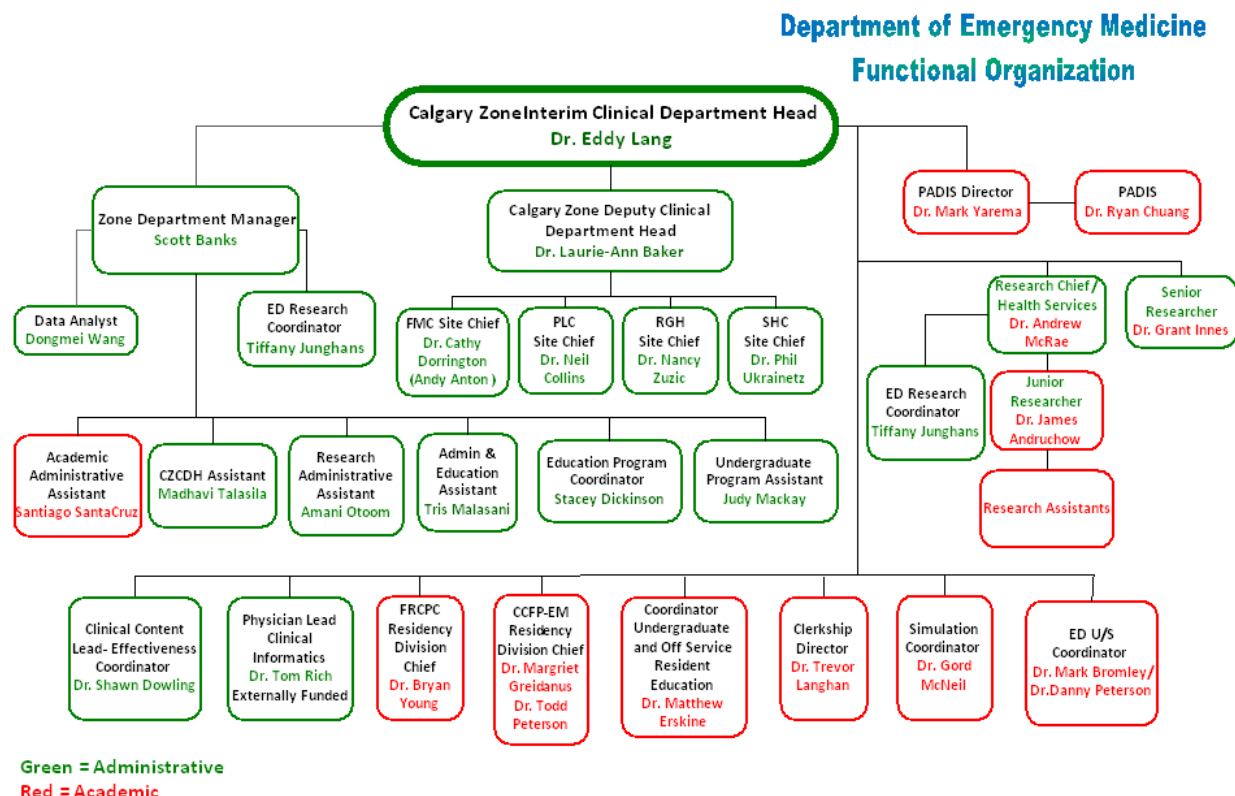
welcomed back Dr. Grant Innes from sabbatical who has wasted no time in becoming involved in a number of projects with particular focus on the more rational use of imaging resources in patients with kidney stones as well as addressing issues related to disposition and referral for surgical management.

Calgary's educational portfolio also continues to flourish with two highly successful and sought after residency programs and an equally successful clerkship rotation and undergraduate teaching in many domains for Calgary medical students. Emergency Department faculty are well-integrated into a number of university portfolios including admissions, simulation, ultrasound training, and continuing medical education. Educational opportunities are also made available to our faculty through a highly effective procedural skills training program and both low and high fidelity simulation opportunities.

Emergency Medicine Department Operations

Departmental Structure and Organization

Governance: Physician leads in our department include an Interim Department Head (Eddy Lang), a Deputy Department Head (Laurie Ann Baker), a Site Chief at each hospital (RGH – Nancy Zuzic; PLC – Neil Collins, SHC – Phil Ukrainetz, and FMC – Cathy Dorrington, Andy Anton, effective February 2015), Royal College Residency Directors (Bryan Young, Sarah McPherson), CCFP-EM Co-Residency Directors (Margriet Greidanus and Todd Peterson), a Clerkship Director (Trevor Langan), Director of Off Service Resident Education and Undergraduate Education (Matt Erskine), Senior Researcher (Dr. Grant Innes), Research Director (Andrew McRae), Junior Researcher (James Andruchow), ED Ultrasound Coordinators (Mark Bromley, Danny Pederson), Simulation coordinator (Gord McNeil), an Informatics Lead (Tom Rich) and a newly appointed Effectiveness coordinator (Shawn Dowling). Scott Banks, our Department Manager, oversees budget, physician recruitment and management.



Departmental Committees

Four main DEM committees meet monthly or bi-monthly.

The Physician Executive Committee

The Physician Executive Committee provides leadership, direction and support for all physician-related activities. The Committee is a decision-making body for physician manpower, scheduling, operational, quality, safety and financial aspects of the Zone department of Emergency Medicine (ZDEM).

THE ZDEM Operations Committee

The Operations Committee is a multi-disciplinary committee including Physician, Nursing and administrative representatives. Duties include strategic planning, prioritization, quality, safety, innovation and oversight of all ED systems and processes.

The Academic Steering Committee

The Academic Steering Committee guides the development of the EM academic program. Primary agenda items for 2013 include strategic planning towards short term and long-term academic goals, faculty development, recruitment to academic positions and educational programming.

The Promotions Committee

This committee processes faculty appointments and promotion requests for the new Academic Department of Emergency Medicine.

The ZDEM Physician Manpower Committee

The Physician Manpower Committee is a subcommittee of the Physician Executive. It provides leadership and makes decisions with respect to manpower needs, search and selection, and physician hiring in the Department of Emergency Medicine.

The Quality Assurance Committee

This committee reports to the ZDEM Operations Committee. It is one of the few departmental QAC's that have been allowed to continue within the new AHS Safety framework.

Department Membership

The Department of Emergency Medicine currently employs 180 active physician staff and treats approximately 320,000 patient visits per year (annualized value based on current and projected inflow volumes).

Historically there were two main “practice-groups” (The Foothills-PLC group and the Rocky view group), but an increasingly zone focus and multi-site practice has changed this model. We now have extensive physician cross-coverage of sites, with a variety of site combinations. Overall, ~120 Department of Emergency Medicine physicians have academic appointments (or appointments in progress).

Manpower and Workforce Planning

Highlight of the Year: MD Recruitment and Hiring



Dr. Laurie-Ann Baker, MD
Deputy Department Head –
Calgary Zone

The year 2014 was once again a very active recruitment year for the Calgary Zone Emergency Department. Seventeen new physicians started work in the Emergency Department in 2014 and another 14 physicians were recruited to start work in the Calgary Zone Emergency Department to begin in 2015. We completed a very aggressive recruitment campaign to improve our emergency physician staffing levels and we anticipate that in 2015 we will be winding down our recruitment efforts and returning to more moderate recruitment efforts.

Our Calgary Zone Emergency Department is now one of, if not the largest, Emergency Departments in Canada with approximately 180 emergency physicians and locums on staff. Despite our successes, we remain very diligent with our recruitment efforts. Dr. Laurie Ann Baker our Deputy Department Head, completed extensive surveys of our physician group and found that many emergency physicians planned to either retire or reduce their workloads by joining split lines in the next 3 to 5 years. To account for continued growth

within the city and both planned and unplanned attrition, we are anticipating that we will need to hire approximately four to six emergency physicians per year for the next 3 years. Given our recruitment success over the past few years, we are very confident that we will be able to achieve this goal. It is however, critical that we continue to develop new and innovative ways to differentiate our department so that we can continue to recruit Canada's best and brightest emergency physicians. New recruits will not only need to be exceptional clinicians they must also offer strong extra-clinical skills as well.

The Recruitment Process



Scott H. Banks, MBA, CITP, CHRP
Emergency Medicine Zone Department
Manager & Chair Physician Manpower

To attract applicants from our target market, in 2014 we published advertisements in the Canadian Journal of Emergency Medicine (CJEM), the Canadian Medical Association Journal (CMAJ), and online using websites such as CMA careers. Advertisements also appeared throughout the year in the CAEP Communiqué, a bi-weekly newsletter that is emailed to over 1,500 emergency physicians in Canada.

In addition to print and online advertisements, we recruited by setting up an exhibitor booth at the annual Canadian Association of Emergency Physicians conference in Ottawa that took place in June 2014. We also set up an exhibitor booth at the Canadian Association of Emergency Physicians (CAEP) Resident Career Fair and worked closely with emergency medicine Residency Directors across Canada to recruit residents interested in moving to Calgary. Since our involvement with CAEP, many physicians from other

provinces have followed up with us. We do not anticipate the need to set up a recruitment booth in 2015 as our recruitment drive is now winding down, and we are getting far more applicants than positions available.

Leading Edge Recruiting Practices

Our Selection Committee tends to be small and has the ability to invite applicants to Calgary quickly after their application file is complete. Exceptional candidates with very good references are provided employment contracts within 24 to 48 hours of their interviews. We believe this expedited process has increased our success rate substantially, as it makes candidates feel highly sought after. Most high quality candidates interview at multiple sites across the country, and most potential employers (EDs) take days or weeks after the interview to make hiring decisions and extend job offers. By making immediate or rapid offers, we are demonstrating to candidates that we are decisive, well prepared, capable of getting things done, and serious about hiring them. These are characteristics that our recruits have indicated that they find appealing. Recruitment Is Important – But retention is equally as Important:

Retention Strategies

To ensure that we maintain a core of experienced EM physicians who can provide mentorship to our new recruits, the manpower committee has adapted its philosophy to focus on the active retention of this important physician group. Retention strategies that have been implemented in 2014 include the option of removing night shifts from regular clinical rotations for those individuals aged 55 years or older and have worked in our department for a minimum of 10 years. For those physicians who qualify for this exclusion but choose to continue to work night shifts, they are offered extended time off during the summer vacation blocks in lieu. Other strategies for some of our older physicians have successfully included the tempering of shift types to support changing practices as they begin to plan for retirement while still maintaining their clinical competence.

In September of 2014, the Department of Emergency Medicine successfully held its first ever gala and awards night to recognize individuals with outstanding clinical skills and achievements. These awards included overall clinical excellence, humanitarian, lifelong learning as well as outstanding rookie awards for those physicians who have excelled in their first two years of practice. The success of the evening, that included attendance of EM physicians and their significant others from all four adult sites as well as Alberta Children's Hospital, was overwhelming and as a result will now continue as an annual event.

Goals and Strategies

Our underlying primary goal is to provide safe and efficient care to all patients that present to a Calgary Zone Emergency Department. We have increased manpower and continue to modify ED shift schedules so that we can better match physician capacity to patient demand. This requires ongoing reassessment of demand but it is also dependent on modifying operations so that added physicians are actually effective (i.e. able to examine patients in care spaces). In 2014, we created a new "Surge Strategy" within each of the adult ED's. When patient demand exceeds physician manpower and a minimum number assessment spaces are available, the departments proceed with a physician call out to assist in the department. This strategy has had limited success but continues to evolve and is anticipated to be better utilized in 2015.

The increased number of admitted patients remaining in the ED because of a shortage of available inpatient beds in 2014 in the Calgary Zone, has been extremely challenging and has crippled many of our previously successful ED and in patient process changes, i.e. Creation of Intake area in all adult ED's; Over Capacity Plan (OCP) triggering and implementation to name a few.

ED overcrowding is not the root of the current crisis rather it is the result of the limited number of available inpatient beds stemming primarily from the province's shortage of long term care beds. Although AHS and the province of Alberta continue to try and find measures to improve access, until

more acute care and long term beds are created, we anticipate the situation will worsen over the coming year.

Impact on Other Departments and AHS Resources

Hiring large numbers of ED physicians has an impact on the provincial physician budget (payments are fee for service billings through the Physician Services Branch), but minimal impact on other Calgary Departments and the CMO (Physicians Affairs) budget, as the physicians are fee for service workers increasing in response to growing patient demand. We have required and will continue to require some additional financial resources for ongoing advertising and physician recruitment until this active initiative winds down in June 2015.

Accomplishments and Highlights

Quality Improvement Report 2014

Calgary Zone Emergency Departments (CZEDs) have established Quality Improvement (QI) Teams supported by Leadership that meet regularly to plan, implement, and monitor QI initiatives. Each Emergency Department is continually improving processes to improve patient care based on AHS strategic priorities and site based environments. Emergency Departments work in collaboration with other services on continual improvement at each Calgary Zone site to support quality patient care and flow through the hospital system.

The third quarter of 2014-15 continued to be challenged by pressures on hospital capacity. The impacts on the CZEDs included increases in key metrics including Triage to Physician assessment, length of stay for admitted and discharged patients, and reported challenges for staff at all sites related to reduced resources to manage ED patients while supporting inpatient holds.

Accreditation work continues at all sites, and site based teams are moving forward with education and program development to meet Accreditation standards. A key area in development is a falls reduction program. There has not been a formal falls reduction program in the EDs, and site based QI RNs are working collaboratively with the Provincial Falls Reduction program to develop a pathway to support patient care. Recertification for staff at each site, as well as specific training is the vehicles for presenting the accreditation information and requirements to staff.

PCN referrals are being done at the FMC and RGH with plans to spread to all sites in order to support patient attachment to a community Physician to support enhanced continuity of care, and support options other than the ED.

The details for each EDs internal improvement work are included below, and demonstrate the significant effort that each site is putting into improvement work while managing significant flow challenges.

Calgary Zone Emergency Department QI initiatives that are planned or in progress at each site reflect the following Calgary Zone Regional Department of Emergency Medicine (RDEM) zone priorities for the fiscal year 2014-2015:

- 1) Engaging with community partners to support patients: the goal is to work with EMS, PCN's and other services to develop processes to support specific population, including seniors and patients who use the EDs frequently in order to provide coordinated care across the zone.*

- 2) *Accreditation focused projects to support ROP requirements.*
- 3) *Enhancing clinical documentation accuracy to support safe, effective care for patients.*
- 4) *AHS targets: Time to see an Emergency Physician*
 - *Emergency Department Length of Stay for Admitted Patients (8.5 hours-median)*
 - *Emergency Department Length of Stay for Discharged Patients (3.0 hours-median)*

ALBERTA CHILDREN'S HOSPITAL

1) *Engaging with community partners to support patients: the goal is to work with EMS, PCN's and other services to develop processes to support specific population, including seniors, and patients who use the EDs frequently in order to provide coordinated care across the zone.*

- Pediatric Follow up Clinic: Working with the ACH Pediatric Teams to decrease ED return visits for follow up and to reduce potential admits. A process has just been implemented with the Pediatric Follow Clinic at ACH in which ED physicians can book follow up appointments that meet the defined criteria at the Paediatric Follow Up clinic on ACH (Mon/Wed/Fri).

2) *Accreditation focused projects to support ROP requirements.*

- Information Transfer -Ongoing work with RAPID, EDs and UCC regarding improving the transfer of patient information from external facilities to ACH.
- Medication Reconciliation at Care Transitions - ongoing ED and site work to ensure compliance and completion of the medication reconciliation documentation. ACH ED has adopted criteria from the ESCN and working in collaboration with Stollery towards implementation.
- Infusion Pump Training - working in collaboration with the site to organize the infusion pump training for fall.
- Falls – department accreditation group is working on criteria to identify high risk patients for falls using work from within the Calgary zone to create criteria. Implementation currently ongoing
- Working in collaboration with IT to increase accessibility to the ACH website via Insite. This will increase safety in nursing practice to promote ease of accessibility.
- Zone based meetings are held every 6 weeks with support from AHS Accreditation Specialists to review site based Accreditation standards self-assessment results, and plan activities to address areas of need.
- Department accreditation lead has developed a staff feedback board to better understand gaps in knowledge for accreditation and to encourage staff to provide suggestions and feedback regarding gaps in knowledge or processes.
- Department based Accreditation team formed to educate staff of Accreditation standards, and implement required processes to address areas of need.
- Established working group to review department Equipment, Linen and Supplies and identify possible 5S opportunities.

3) *Enhancing clinical documentation accuracy to support safe, effective care for patients.*

- Development of process to track lab results in the department. To ensure that all results are safely followed up with, a process to include the nurse clinician/charge nurse to organize and track results ordered by ED physicians will ensure timely follow up for patients.
- Implementation and ongoing use of Ebola Virus Disease screening tool to ensure the safety of patients and frontline staff.
- PPE buckets remain at triage to ensure efficient application for PPE to promote safety of staff.

4) AHS targets:

Time to see an Emergency Physician

- Triage projects: To manage the large volume of paediatric patients presenting during evening hours. Goal: Reducing time to the initial triage assessment reduces the risk of the unknown patient in line, and reduced time to physician assessment.
- Enhancements to the triage orientation and CTAS course were provided. Define the triage nurse's roles and responsibilities in order to better manage patient flow into the dept and increase patient safety while awaiting care – currently 80% of ED triage staff have attended this course.
- Flexibility of bed utilization to meet the demands of patient volume and acuity. Worked with the ED physician clinical lead, triage/charge/clinician staff to define criteria as to when to expand or reduce the number of the intake or Fastrack spaces in order to better manage patient flow, acuity and meet the needs of the department.
- Created an extra touchdown space to support MD practice in Fastrack, this would allow multiple physicians to work in the area and increase the ability to perform more services (i.e. suturing).
- Ongoing work with Strategic Capital Planning – ED observations and data collection have been completed and ongoing work has been completed to identify possible quick wins for streamlining of patient flow from triage to ED physician assessment (i.e. removal of millwork in areas to increase capacity, and removal of millwork desk in waiting room to increase triage and waiting room safety).
- Additional work with strategic capital planning is examining ways to improve flow and potential physical space to increase capacity in ED (eg. returning Room 9 to treatment space, converting SIM space to multi-patient treatment room).
- Developed core working group for focusing on opportunities to increase capacity and streamline patient flow within the entire emergency department.
- Implementation of a trial to have service workers support in intake. Their role would be to support quick turnover and nursing practice to improve nursing efficiency, documentation and throughput of patients safely.
- AIW based improvement education using an ED simulation will be provided to ED staff starting March 2015 to develop skills and understanding around improving processes in the ED.

Emergency Department Length of Stay for Admitted Patients (8.5 hours-median).

- Working in collaboration with the mental health team to decrease LOS for admitted patients.
- Ongoing work with the site to increase overcapacity space, identifying the need to keep areas of the hospital open when capacity is at critical levels.
- Engaging with the site at Inpatient Advisory and identifying the common barriers from time of bed allocation to departure from emergency department. Working closely with inpatient leaders to reduce the variables though increased communication about ED patient safety with their staff.
- Collaborating with the ACH mental health liaison to ensure optimal patient movement throughout Unit 23 & 26 at FMC and SHC adolescent unit. This clinical position is intended to support optimal patient placement for increased capacity.

Emergency Department Length of Stay for Discharged Patients (3.0 hours-median)

- Working in collaboration with the mental health team to decrease LOS for discharged patients.
- Looking at potential patients that can be managed by the mental health crisis team and ED physician versus awaiting consult to Psychiatry on all mental health referred patients.

- Working in collaboration with physicians and nursing to ensure patients who present with limb injuries receive timely medication and proper follow up to provide quality care – Pain Project Calgary Zone Innovation Grant.

FOOTHILLS MEDICAL CENTRE

1) Engaging with community partners to support patients: the goal is to work with EMS, PCN's and other services to develop processes to support specific population, including seniors, and patients who use the EDs frequently in order to provide coordinated care across the zone.

- Foothills Medical Centre Emergency Department has teamed up with the Calgary Case Management Group to focus on providing continuity of care to Familiar Faces that present to the emergency department. This team has representation from EMS, Social Work, The Drop-In Centre, The DOAP Team, The Alex and AHS. Currently the focus is to align patients with a family physician. The CUPS organization plays a key role with this initiative.
- Primary Care Network referral project: Funding was received and a Liaison RN was hired in October 2014. The referral processes are being reviewed and work is being done with teams to streamline and apply QI structures to embed the practice of ED to PCN clinic referrals. Modification and standardization of forms, processes, and reducing duplication of steps have been the focus for this quarter. Collaboration with other AHS sites and PCN clinics is on-going. Data collection is on-going and outcome reports are being submitted quarterly. Other interested Zones include South and Central.

2) Accreditation focused projects to support ROP requirements.

- Medication reconciliation is an ongoing project. The goal is to complete the 'Best Possible Medication History' for all patients who visit ED, and medication reconciliation on all admitted patients.
- Zone based meetings are held every 6 weeks with support from AHS Accreditation Specialists to review site based Accreditation standards self-assessment results, and plan activities to address areas of need. Site based meetings are occurring weekly to review the Accreditation standards in preparation for the survey visit that is to occur in May.

3) Enhancing clinical documentation accuracy to support safe, effective care for patients.

- Data collection has begun on our Level 1 Trauma call outs to review the communication pathways between the ED and other departments during a Level 1 Trauma case.
- A new Regional Type and Screen Information System document is being trialed at FMC to determine if there will be a reduction in documentation errors, and resulting reduction in patients requiring a second blood draw. The latest data indicates the new form has reduced the variability in the type of errors that were occurring.

4) AHS targets:

Time to see an Emergency Physician

- Construction processes will continue on the new patient care areas in the department into the new year. Working groups continue to evaluate and develop processes for patient care in the new areas with a focus on ensuring improved Triage to MD Assessment times.
- In an effort to reduce the number of EMS patients that are waiting in EMS park, a Stretcher Intake area (the 80s) has been established in the department. Depending on staffing this area will

be open from 1100 until 0300, to help download patients that arrive by EMS. In collaboration with triage, the 80s RNs will decide which patients to pull into the area.

Emergency Department Length of Stay for Admitted Patients (8.5 hours-median)

- The Blue Card elimination project is close to completion reducing administrative work for admitted patients.

Emergency Department Length of Stay for Discharged Patients (3.0 hours-median)

The Primary Care Network referral process continues to identify patients at triage who would be appropriate for a safe referral to a Calgary Foothills PCN clinic, therefore reducing demand on ED.

PETER LOUGHEED CENTRE

1) Engaging with community partners to support patients: the goal is to work with EMS, PCN's and other services to develop processes to support specific population, including seniors, and patients who use the EDs frequently in order to provide coordinated care across the zone.

- Complex High Needs Initiative collaboration with East Family Health Centre and Mosaic Primary Care Network patient enrollment started January 13th.
- Discussion with East Family Health Centre to develop a PCN referral process from the PLC Emergency department plan for implementation in March, 2015.

2) Accreditation focused projects to support ROP requirements.

- Medication reconciliation work ongoing with target to complete Best Possible Medication History, and Medication Reconciliation on all ED patients.
- Zone based meetings are held every 6 weeks with support from AHS Accreditation Specialists to review site based Accreditation standards self-assessment results, and plan activities to address areas of need.
- Site based Accreditation team being formed to educate staff of Accreditation standards, and implement required processes to address areas of need.
- Weekly FYI for staff with regards to Accreditation Emergency Department standards.
- Plan for mock tracer February 2015.

3) Enhancing clinical documentation accuracy to support safe, effective care for patients.

- Frontline staff reminded and mentored by the Educators and Clinicians the importance of documentation of Fluid Ins & Outs, Allergies and IV's. Educational review is completed at the mandatory education days provided in the spring or fall to all RN Staff.

4) AHS targets:

Time to see an Emergency Physician

- Triage desk redesign to support the role of the Triage Lead for bed allocation and prioritizing.
- Process improvement for EMS patient January 2015:

- EMS patient assessment by EDMD when in SEC priority next to be seen and no treatment space available.
- Intake process redesign February 2015:
 - Assignment sheet revised to support workload in the Intake and department.
 - Patient flow in Intake area – use of Old Intake stretcher space, role of Intake Lead to support patient flow through Intake and support EDMD assessment for sicker patients when no assessment space available in the main department.
 - Change in department SEC map to identify specific patient location in Intake area.
 - Expedited 12 Lead ECG protocol will be facilitated by the Intake lead closed loop communication between the Triage lead and Intake lead.

Emergency Department Length of Stay for Admitted Patients (8.5 hours-median)

- Green Bar process improvement November 2014, PLC Inpatient Managers provided access to a Dashboard for Bed assigned to ED departure to track delays that are unit specific. Monthly report sent to Unit Managers for review.

Emergency Department Length of Stay for Discharged Patients (3.0 hours-median)

- To facilitate patient flow and improve ED MD to RN communication, Physicians will place note in clinical comments identifying patients that no longer require monitored bed space to facilitate movement of patients to an appropriate treatment space to free up main department beds.
- Increase in staffing in Intake area to decrease overall length of stay. Staffing support to complete Nursing Initiated protocols, designated roles for processing orders and facilitating reassessments.

ROCKYVIEW GENERAL HOSPITAL

1) Engaging with community partners to support patients: the goal is to work with EMS, PCN's and other services to develop processes to support specific population, including seniors, and patients who use the EDs frequently in order to provide coordinated care across the zone.

- Ongoing work with Community Paramedic program as a discharge referral option for post discharge home follow up/treatment to act as a bridge between ED and home care/primary care services.
- Partnering with Calgary West Central Primary Care Network to refer appropriate non-urgent patients to the primary care center for care/treatment. Once established, looking to explore post ED support & referrals for specific patients (e.g. post ED ordered ultrasound follow up care).

2) Accreditation focused projects to support ROP requirements.

- Zone based meetings are held every 6 weeks with support from AHS Accreditation Specialists to review site based Accreditation standards self-assessment results, and plan activities to address areas of need.
- Site based Accreditation team formed to educate staff of Accreditation standards, and implement required processes to address areas of need. Falls and Med Rec are identified as priorities.
- Falls prevention: Will build upon work already done by site and work with RNs/NAs, OT and Seniors Health CNS at RGH to educate staff during annual recertification (winter&/spring 2015). There will be a large focus on implementing comfort rounds for senior's population. A Falls Prevention Algorithm/Process Map has been developed by Site Accreditation Team and ED OT.

- Medication Reconciliation: monthly audits of ED process for admitted patients ongoing. The ED SCN determined in January 2015 that the Modified Hohl tool will be used to screen for high risk patients.
- “Help Us Help You” initiative implemented and engages patients to complete home medication list while they wait to be seen.

3) *Enhancing clinical documentation accuracy to support safe, effective care for patients.*

- Manual allergy audits initiated. Awaiting direction from RDEM CNS to determine SEC data pull required.
- Planning stages: Once audits completed will work with Educators and RDEM CNS to determine priorities and educational component.

4) *AHS targets:*

Time to see an Emergency Physician

- EMS Hallway Process developed to manage patients waiting in EMS hallway for an available treatment/stretchers location. Patients can be seen by ED physician and orders initiated in the hallway as appropriate.
- Use of MD Surge process when wait times increased.

Emergency Department Length of Stay for Admitted Patients (8.5 hours-median)

- Identification of constraints for inpatient flow for patients with cognitive impairments and use of Confusion Assessment Method score screening in ED.
- Site Flow Coordinator engagement in patient journey upon ED admission to reduce constraints on inpatient discharge processes earlier in the patient journey.
- Opened 8 additional stretchers locations to hold admitted patients as they wait for inpatient beds. Patients cared for by “EIP” RNs in this new location.
- SWAT Rounds daily by Site Flow Coordinators on RGH Inpatient units to support and expedite Inpatient discharge processes and reduce capacity issues.
- Admission avoidance discussions to explore ways to improve care in place in community facilities; potential collaboration with transition services, home care, Community Paramedics.
- Aggressive/ETOH/Mental Health patients – working with Psychiatric Assessment Team to improve communication with ED staff, and improve flow of patients with addictions requiring Psychiatric Assessment Team service.

Emergency Department Length of Stay for Discharged Patients (3.0 hours-median)

- Ongoing discharge teaching work with patients through the, “Help us Help You” initiative developed by RGH staff.
- Ongoing use of the ED Team Internal Surge Process.

SOUTH HEALTH CAMPUS

- 1) *Engaging with community partners to support patients: the goal is to work with EMS, PCN’s and other services to develop processes to support specific population, including seniors, and patients who use the EDs frequently in order to provide coordinated care across the zone.***

- Continuing to work with the South Calgary PCN to support follow up/referrals from SHC ED.
- Evaluating if the patient has returned to the ED since attached to PCN.
- Looking at a process for information transfer to PCN for attached patients.
- SHC Academic Family Medicine groups to support improved primary care follow up – meeting in January with AFM to work out details
- Obtaining demographic data from DIMR to better understand who is accessing SHC ED, and from where our patients are coming (e.g., urban, rural, local communities, more distant communities).
- Continue to participate in the Elder Friendly Care group at SHC.
- Pilot project – Unit Clerks trained on ePCR data base; clerks are now able to print completed EMS PCR's when required

2) Accreditation focused projects to support ROP requirements.

- Zone based meetings are held every 6 weeks with support from AHS Accreditation Specialists to review site based Accreditation standards self-assessment results, and plan activities to address areas of need.
- Site based Accreditation team being formed to educate staff of Accreditation standards, and implement required processes to address areas of need.
- Best Possible Medication History (BPMH)
 - Audit completed by SHC Medication Reconciliation Implementation site lead. At present 90% of all admitted patients are completed prior to the patient being transferred from the ED.
 - Currently working on defining non-admitted “High Risk Patients”.
- Fall Prevention
 - Several of the PCT staff attended an 8 hour Seniors health day
 - Working on our PCT's providing more consistent care rounds on patients in the ED.
 - Reviewing inpatient fall scale for applicability to ED environment.
 - Currently conducting audit of catheters, restraints and fall risks with our Elder Friendly Care group at SHC.
- Ongoing, effective training on infusion pumps
 - Ongoing training and evaluation taking place during our monthly simulations.

3) Enhancing clinical documentation accuracy to support safe, effective care for patients.

- Trialing 3 different tools to document care rounds completed by our Patient Care Techs.

4) AHS targets: (initiatives listed for all below)

Time to see an Emergency Physician

Emergency Department Length of Stay for Admitted Patients (8.5 hours-median)

Emergency Department Length of Stay for Discharged Patients (3.0 hours-median)

- SHC ED re-organized CIA/Intake – improvements to all “Triage to MD” measures have been consistently maintained.
- Revised RN schedule to address gaps in coverage as of September 2014.
- Revising Paramedic Schedule to better meet service demands.

- Looking at modifications to Physician Schedule to better address service gaps.
- Flow Committee Meeting continues to meet regularly.
- Triage Committee continues to meet regularly.
- Currently working on refining Early Gestational Assessment to expand criteria. Early Gestational Assessment (EGA) Clinic increased the number of patients assessed in November and December – 32/68 eligible patients attended EGA in both months.
- SharePoint site for SHC ED launched.

Emergency Department cost-savings initiative

We present two examples to illustrate how evidence-based changes in order sets resulted in better utilization of laboratory resources with cost-effective outcomes:

CKMB and urine drug screening order sets changes were introduced in August 2013. As a result the yearly average of CKMB orders was reduced by 98.65% between 2012 and 2014, and the total ordering of urine drug screening tests (UDS and UDSR) was reduced by 74.46%. It is of note also that the use of urine drug screening tests shifted to the less expensive test (UDSR), impressively lowering costs by 88%. More detailed information can be found in the tables below:

CKMB RRL/UC*					UDS RRL/UC*					UDSR RRL/UC*					RRLs	
Mth	2012	2013	2014		Mth	2012	2013	2014		Mth	2012	2013	2014		Urgent Care Centres	
Jan	355	218	7		Jan	588	614	29		Jan	33	32	125		Foothills Medical Centre	
Feb	205	110			Feb	581	526	11		Feb	26	57	136		Peter Lougheed Centre	
Mar	194	78	7		Mar	567	603	17		Mar	21	42	151		Rockyview General Hospital	
Apr	207	84	2		Apr	634	372	17		Apr	21	100	133		South Health Campus	
May	165	98	4		May	615	229	12		May	34	87	141			
Jun	183	117			Jun	638	149	11		Jun	38	82	140		South Calgary Health Centre	
Jul	176	67	1		Jul	578	154	19		Jul	29	98	124		Sheldon M. Chumir	
Aug	207	14	2		Aug	550	31	11		Aug	38	169	139			
Sep	219	4	6		Sep	566	16	13		Sep	33	135	162			
Oct	241	9	5		Oct	597	18	13		Oct	35	129	157			
Nov	214	38	1		Nov	547	16	15		Nov	34	113	154			
Dec	234	6			Dec	551	22	17		Dec	34	122	139			
Tot	2600	843	35		Tot	7012	2750	185		Tot	376	1166	1701			
change		-68%	-96%				-61%	-93%				210%	46%			
Ave	216.7	70.25	2.917		Ave	584.3	229	15.4		Ave	31.33	97.17	141.8			
Pre			177.5		Ave			508		Ave			46			
Post			6.235		Ave			16.9		Ave			139.4			

(2013 Aug on=17 mths)

Post initiative

Data in tables was provided by Dr. Tom Rich, MD.

Introduction of SharePoint

Under Dr. Tom Rich's supervision, unit clerks Kara Converse and Cyndral McGonigal developed a web-based program on ED discharge resources called SharePoint. This program is available to clinicians through the link "Discharge resources page" accessed by logging on any Sunray station. It contains valuable information on various clinics to where patients are usually referred after ED visits, printable referral forms, discharge letter links, and other practical resources. Currently, another section of this website is being developed called Clinic Referral guidelines. This section contains information on intake

criteria for each clinic along with their approximate referral waiting time. Other resources included in this program are a list of links to clinical orientation websites and physician's billing information.

Ebola Update and Disaster Planning



**Dr. Laurie-Ann Baker,
MD**
Deputy Department Head –
Calgary Zone

The year 2014 is being marked as having had the most widespread epidemic of Ebola virus disease in history. Although 26 previous outbreaks were brought under control within a few weeks since 1976, this most recent outbreak quickly became a global threat as initial efforts failed to control the epidemic. As of December 2014, 18,603 confirmed cases of Ebola were recorded worldwide holding a case fatality rate of over 70%. Confirmed cases were reported in Europe and the United States in the fall of 2014 resulting in the realization that Canada, and specifically Alberta, were no longer exempt from the risk. A significant need for more expertise and training for front line staff, specifically those working in the emergency department, was quickly realized. With the support of AHS and the provincial Ebola working group, the Calgary ZDEM quickly organized mass training sessions for its staff including those related to personal protective equipment (PPE) and infectious disease containment for each site. Although Canada has yet to see its first case of Ebola, the DEM is better prepared than previous years.

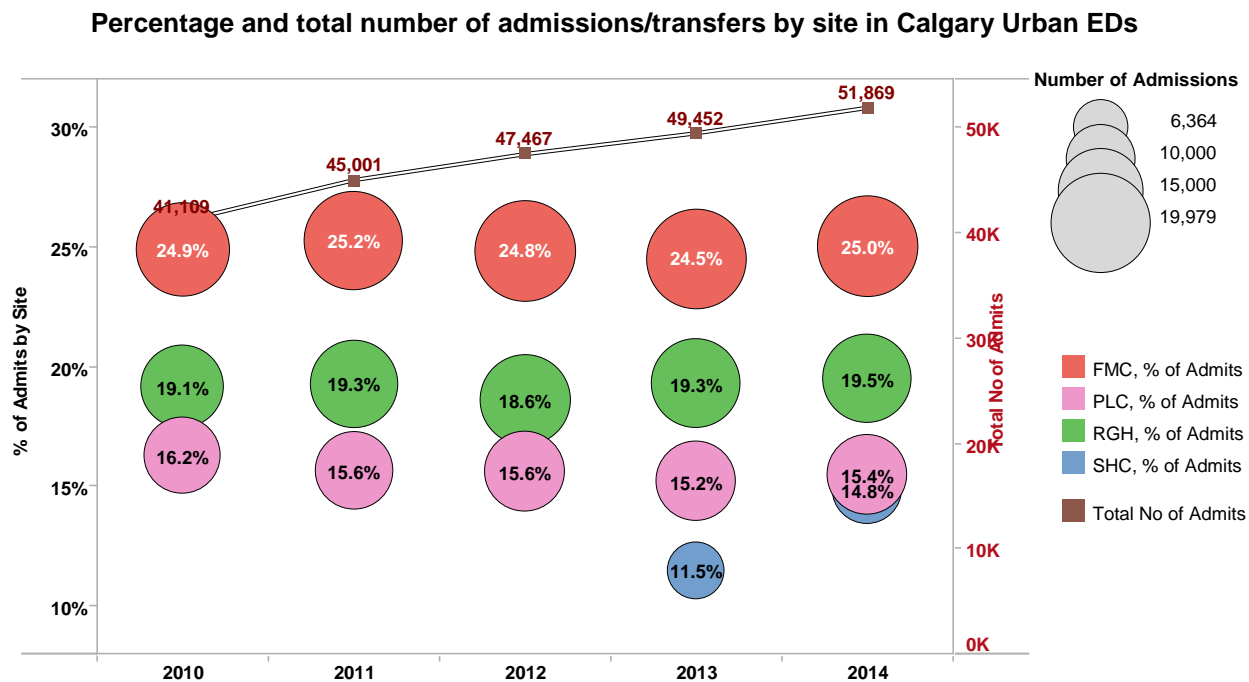
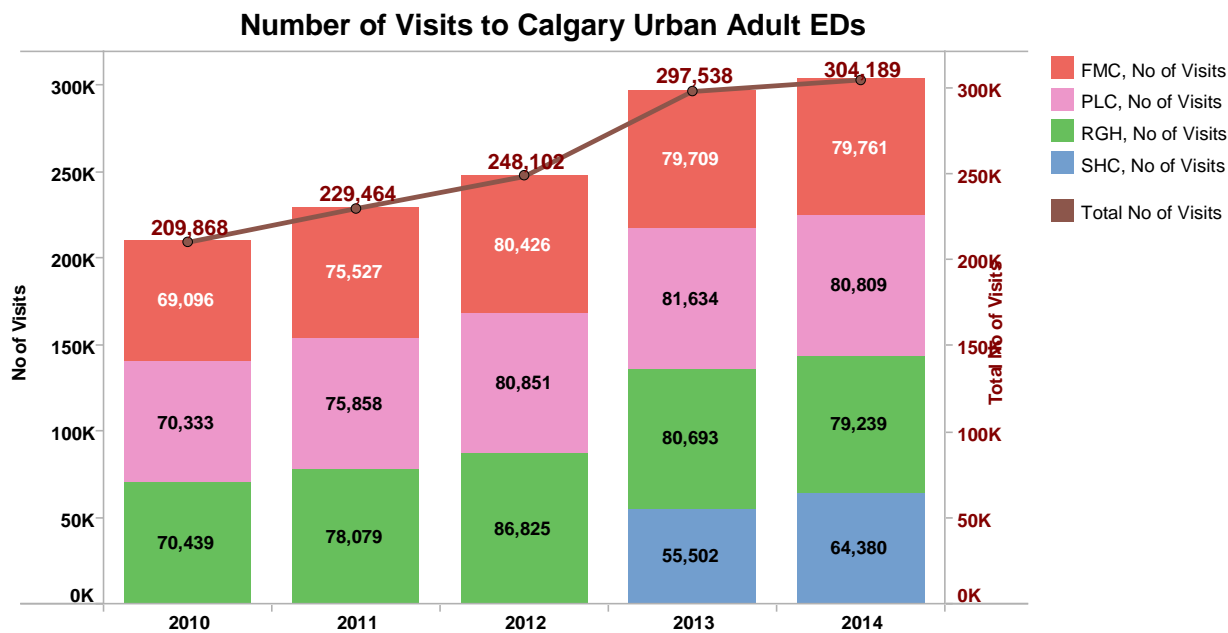
As a result of this global crisis and subsequent emergent planning, the DEM recognized that future epidemics of other unknown diseases or similar disasters were certainly a reality and the question was no longer “if” but rather “when”. Planning for future risks and development of specific disaster plans for the ED is currently being examined using multiple experts in disaster planning as well as local expertise in the area of infectious disease. During the course of 2015, we are anticipating that such planning will result in the implementation of ongoing staff disaster training and educational sessions for physicians and other staff. An evaluation of our progress will occur at year end.

Annual Operational Data

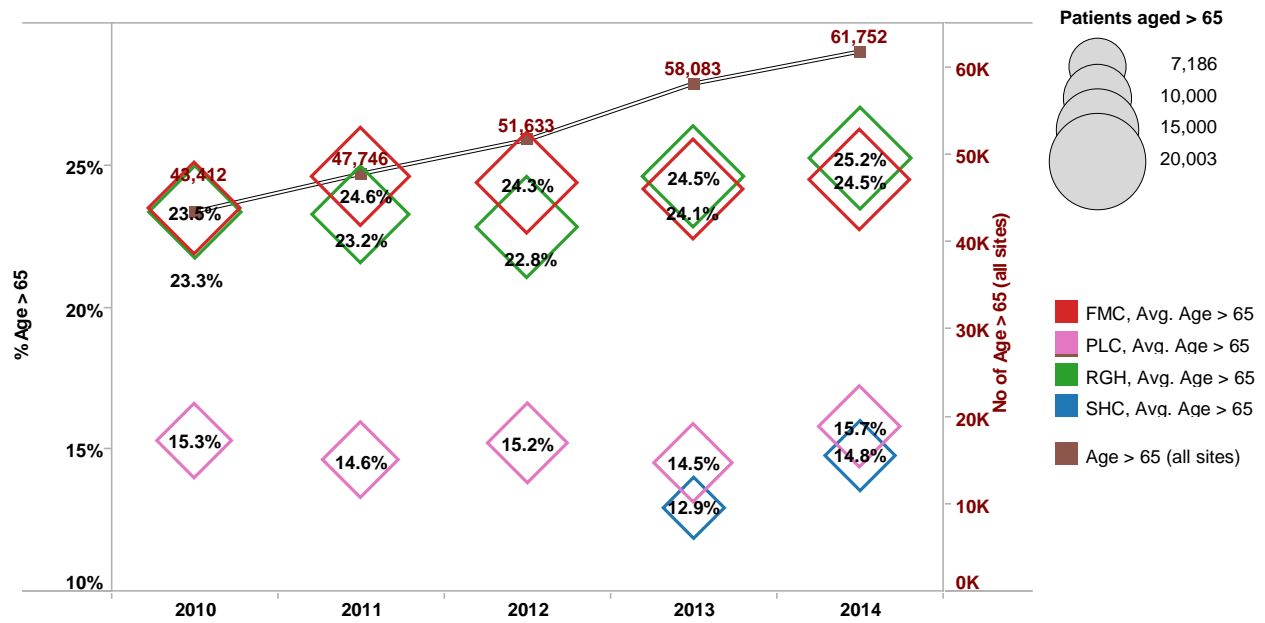


Dongmei Wang
Data Analyst

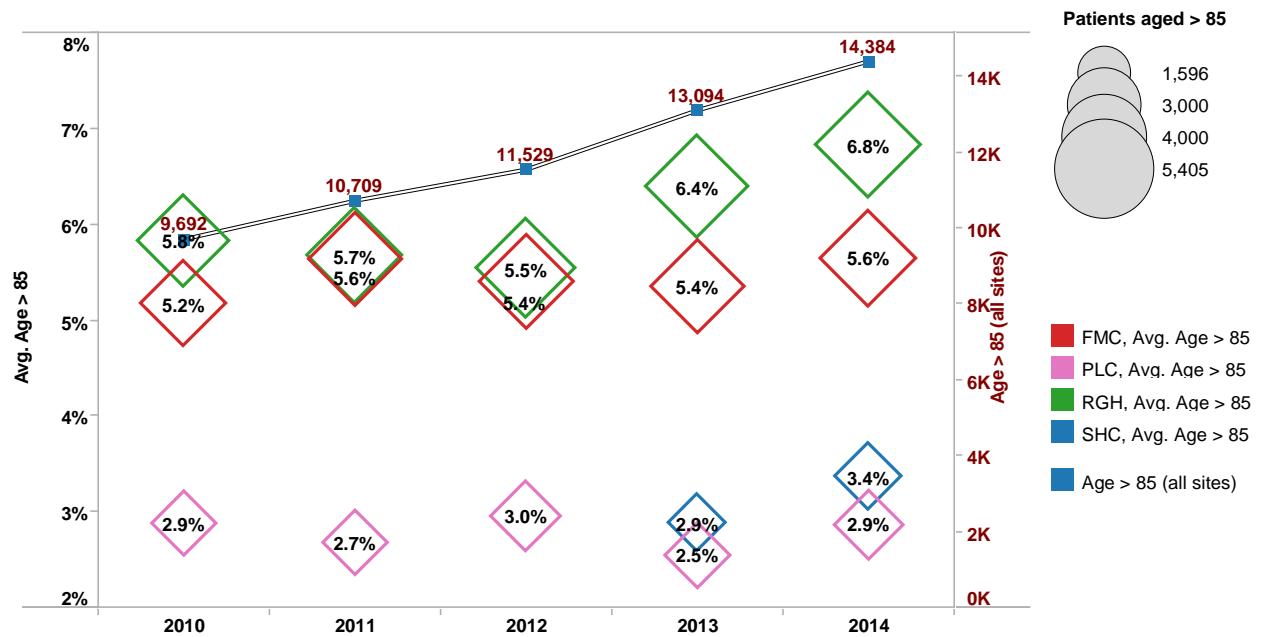
Comparative Annual Data



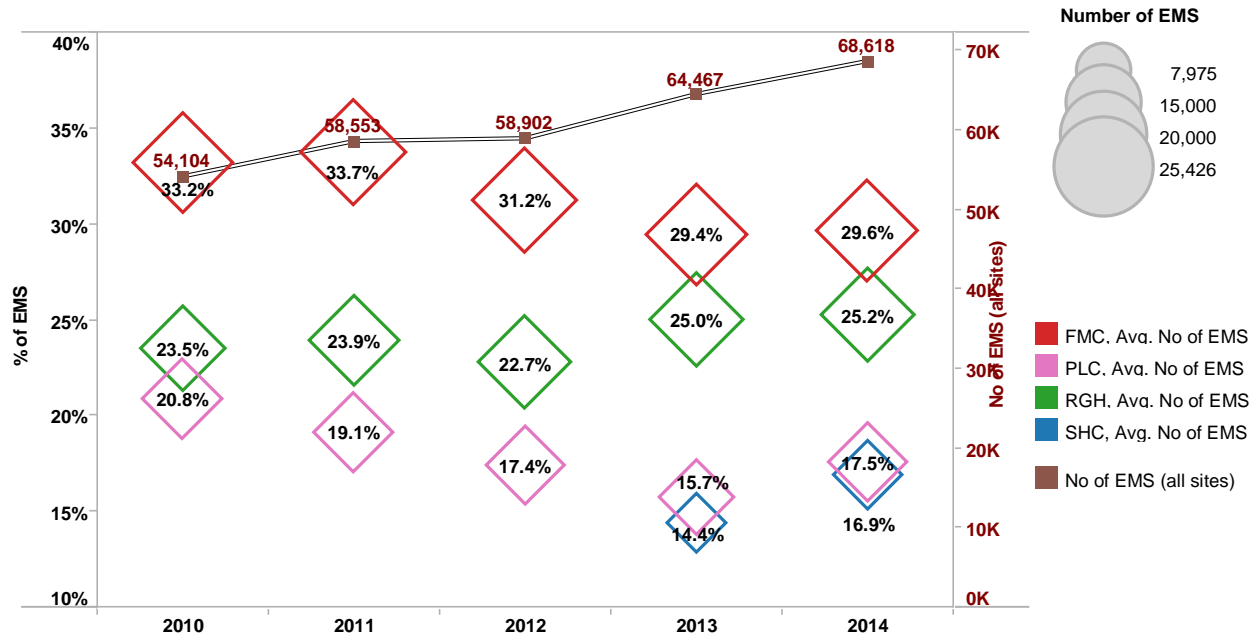
Percentage and total number of ED Visits of patients aged over 65 in Calgary Urban EDs



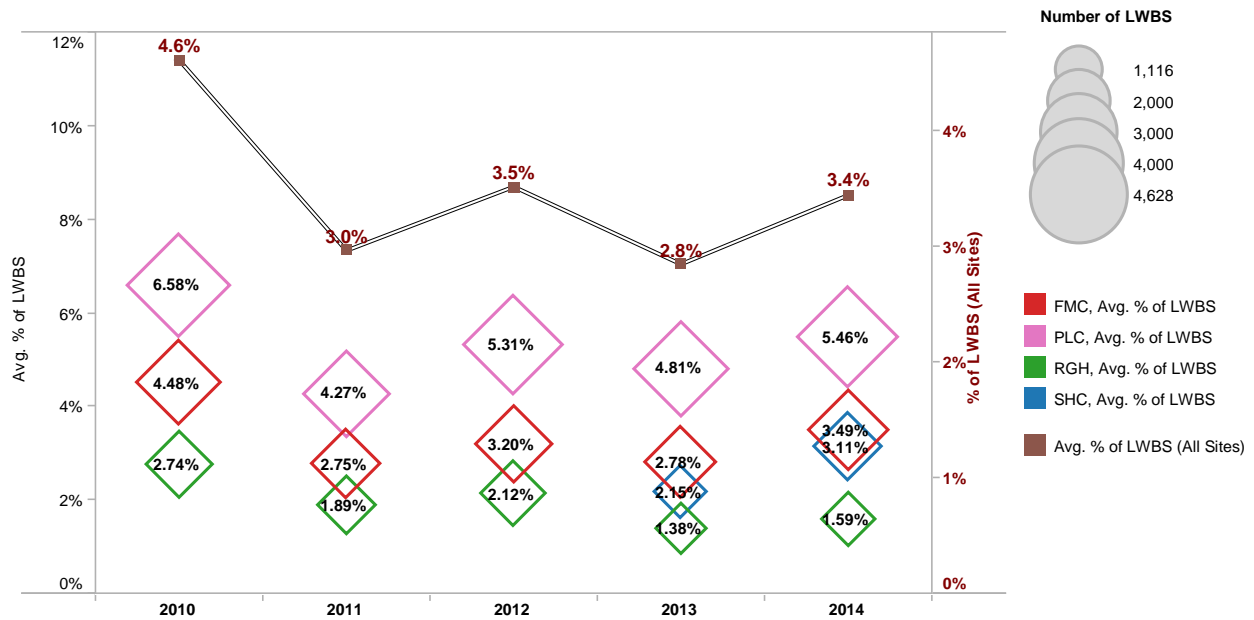
Percentage and total number of ED Visits of patients aged over 85 in Calgary Urban EDs



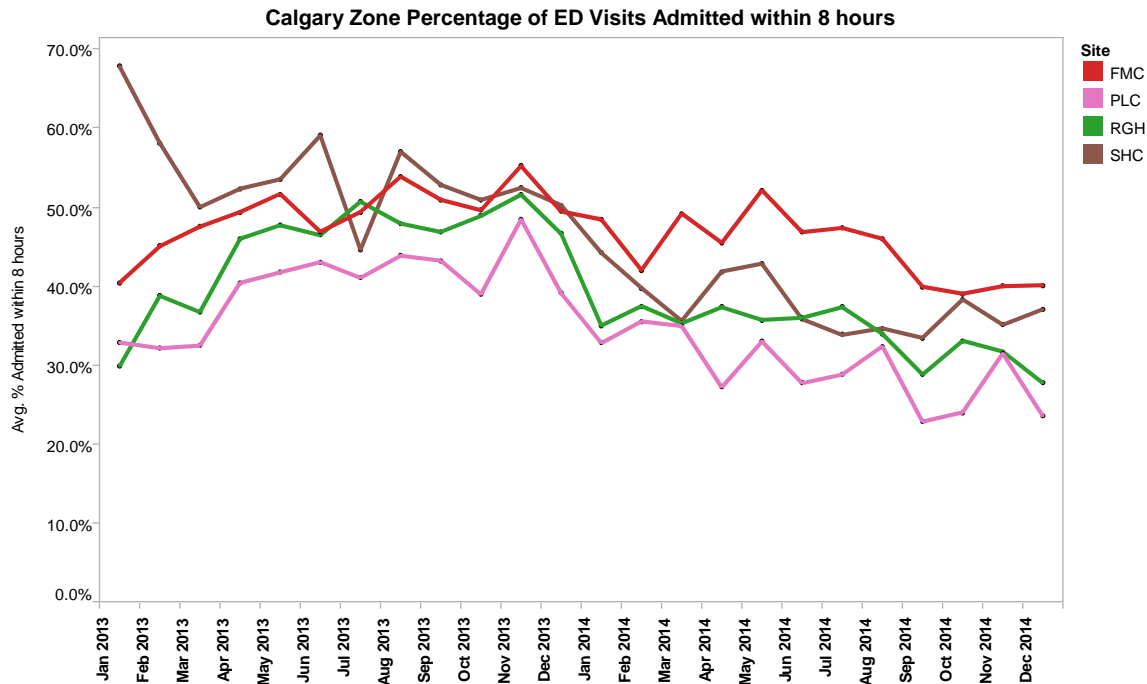
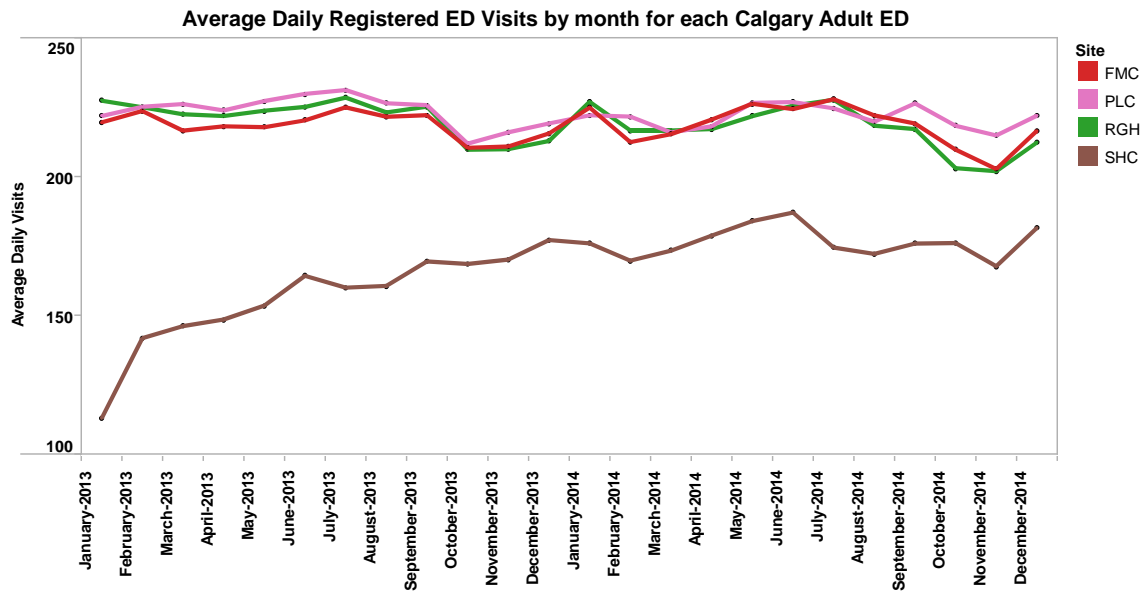
Percentage and total number of ED Visits Arrived by EMS in Calgary Urban EDs

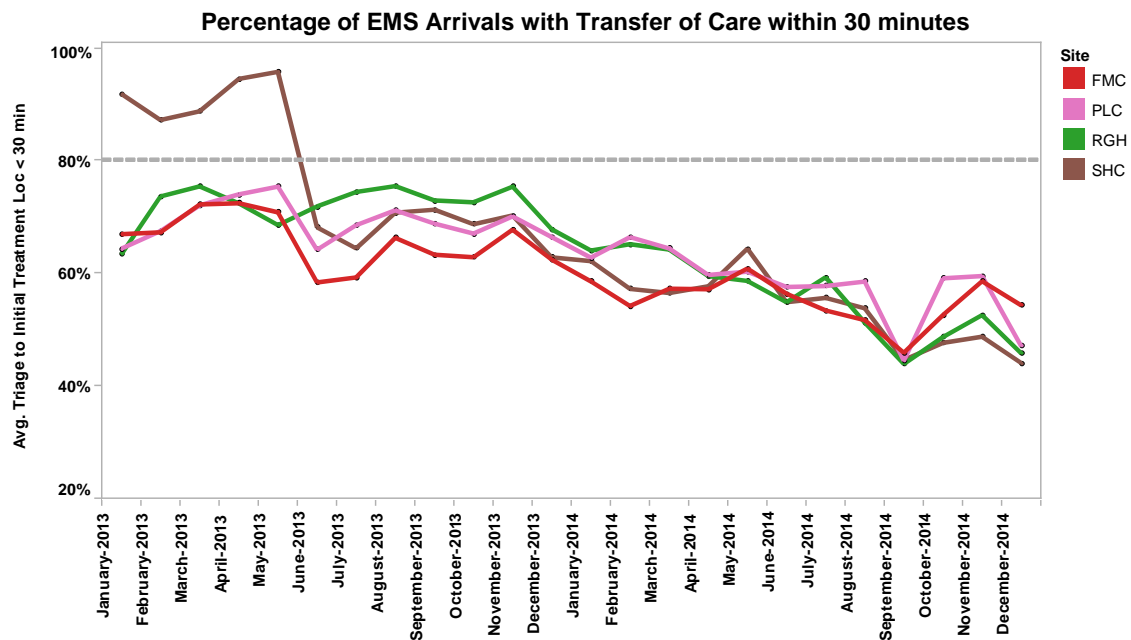


Percentage and total number of ED Visits LWBS at Calgary Urban EDs

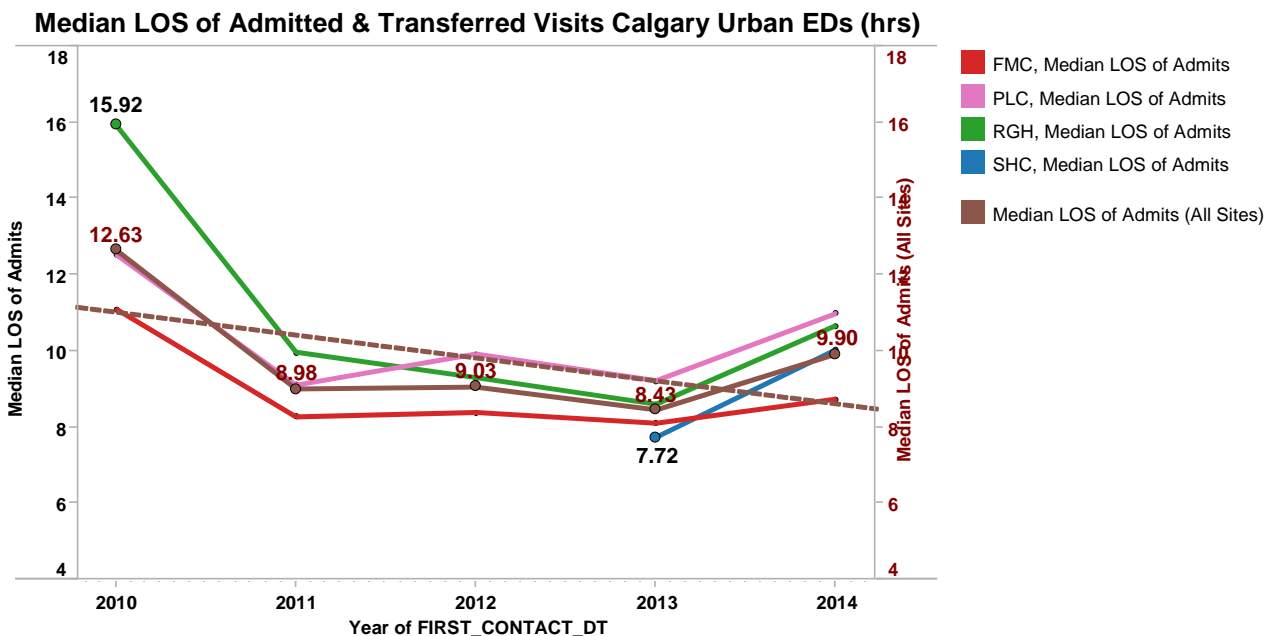


Monthly data

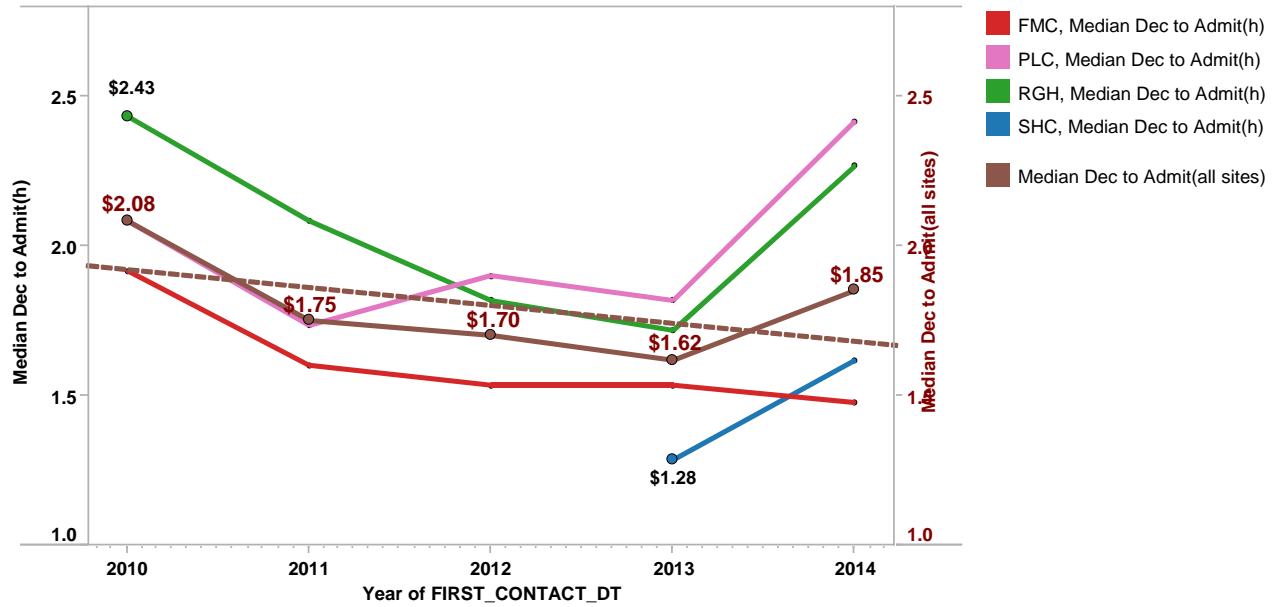




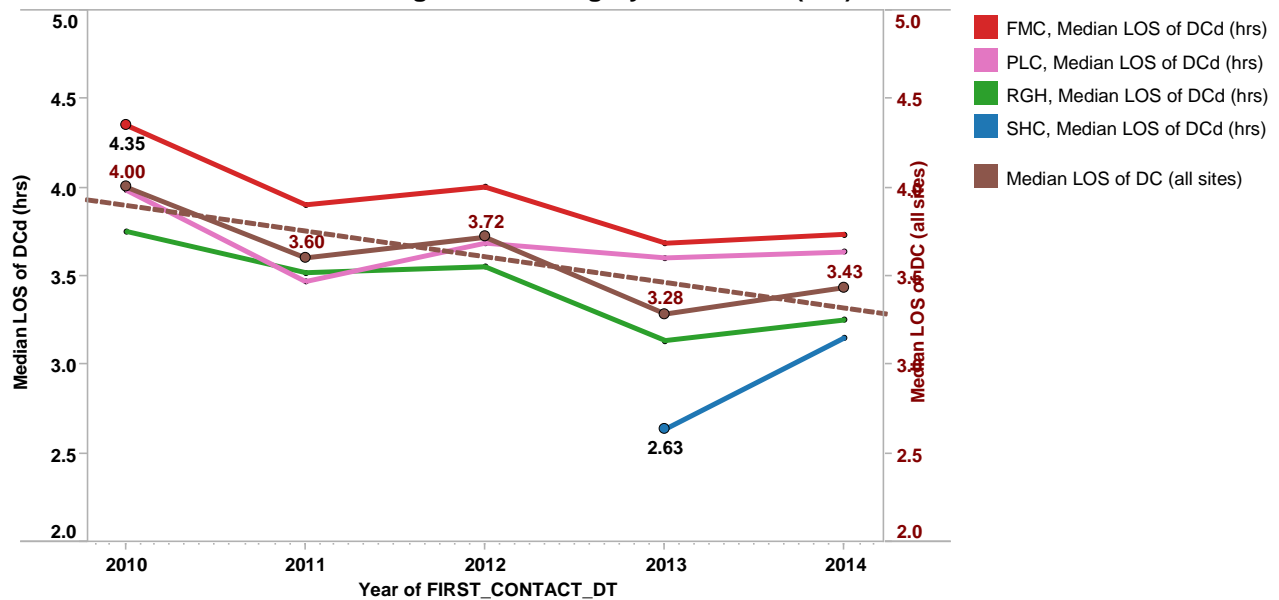
Data on Length of Stay (LOS)



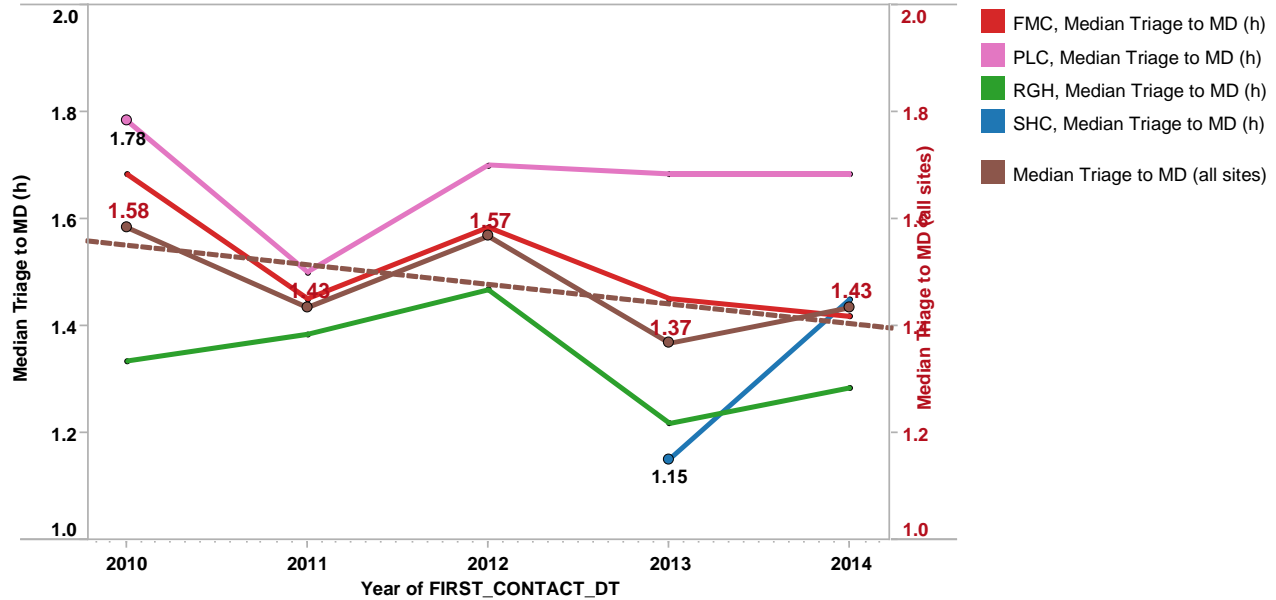
Median Decision to Admit Time Calgary Urban EDs (hrs)



Median LOS of Discharged Visits Calgary Urban EDs (hrs)

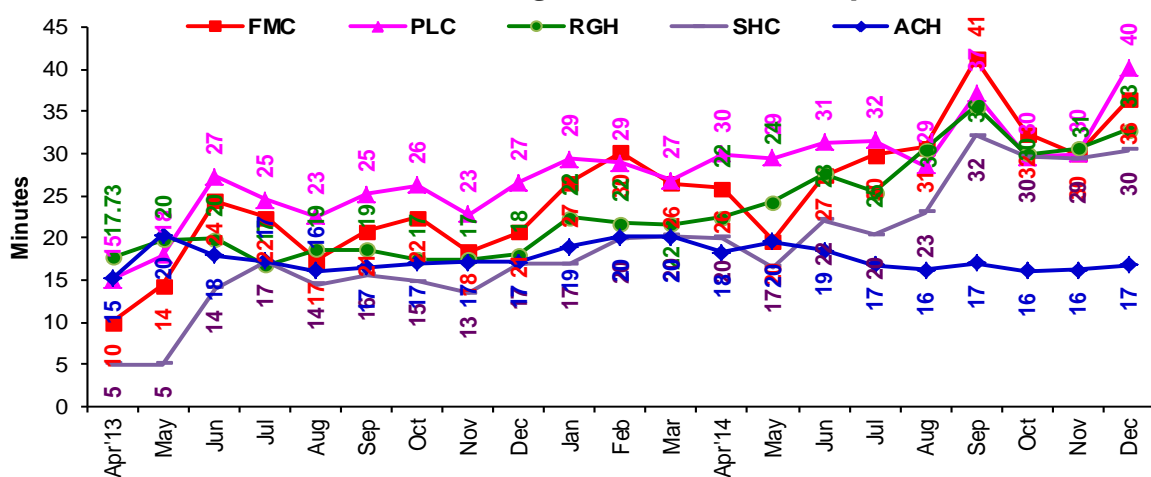


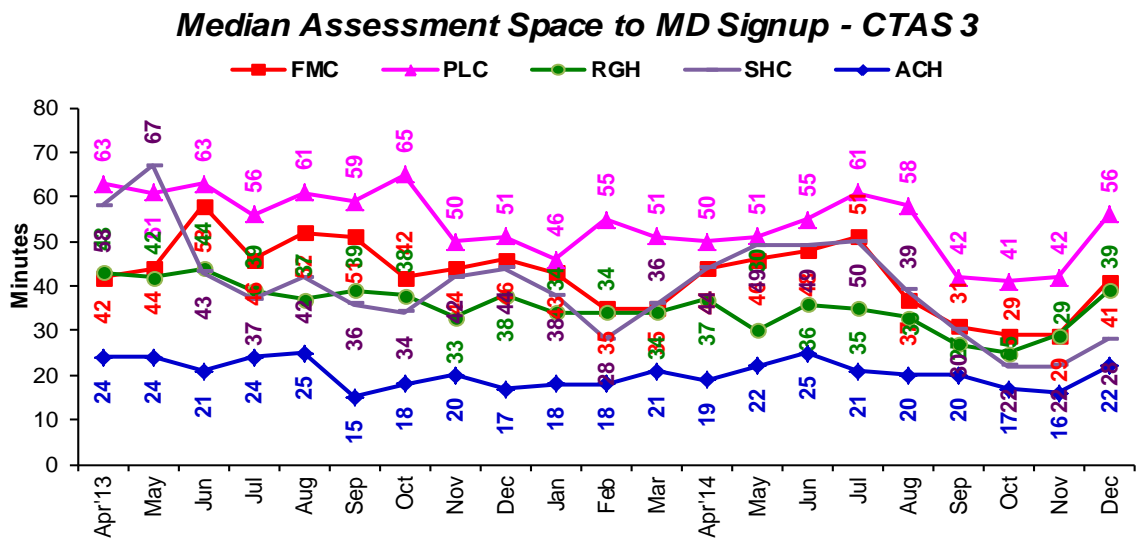
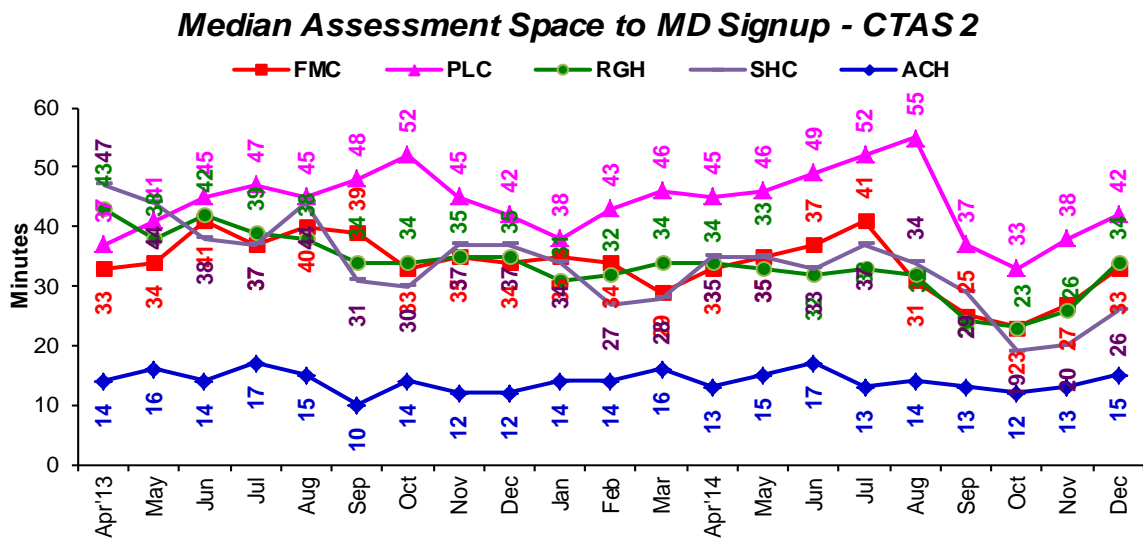
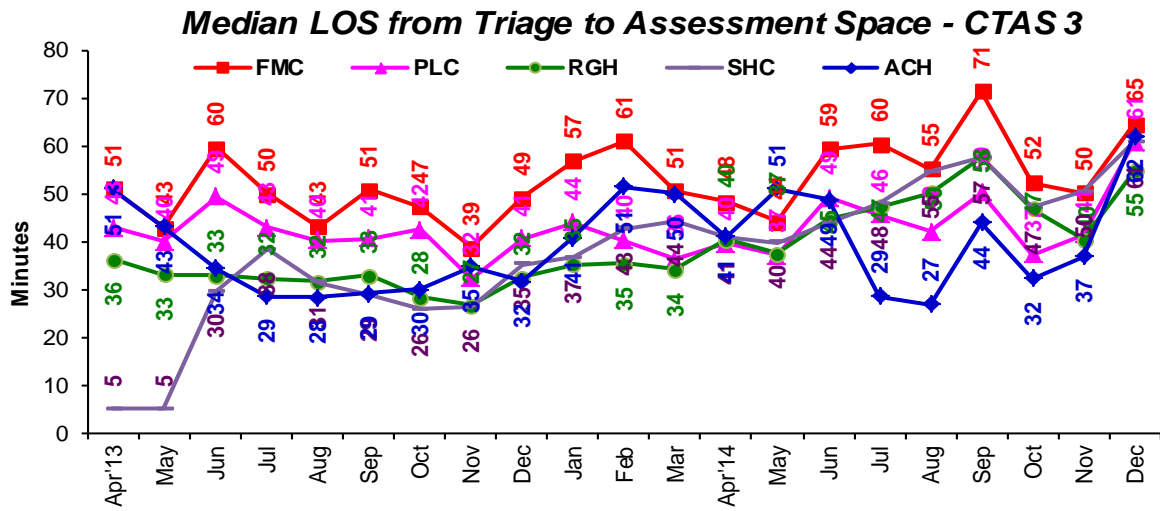
Median Triage to MD of CTAS2&3 ED Visits Calgary Urban EDs (hrs)



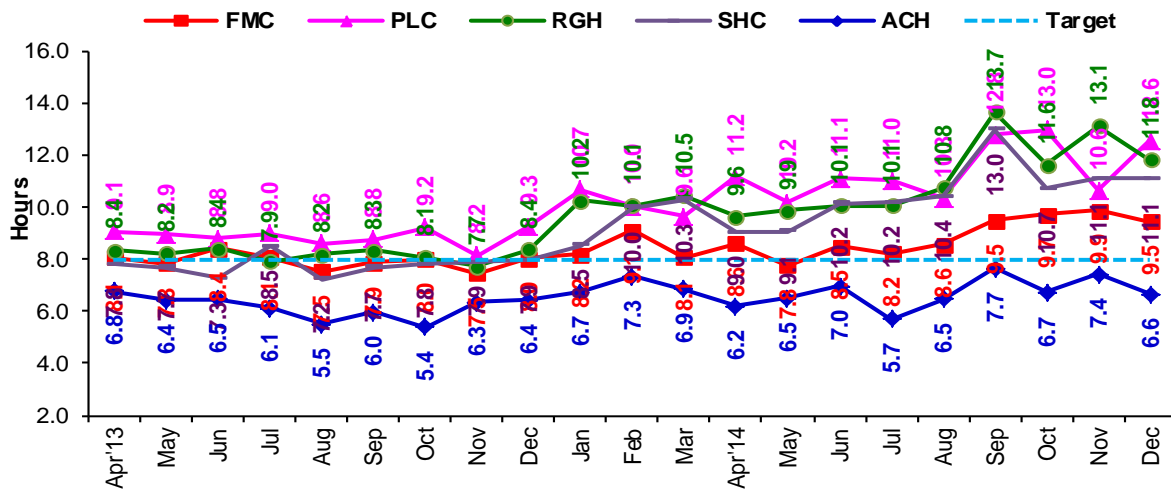
Selected 2014 Performance Indicators

Median LOS from Triage to Assessment Space - CTAS 2

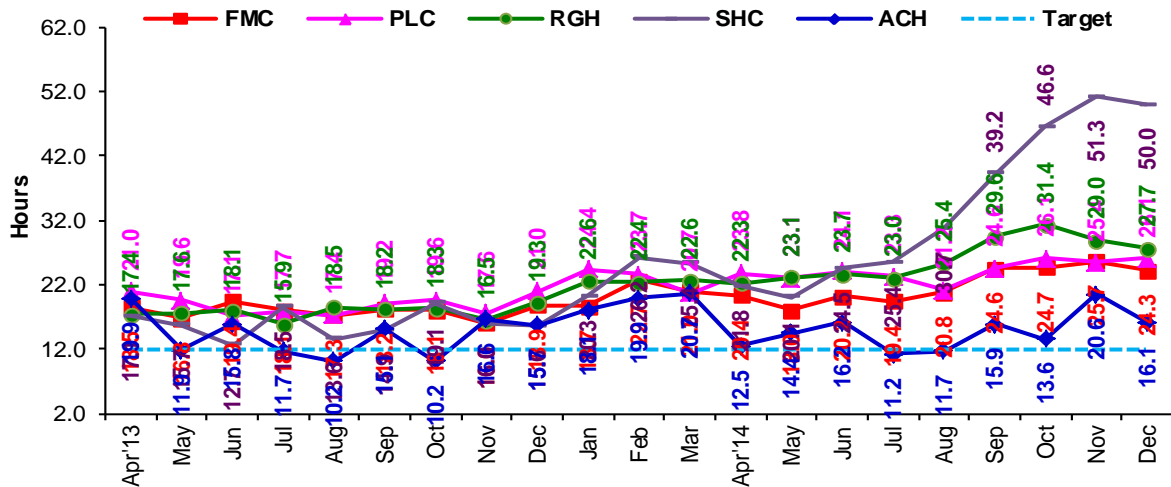




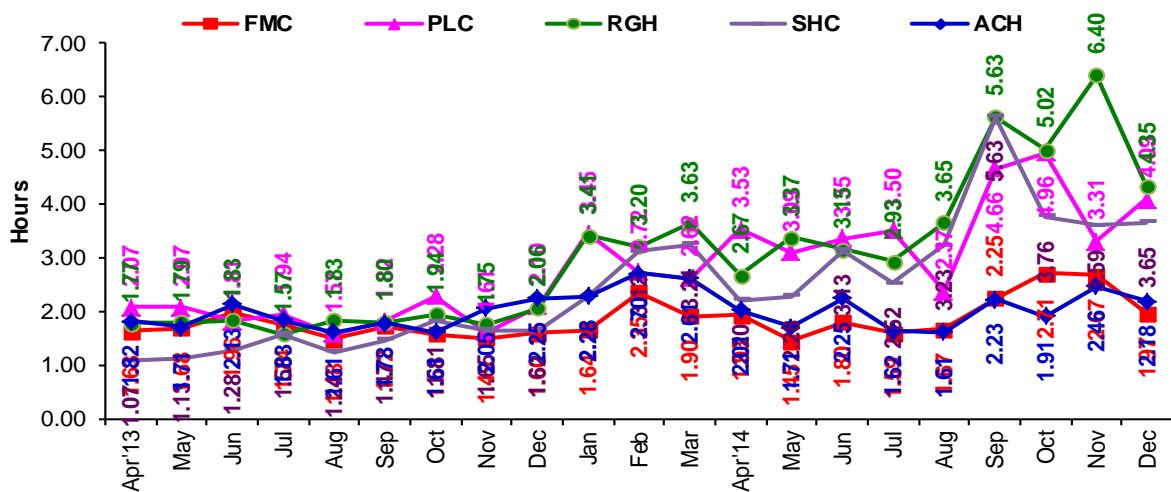
Median LOS from Triage to Left ED for Admitted Visits



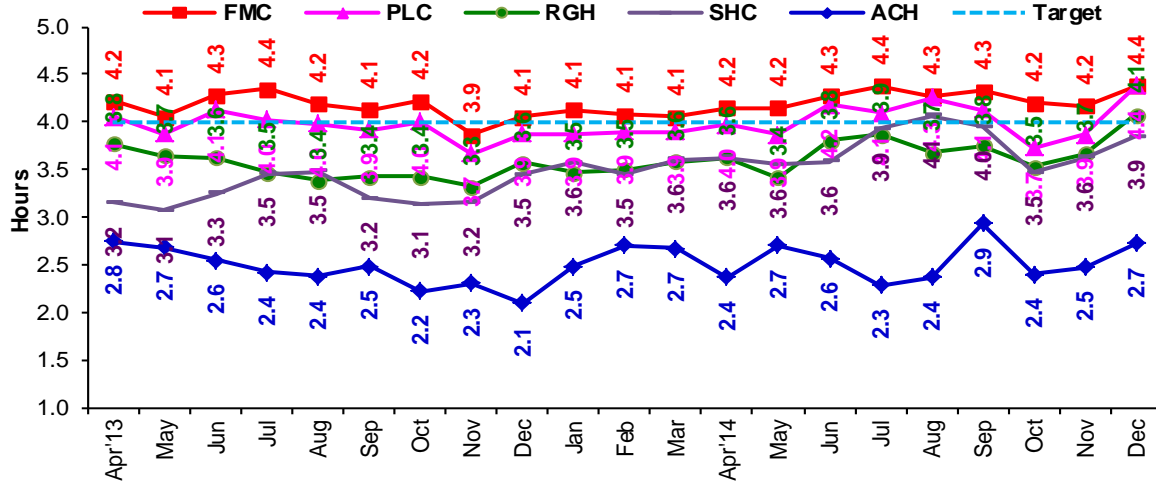
P90 LOS from Triage to Left ED for Admitted Visits



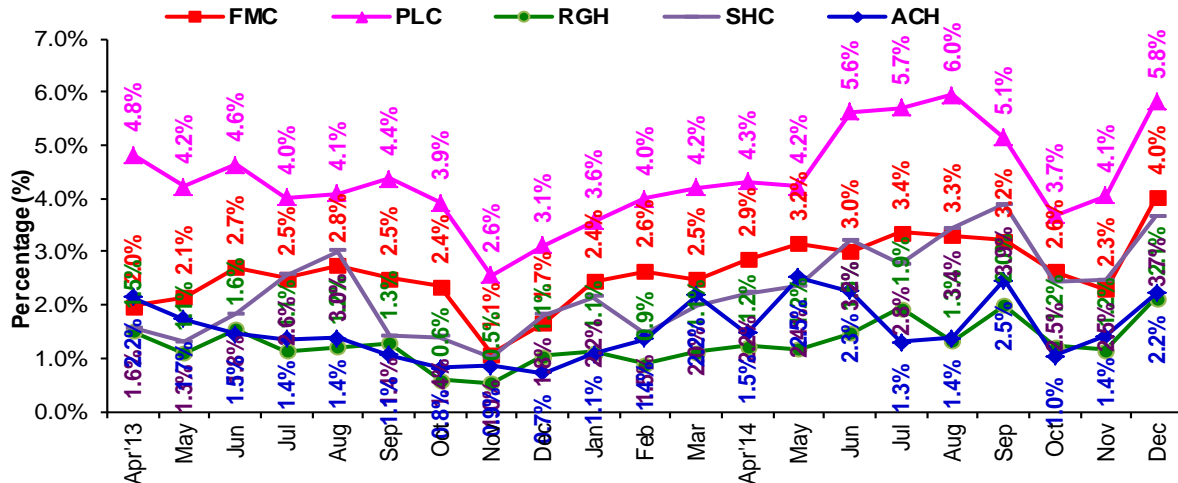
Median from Admit Request to Left ED for Admitted Visits



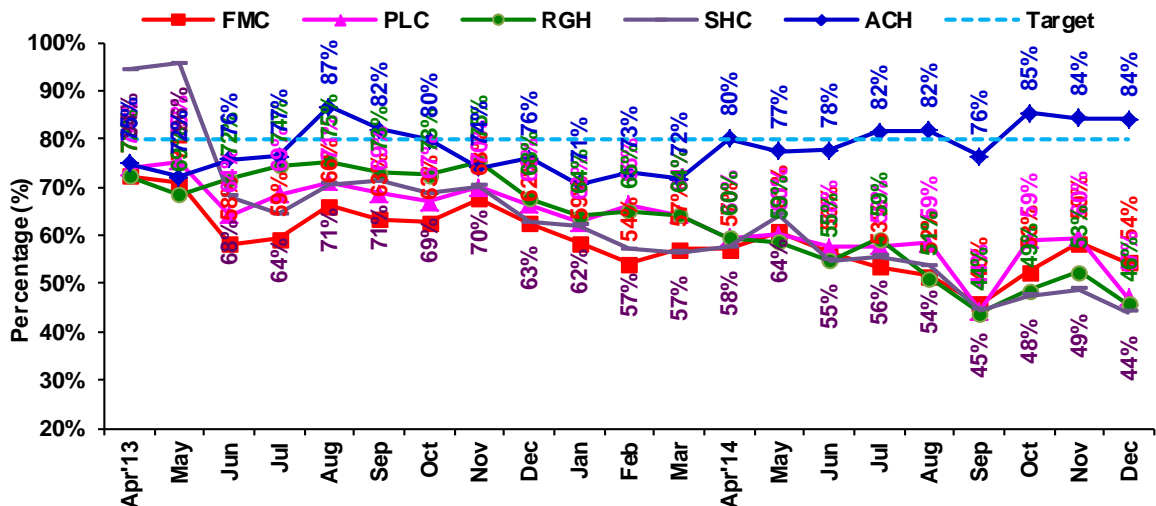
Median ED LOS for Discharged CTAS 1-3 Visits



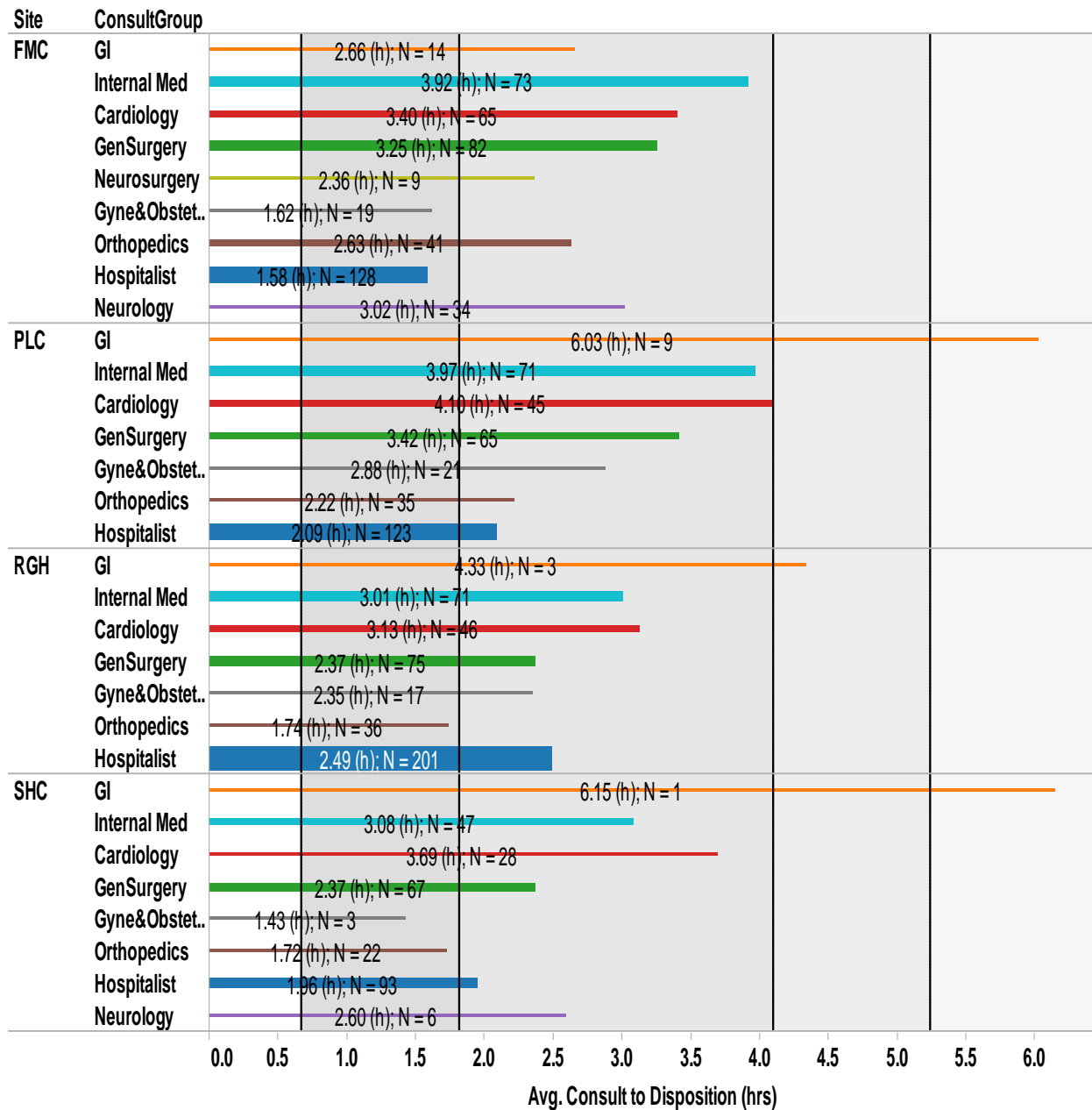
% of Left with Being Seen by ED MD - CTAS 1-3



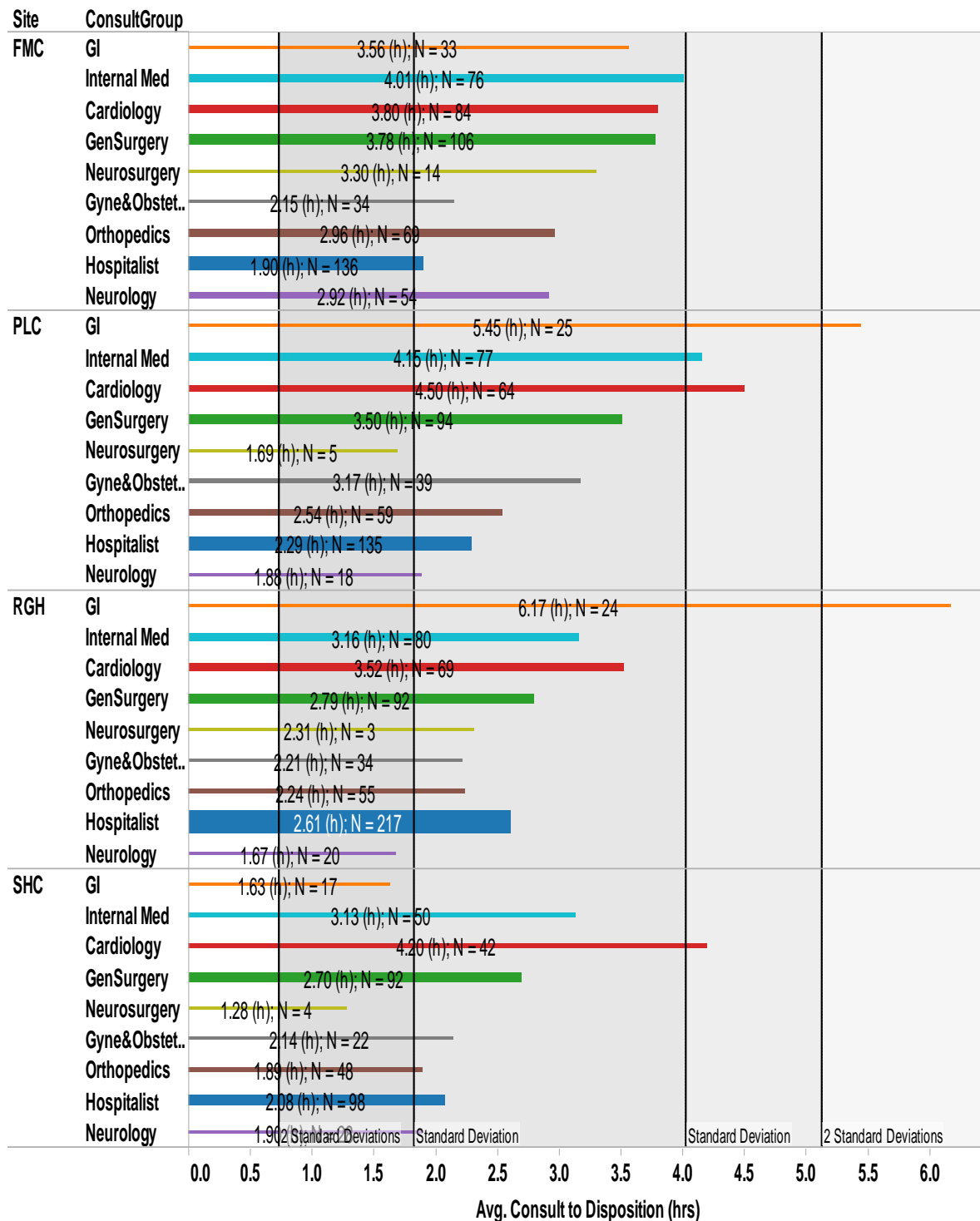
% of EMS Transfer of Care within 30 Minutes



Average Consult Request (Single) to Admit Request by Service Group for December-2014



Average Consult Request (Single) to Disposition for Admitted/Discharged December-2014



Perceived issues

Our data show that there has been a steady increase in ED length of stay for admitted patients in the last 12 months, affecting all sites. This can be seen comparing data from December 2013 with the results of

the same month in 2014, as well as comparing the last trimester of 2013 with the same period in 2014 (table 1a-1b).

Table 1a

ED Length of stay (LOS) from triage to hospital admission (hours)				
	FMC	PLC	RGH	SHC
Net increase (Dec/13 to Dec/14)	2.15	3.42	4.96	10.49
% increase (Dec/13 to Dec/14)	22.64%	30.96%	49.84%	121.22%
Net increase (4th trimester/13 to 4th trimester/14)	3.24	3.66	5.92	10.35
% increase (4th trimester/13 to 4th trimester/14)	35.64%	35.07%	62.26%	116.61%

Table 1b

Average LOS increase from triage to hospital admission (hours)	
Average net increase (Dec/13 to Dec/14)	5.25
Average % increase (Dec/13 to Dec/14)	56.17%
Average net increase (4th trimesters 2013 and 2014)	5.79
Average % increase (4th trimesters 2013 and 2014)	62.39%

There is increase length of stay (LOS) from triage to actual hospital admission. This happens in the context of not significant variability in the number of ED visits. Once patients meet an ED physician, LOS's for patients that are not hospitalized are fairly unaltered. With a slightly downward trend in the length of time between reaching assessment space and being assessed by an ER physician, the most likely cause of increasing LOS from triage to hospital admission is due to the increase in the number of admitted patients waiting longer hours in the ED for a hospital bed (hospital access block). This is better illustrated by the increasing amount of hours admitted patients wait in the ED from admission request to the time in which they actually leave the ED (Tables 2a-2b).

Table 2a

ED LOS from admission request to actual hospital admission (hours)				
	FMC	PLC	RGH	SHC
Net increase (Dec/13 to Dec/14)	2.04	2.77	4.23	11.18
% increase (Dec/13 to Dec/14)	58.85%	64.27%	102.56%	381.51%
Net increase (4th trimester/13 to 4th trimester/14)	3.02	3.35	5.75	11.07
% increase (4th trimester/13 to 4th trimester/14)	89.21%	88.31%	154.92%	342.89%

Table 2b

Average ED LOS from admission request to hospital admission (hours)	
Net increase (Dec/13 to Dec/14)	5.06
% increase (Dec/13 to Dec/14)	151.80%
Net increase (4th trimester/13 to 4th trimester/14)	5.80
% increase (4th trimester/13 to 4th trimester/14)	168.83%

Naturally, the increasing length of stay for admitted patients in the ED results in increasing number of admitted patients in the ED, as shown in tables 3a and 3b.

Table 3a

Number of admitted patients holding in the ED at 11 am				
	FMC	PLC	RGH	SHC
Net increase (Dec/13 to Dec/14)	7.00	5.00	10.00	14.00
% increase (Dec/13 to Dec/14)	75.37%	70.62%	103.87%	483.76%
Net increase (4th trimester/13 to 4th trimester/14)	9.22	5.10	12.29	13.75
% increase (4th trimester/13 to 4th trimester/14)	111.99%	83.48%	155.12%	441.53%

Table 3b

Average Number of admitted patients in the ED at 11 am	
Net increase (Dec/13 to Dec/14)	9.00
% increase (Dec/13 to Dec/14)	183.40%
Net increase (4th trimester/13 to 4th trimester/14)	10.09
% increase (4th trimester/13 to 4th trimester/14)	198.03%

Due to this access block, several other issues can be taking place. One of them appears to be the rising percentage of patients leaving EDs without being seen by physicians since Nov 2013, most notably in CTAS 1-3. Possibly for increasing waiting times, in turn due to the backlog caused by increased time to find beds for admitted patients.

Also to note, the decline of the percentage of EMS transfer of care done within 30 minutes, from approximately 70% in Apr 2013 to 44% in Dec 2014.

Site Updates



Dr. Nancy Zuzic, MD
RGH site chief

Rockyview General Hospital

Volumes at the RGH are stable year-to-year 79,239 (2014). We continue to see high acuity patients including a high volume of EMS patients. Along with the rest of the zone, we have been challenged this year by lack of inpatient beds. This has resulted in decreased patient care spaces in the ED due to extended stays by emergency inpatients (EIP's). We see approximately 40% of ED patients daily in the Intake area. Due to lack of stretcher space we are seeing higher acuity patients in Intake and at peak times up to 60% of the ED patients are triaged to the Intake area. Our ED is integrated into the site capacity plan and we look forward to working closer with site leadership to seek out new and existing opportunities to carve out untapped capacity.

The RGH Emergency department continues to identify numerous opportunities to improve the patient experience. Of note are several projects: 1) **Community Paramedic Program** which serves to bridge ED to community/homecare services therefore, avoiding a possible acute care admission: 2) **EMS**

hallway process, MD's continue to assess the sickest pts. In the department, in a non-traditional ED setting, supported by an RN who is able to implement hallway appropriate ED MD orders; 3) **Family Practice Sensitive condition Referral Process** to the Calgary West Central Primary Care (CWPCN) for patients with medical conditions appropriate for evaluation at a family medicine clinic.

The RGH ED enjoys a supportive team environment and has partnered with the site to open additional patient care stretchers in an unused space of the ED. The premise for the additional care spaces is related to the previously mentioned capacity challenges at the RGH site which have resulted in a 50 % increase in numbers of EIP's holding in the ED for the 2014 year. Site medicine managers identified additional staffing opportunities for the opening of D (Area), partnering with the ED to allow for the rapid opening of (D) area care spaces in under 2 weeks. The focus for D (Area) is for the care of admitted medical patients.

Physician manpower remains stable at the RGH ED. Due to patient volumes a 10 am to 4 pm shift was added from Monday to Friday. The Intake area continues to have a dedicated physician from 9 am to 11pm. For approximately half of the ED shifts physician's start in Intake for 2 hours. This helps flow as physicians tend to be most efficient at the beginning of their shift. The 7pm shift spends 4 hours in Intake. We continue to stagger time of handover. Handover is taken 2 to 3 hours after the start of a shift as opposed to the beginning of a shift to help with efficiency. There is a dedicated Fast-track physician from 10 am to midnight daily (two 7- hour shifts) for minor treatment patients. Shift times and need for additional shifts continue to be examined to adjust for patient volume and demand.

A new balanced RN rotation, based on demand capacity matching, was implemented October 2014 resulting in improved coverage for shifts, including weekends therefore, ensuring appropriate RN staffing. The high numbers of EIP's challenge the staffing model and regular augmentation of staff is required.

A collaborative partnership between the RGH ED and the RGH Cast clinic has resulted in the development of a balanced shared rotation fully staffing the Registered Orthopedic staffing requirements for both services.

Other highlights include the development of a departmental specific team-based **Ebola** response plan integrated with the RGH site plan. A working group has been established to plan for **Accreditation** May 2015; the 2 primary required operational practices (ROP's) being focused on are Medication Reconciliation and the development and implementation of a Patient Falls Strategy.

The RGH ED continues to work with the other ED sites at a zone level to provide the best patient care possible and to address the current capacity issues throughout the zone.

Foothills Medical Centre

Manpower

FMC ED overall patient volume in 2014 was similar to 2013, with a total of 79,760 patients registered. Acuity of this patient population remains high, with 34% CTAS 2 patients and an overall admission rate of 23%. Triage to MD time for CTAS 2 and 3 patients were similar to 2013, at 68 minutes and 103 minutes respectively. Median length of stay for both admitted and discharged patients showed modest increases, at 8.7 hours and 3.8 hours. Number of EIP's dramatically increased from September to December of 2014 with ED holding an average of 13.7 patients as compared to an average of 8.3 patients the previous year.

Department

As the FMC ED redevelopment project continues, the move into the new Intake and MET areas occurred on November 12, 2014. The next phase of development is underway and construction within the main department will begin in March. Less acute, but non-ambulatory patients (previously from the 70's) as well as our isolation patients will move into the old ED-2 (old ICU) area and the patients from within the 20's area will move to the 70's area. This move will consolidate some of the more acute patients within the main department and the less acute in the separate space.

The new triage area will open in March and the new EMS holding area will open in July 2015. The functional program for the final phase of redevelopment (TP4) was completely revised.

Manpower

Commitment to achieve best possible matching of physician coverage and patient arrivals continues, with further shift timing adjustments and additions in 2014. FMC now has 15 shifts totaling 108 hours of physician coverage per 24 hours. Dedicated Intake MD coverage occurs 1000 – 2200, with two dedicated Intake MDs from 1200 – 1600, including one shift that is completely Intake based. Dedicated MET MD coverage occurs 1000 – 2400. Future plans, once MD manpower permits, include addition of a second Intake dedicated shift, and overall increase in MD hours to match patient volumes.

In the current environment of high numbers of EIP's we continue to adapt to meet the challenge of seeing waiting patients despite the lack of available care spaces.

RN staffing continued to be a major emphasis in 2014. Thirty-three RN's were oriented to the department and 15 re-oriented back to the department from leaves. Over 200 RNS completed their annual compulsory education (ACE) and recertification within the department. Baseline staffing increased for Nursing Attendants and Unit Aides, which will improve ADL, care for admitted patients and stocking of supplies.

Work continues on the provincial staff transformation project, exploring rotation optimization and staff scheduling. New rotations for RN's will be posted in early 2015.

Committees and Initiatives

The FMC Operations Committee: meets once per month. Multidisciplinary representation includes MD's, RN's, Unit Clerks, RT's, IT and pharmacists. Day to day issues are discussed and solutions implemented.

The Change Team: Usually meets once per month; however, prior to the opening of our new Intake and MET area, this group met weekly. New work flow and roles and responsibilities were outlined for the Intake and procedure area, making best use of the resources available.

The ED/DI committee: Includes admin teams from ED and DI that meet bi monthly to improve mutual processes. Work continues on ultrasound process and outpatient fluoroscopy.

The ED/ICU working group: Composed of ED and ICU MD site chiefs as well as ED MD and ICU MD's, meets on an ad-hoc basis to discuss mutual patient issues and develop processes to

provide optimized care for our shared patients. Recent projects have included an algorithm for investigation, management and disposition of massive and sub-massive PE.

Quality Improvement within the Department

Major achievements occurred in 2014 related to quality improvement. The Green Bar process was finalized resulting in ED-IP transfer tool being used throughout the site. Verbal report is only provided with direct RN to RN transfer in critical care/monitored areas.

The City Case Management Group (CCMG), which is a multidisciplinary group working to assist with the homeless/vulnerable population who frequent the emergency departments met monthly. Patient Consent as been obtained for 15 clients and care plans are being developed. Work is progressing on the RTSIS (transfusion medicine requisition) to improve the compliance with the cross match process.

The development of roles/ responsibilities and processes for the new Intake and Procedure are was the major emphasis for QI over the past 3 months.

Continued collaboration with the FMC ED, Stroke Team and EMS has proved successful in reducing door to needle (DTN) times for acute stroke. HASTE II set a median DTN goal of 45min, which was achieved. As well a record DTN time was 11 minutes. 2015 brings HASTE III, with direct CT to EMS protocol and a DTN goal of 30 min.

Review of safety cases involving Trauma has resulted in implementation of changes to our trauma protocols.

Review and discussion of patient concerns helps to re-focus on patient and family centered care.

Operational Changes within the Department

Change, improvement and quality continued to be a major focus in 2014. Working closely with pharmacy, we have made headway in medication reconciliation for our admitted and complex patients.

We continue to work with specialty services such as stroke, trauma and interventional cardiology to improve emergency care of these high risk patients.

In March of 2014 the CFPCN / ED PCN pilot project became part of regular operations within ED. We continue to safely refer 2-5 patients per day to the PCN. Both ED and PCN were fortunate to receive grant funding for a .5 FTE liaison nurse who will contribute to the sustainability and evaluation of the referral program. Spread of the referral program is occurring at RGH and PLC. This project has been accepted for numerous poster and oral presentations throughout the country.

Employee Development

Once again, our staff continue to pursue educational opportunities. Several of our Nursing Attendants have gone forward to achieve their LPN and/ or RN licensing. We have a number of RN's pursuing both undergraduate and graduate degrees and one RN who completed her PHD this past year. Our Clinical Nurse Educators work diligently to keep our staff up to date.

Dr. Dorrington will complete her term as Site Chief and has made significant contributions to the operations of the department. She has been an outstanding leader and we will miss her involvement in operations.

Peter Lougheed Centre



Dr. Neil Collins, MD
PLC site chief

The Peter Lougheed Emergency Department is a 34 bed ED in the Northeast quadrant of the city. It is the only Calgary ED that is easily accessible by public transportation and is the ED of choice for the inner-city population. It is heavily used by the densely populated communities around it.

The ED sees a mix of adult and pediatric patients with a large number of recently arrived immigrants, inner city dwellers, and patients who do not speak English.

There are over 81000 pt visits per year, making it the busiest ED in the city. It is staffed on average by 14 MD's, 50 RN's, 3 Orthopedic Technologists, 6 Unit clerks, 7 Nursing Attendants, 2 Social Workers and 3 Transition Nurses per day. There is a pool of 64 ED MD's and 150 RN's from

which to draw from.

Our biggest challenge is providing care for 240 patients a day in a 34 bed Emergency Department that is often holding 20 or more admitted patients. The Peter Lougheed Hospital was a pioneer in the development of the "intake area". This is a small area outside of the ED (actually in a hallway in front of the triage desk) that contains 6 stretcher spaces that are used for rapid assessment of patients. Investigations are initiated here and the patients are moved to either the waiting room or a stretcher inside the department. We see 40% of our patients through this intake area.

Measures designed to help mitigate ED overcrowding include the following:

- 1) identifying the frequent users (>10 visits per year) and helping to provide a care plan that may reduce the need for ED visits
- 2) a "triage away" initiative that will identify patients that could be seen at the East Calgary Family Care Clinic by appointment on the same or next day
- 3) tracking consultant response times
- 4) tracking delays in moving admitted patients up to the ward
- 5) overcapacity protocols on inpatient units
- 6) Monitoring ED MD staffing levels to optimize flow
- 7) Enhanced intake area staffing to allow for more efficient use of intake area

We are proud of the care that we give to a culturally diverse group of patients under challenging conditions. We are carefully monitoring our progress towards Provincial wait time targets, and are striving to reduce the number of patients who "leave without being seen".

We look forward to the time when we can move into the existing shelled out space designated for the new ED when the hospital was renovated 8 years ago. The potential to create an "ED for the 21st Century" is exciting. We look forward to providing a service to our patients from an ED space that is designed and supported to a level that is commensurate with the importance of the care that it provides.

South Health Campus



Dr. Phil Ukrainetz, MD
SHC site chief

2014 marked the SHC ED's first year of full emergency operations and this year will form our first year of comparison data. We attended to 65,000 patients, of which approximately 25 percent were under the age of 18.

In keeping with our colleagues in the Calgary Zone Emergency Departments, we grappled with significant capacity challenges. Many days in late 2014, we were caring for in excess of 25 emergency inpatients (EIPs) in our department funded for 30 beds. These challenges have led to a number of creative capacity plans within the both the ED and the rest of the site. We are hoping to add a number of additional pilot projects to the mix in 2015 – projects that will contribute to temporary and flexible inpatient capacity at the site.

Ongoing and Collaborative Opportunities for process improvement and patient care have been numerous in 2014. They include:

1. *Expansion of the Early Gestational Assessment (EGA) Clinic at SHC*

This program allows the SHC ED to transfer women experiencing possible early pregnancy loss to the Women's Health Team for specialized diagnosis and treatment. Without this clinic, women would be required to wait in the ED for the speciality service to assess. Feedback from patients and families has been very positive. Approximately 30 women per month attend the EGA Clinic directly from ED

2. *Pediatric Emergency Care*

The Alberta Childrens' Hospital (ACH) Emergency Physician group continued to provide service to pediatric clients attending the SHC ED. This unique model in which Pediatric Emergency Physicians work in tandem with our Adult Emergency Physicians and our operations team has contributed to significant improvements in pediatric care within our Department.

With the support of the SHC Leadership and the ACH operations team, the SHC ED recruited two pediatric expert nurses to support the operations team hone its pediatric expertise.

3. *Home Safe Project*

In collaboration with the South Calgary Primary Care Network (SPCN), the SHC ED has referred a number of unattached patients to the PCN for purposes of Primary Care physician follow up.

4. *Shared Ortho Tech labour force*

Since opening in January 2013, the SHC ED and the Bone and Joint Clinic have shared our Ortho techs. Due to the proximity of the two departments, we have expanded the ability to support ED and the Clinic with surges in volumes and it has

provided our team with variety in their clinical practice

5. *Respiratory Therapy at Triage*

The Department based Respiratory Therapists work in close alignment with Triage RNs to support early intervention and support for patients with presenting respiratory ailments

6. *Psychiatric Emergency Services (PES)*

The SHC ED and PES work in a collaborative model that we continue to refine. The PES is staffed by Registered Nurses 24 x 7 who are able to commence certain mental health treatments and assessments prior to the involvement of the Emergency Team. This collaborative model is unique to the Calgary Zone Emergency Departments

New Projects started and expanded in 2014

1. *EVD Planning*

South Health Campus was designated as the Adult Ebola receiving site within the Calgary Zone. Though the planning encompassed an entire facility, the ED was tasked with developing a response plan for receiving patients with a provisional diagnosis of EVD. There were a series of simulated exercises designed to improve upon EMS arrivals, transfers to ICU, along with contingency plans to support EVD admissions destined for ICU in times of ICU capacity challenges.

Physician manpower was increased in October 2014. This change showed near immediate improvements in all measures for the SHC ED.

The SHC ED team continues to work on Accreditation plans with our peers in the Calgary Zone Emergency Community. Like our other Calgary Zone Emergency Departments, the SHC ED will be focussing on standards associated with Medication Reconciliation and Patient Falls Prevention Strategies.

Clinical Informatics



Dr. Tom Rich, MD
Physician Lead
Clinical Informatics

Significant Accomplishments 2014

1. Optimization of the SEC tracking board post implementation (revisions, solutioning of ongoing issues, implementation of enhancements)
2. Upgrade of SCM to version 6.1 with enhanced functionality and stability
3. Completion of the ED/Urgent Care visit summary report from SCM to NetCARE. It went live Jan 20th 2015. This is a huge step in the transfer of information from the ED to all community care providers (family physicians, clinics, etc)
4. Comprehensive review and revision of management of ED Hyperglycemia and ED Hyperkalemia
5. Continuation of order set optimization (best practice, clinical

- decision support, new treatment options such as novel anticoagulants)
6. Comprehensive review of Analgesics and Antiemetics (See Pain Management review)
 7. Establishment of a Knowledge Transfer lead to help manage order set content, provincial standardization, clinical decision support, and knowledge transfer to clinicians.
 8. Completion of first physician performance review around clinical standards (Time from Triage to antibiotic ordering for each physician, and comparison with group)
 9. Establishment of standardized patient discharge information handouts (Collaboration with Healthwise)
 10. Establishment of an ED Clinical Informatics Committee to determine future direction, needs, and priorities for ED informatics needs.

Priorities for 2015

1. Review and optimize ED/Urgent Care visit summary
2. Continue collaboration with University of Calgary on innovative clinical decision support tools linked with SCM
3. Continue process of provincial collaborative work on evidence based Clinical Practice Guidelines, and modify SCM order sets to reflect and optimize best practice and standardized care.
4. Enhanced physician performance reviews focusing on clinical performance
5. Ongoing work on enhanced discharge process, as well as abnormal lab and DI followup.
6. Improve physician training in SCM/SEC

Medical Education

CCFP-EM Program



Stacey Dickinson
Education Program
Coordinator

The University of Calgary CCFP-EM program continues to be a top program in the country. This year we interviewed 114 residents and successfully filled 8 spots. We strive to take applicants coming directly from residency as well as return from practice physicians. Our interview process this year was a huge undertaking and changed somewhat to incorporate a traditional format as well as a multiple mini interview (MMI) format. The goal of this was to try to look to new and improved ways to interview and better select applicants.

Our strong academic tradition continued with EKG and Tintanelli rounds embedded in the full day academic teaching. The monthly HPS (Human patient simulation) exposes our residents to disease processes they may not encounter during their training and fine tune crisis management resource skills. Finally, a few highlights of the year include the resident retreat and year-end barbeque. We are very fortunate to have a large group of very dedicated teachers and educators who go above and beyond to train our residents.

Royal College Emergency Medicine Residency Program

The Royal College Emergency Medicine training program enjoyed another successful year. Recruitment of potential candidates through the CaRMS program reached an all-time high of 127 applicants. The four matched residents have continued to bring diverse backgrounds. They come from University of Calgary, University of Alberta and McGill University. Additionally, a transfer resident with an international background has been accepted. The four senior residents completing the program were successful at the national exams and are now department members. Drs. Bryan Young and Sarah McPherson currently lead a group of 22 residents. Stacey Dickinson, Judy Mackay and Tris Malasani provide the much appreciated administrative support to the team.

Highlights of the academic year include the annual U of C/U of A Residents' retreat held in Kananaskis each January. The retreat features four discussion forums to generate ideas to move the program forward and a guest speaker to inspire residents in areas of career and life development. Ideas implemented from recent retreats include Academic Full Day, increased Simulation training, rotation on the stroke service, changes to Journal Club, and the addition of a core lecture series on Critical Appraisal skills. The CaRMS interview day in February gives the program a chance to inspire candidates to pick Calgary as the setting for their future training. The flexible fourth year of the program sees current residents pursuing special skills in ultrasound, public health, international health, medical education, and pediatric emergency medicine. Finally the academic year finishes with the annual BBQ where teaching awards are presented and the program graduates are honored.

Off-Service and elective medical Education (2013-2014)

Rotations in the Calgary Zone adult emergency departments continue to be highly sought after by University of Calgary residents and their home training programs. The Department of Emergency Medicine hosted 112 mandatory off-service learners during the 2013-2014 academic year, up from 97 the year before. This represents approximately 12,000 hours of direct 1:1 learner supervision by our teaching faculty. The majority of these resident physicians were from the family medicine residency training program (63 learners), while the remainder came from internal medicine (20 learners), orthopedic surgery (8 learners), general surgery (7 learners), neurology (3 learners), pediatric emergency medicine (4 learners), dermatology (3 learners), dental medicine (3 learners) and psychiatry (1 learner). Due to ongoing expansion of the family medicine residency program, as well as an increase in the number of internal medicine residents we accept, the number of off-service learners is expected to increase yet again in the 2014-2015 academic year. The addition of the South Health Campus has permitted our Department to handle this increasing demand while maintaining a 1:1 preceptor to learner ratio for most shifts.

As the popularity of emergency medicine continues to grow among Canadian medical students and family practice residents, the demand for medical student and resident electives in our Department also continues to rise. In the 2013-2014 academic year, the Department of Emergency Medicine received elective requests from 42 family medicine residents and 76% of these residents were offered electives. We hosted 24 family medicine elective residents (down from 35 in 2012-2013) from the University of Calgary (8 residents), UBC (8 residents), U of A (4 residents), U of S (2 residents), and Dalhousie (2 residents). On the medical students side, in the 2013-2014 academic year the Department of Emergency Medicine received elective requests from 161 medical students and 70% of these residents were offered electives. We hosted 70 elective students (up from 52 in 2012-2013) from the University of Calgary (16 clerks), U of A (13 clerks), UWO (9 clerks), U of O (7 clerks), UBC (5 clerks), U of S (4 clerks), McMaster (4 clerks), Queen's (3 clerks), as well as 2 clerks from each of U of M, NOSM, and Dalhousie, and 1 clerk from each of U of T, and McGill. The 94 elective learners we hosted in 2012-2013 represent over 6,000 hours of direct 1:1 learner supervision by our teaching faculty. This increase in demand for electives is

accelerating and at this point in the 2014-2015 academic year, the department has received 67 elective requests for family medicine residents and 227 elective requests from medical students.

Overall, both the mandatory and elective adult emergency medicine rotations are highly regarded by our learners, who appreciate the diversity of patients, high quality bedside teaching, and one-on-one direct staff supervision around the clock. In total, our teaching faculty provided well over 18,000 hours of direct 1:1 learner supervision in the 2013-2014 academic year, and this figure does not include the hundreds of hours our faculty spent on the supervision of 30 pre-clerkship level students through the University of Calgary summer pre-clerkship elective program as well as the many U of C medical students who request informal shadowing of an emergency physician throughout the year.

University of Calgary Emergency Medicine Clerkship

The Emergency Medicine Clerkship course was once again a rousing success. Students have shown overwhelming support for the program, and consistently rate the clerkship among the top of all clerkships offered in medical school.

Highlights include the breadth of patient care as well as the direct preceptor interaction of academic faculty with students. Students are involved in the investigation and treatment of acutely unwell, often critically ill patients. They also have the demonstration of procedural skills essential to competent physicians (i.e. suturing, casting, fracture reduction, EKG interpretation, etc.).

The number of students participating in the EM clerkship continues to grow. The graduating class of 2013 had 175 students, and the class of 2014 had 187 students. We are anticipating a class size of 185 students for the graduating class of 2015.

Emergency Ultrasound



Dr. Mark Bromley
ED Ultrasound coordinator

On the administration side, 1) Dr. Ryan Lenz (R5 Internal Medicine) is completing a focused year in point of care ultrasound. 2) Return of the Endocavitary Probes: the endocavitary probes are now available and located in the intake area at FMC. We are looking to expand access to the other sites.

In terms of medical education, 2014 was another year that witnessed a successful EDE I course completed. Dr. Kip Rodgers implemented a senior resident ultrasound curriculum. Our Focused Training Program in Point of Care Ultrasound received recognition by Dr. Maureen Topps, the Associate Dean of postgraduate Medical Education. As a result of this, candidates

completing the program will now receive official recognition and a certificate from Postgraduate Medical Education.

Regarding our research work, we have three ongoing projects on nursing intravenous lines with echo detection, the use of ultrasound in the reduction of distal radius fractures, and an expert consensus of ultrasound guidelines for paracentesis and thoracentesis. Our team also published book chapters on Critical Care Ultrasonography and on Gallbladder Ultrasound during the last year.



As our future directions, Qpath is nearly up and running; machine upgrades being one of the last steps. We are seeking to increase the number of machines; FMC has a new Sonosite Edge machine and RGH is looking at adding a third one. SHC is becoming a designated CEUS IP training center; and, Dr. Kasia Lenz will be the next resident to complete the Focused Training Program in Point of Care Ultrasound!

Dr. Danny Peterson, MD
ED Ultrasound Coordinator

Simulation

The Emergency Medicine Staff Interdisciplinary Simulation program continues to grow and is established as one of the most developed weekly continuing medical education programs in the country. The weekly sessions gather Emergency physicians, Emergency nurses and respiratory therapists to participate in sessions that focus on enhancing teamwork skills, procedural skills and knowledge base. Over 100 Emergency physicians and 400 nurses have participated in the last 4 years. The team is exposed to critical care scenarios and is encouraged to practice in real time the skills they will need to use in their daily practice of Emergency Medicine. The program is now expanding to collaborate with other specialties such as trauma services, obstetrics and gynecology and the acute stroke team to improve care and communication through the medical system. Our team of facilitators continues to expand and are now well recognized as valuable teachers for a variety of simulation courses. They have become speakers at international simulation events and are involved in multi-site resident research projects.

Clinical Pharmacology and Toxicology - PADIS



Dr. Mark Yarema, MD
PADIS Coordinator

2014 was another successful year for the Poison and Drug Information Service (PADIS) and for Clinical Pharmacology and Toxicology in Calgary. We welcomed 32 residents from Emergency Medicine, Internal Medicine, Pediatric Emergency Medicine and Critical Care Medicine for our popular Medical Toxicology rotation. This rotation involves a combination of bedside medical toxicology consultations in Calgary hospitals and small-group teaching sessions on management of common poisonings.

In its first year of existence, our Medical Toxicology Clinic had 32 referrals. This monthly clinic was developed to provide evaluation, diagnosis, and management of adult patients in Alberta with toxic exposures, adverse drug events, follow care after hospitalization for poisonings, and interpretation of toxicology tests performed in the community. This year the most common exposures included arsenic, carbon monoxide, and hydraulic fracturing by-products.

Our Clinical Pharmacology and Toxicology Interest Group met three times over the course of 2014 to begin discussions on a Royal College residency program in Clinical Pharmacology and Toxicology at the University of Calgary. The goal is have a residency herein the next five years. The interest group is comprised of members of the Departments of Emergency Medicine, Medicine, Pathology and Laboratory Medicine, Pediatrics, and Anesthesia, and Physiology and Pharmacology.

Finally, 2014 saw Drs Ryan Chuang, Fiona Garlich, Sophie Gosselin and Mark Yarema (PADIS toxicologists and emergency physicians) have five abstracts accepted for poster presentations at the annual North American Congress of Clinical Toxicology in New Orleans, LA. All abstracts were published in the August 2014 issue of Clinical Toxicology.

Calgary Zone Pain Management in Emergency Department Working Group



Bob Ford
Clinical Pharmacist

The Calgary Zone Pain Management in the Emergency Department (ED) Working Group was formed in response to a recommendation from a safety review. The ED Pain Management Working Group is a multidisciplinary group consisting of pharmacists (Ford, Yang), nurses (Mageau, Smith-O'Brien, Hardy, Ryan, Burkart, Rachynski, McNeil, and Evangelista), and physicians (Andruchow, Backlin, Courvoisier-Grzywacz, Lang, Wishart, Joanis, Rich and Vipond). The Working Group mandate is to review and prioritize issues regarding pain management in the ED, develop recommendations to improving patient's pain control while enhancing patient care and reducing risk, and, to implement strategies for pain management after discharge. The recommendations and strategies have been formulated on a foundation of peer clinical knowledge and experience, with support from extensive literature reviews, and are evidence-based with best practice approaches. The Working Group has met monthly since September 2013.

Specific accomplishments to date

- 1) Review of the addition of patient-controlled analgesia (PCA) to the emergency department. Rationale: while the limited literature and evidence suggests may be useful and effective, challenges that would currently preclude use in Calgary Region include designation of initiation and maintenance of PCA orders; staff (medical and nursing) continuing education; lack of availability of costly PCA pumps and storage space for pumps, supplies, and standardized opiate syringes; variable and unpredictable length of ED stay, and patient admittance to those medical units that currently do not support the use of PCA pumps.
- 2) Methadone maintenance procedure for ED patients either for analgesia or opiate addiction outlined and clarified for ED-MD's and nursing staff; pharmacy procedure for providing temporary licensure for MD prescribers acknowledged and provided; dosing and pharmacokinetic information provided to potential prescribers. Rationale: considerable hesitation and misinformation in continuing necessary therapy allowed for the lack or delay of therapy and subsequent reduction in patient comfort and well-being. With the provision of methadone education resources there is a heightened awareness of dosage hazards and drug-drug interactions with a goal of increased prescriber confidence and patient safety.

- 3) Meperidine (Demerol) injectable was removed as ward stock from regional ED's. Specific indications for meperidine use were added to the electronic order system (EOS). The product remains on formulary but is now patient specific from Pharmacy Services. Rationale: very low usage, superior analgesics available with better side effect profiles, and transition to oral dosage form not available as oral tablets are non-formulary and were removed as ward stock from all nursing units previously.
- 4) The Committee anticipated the Alberta Health Services (AHS) 2015 policies for bridging medications, including discontinuing oral opiate analgesic discharge packs of on nursing and surgical units, and limiting the maximum amount per patient that can be dispensed from the ED. The committee examined quantities of oral opiate discharge packs (acetaminophen 300 mg/caffeine 15 mg /codeine 30 mg (Tylenol #3, Atasol 30, ratio-Lenoltec No. 3 and others) and acetaminophen 325 mg/oxycodone 5 mg (Percocet, Ratio-Oxycocet, and others) dispensed from the Regional ED's, barriers to provision of adequate oral analgesics including perceived and known limitations to provision of same to the discharged patient by Pharmacy Services and/or Nursing. Policies and procedures from other major Canadian hospitals were explored. Consultation and clarification was begun with provincial stakeholders and provincial professional governing bodies. Rationale: adequate information for best possible outcome.
- 5) To ensure adequate discharge analgesia requirements were met, the use of triplicate prescriptions in the ED was examined. Extensive peer to peer discussion, dialogue with other provincial ED medical staff and representatives of pharmacy regulatory bodies from other provinces was endorsed. A completed survey among Calgary Region ED physicians to assess the need for triplicate prescriptions and barriers to use in the region was initiated and completed. The committee adopted a recommendation to encourage the use of triplicate prescriptions in the ED. Rationale: Oral opiate discharge packs will have limited usefulness as the current discharge packs may not be adequate for analgesia nor have sufficient quantity to sustain therapeutic effect. Patient safety may be compromised if discharge packaging and labeling is inadequate, and triplicate prescriptions record patient and address parameters as well as exact quantity and dispensing date for incorporation into the Alberta provincial Netcare to maximize medication history and minimize drug diversion.
- 6) Examination of utility and evidence for low dose ketamine continuous intravenous infusion (LDKCII) as an adjunct analgesic in the ED was undertaken and found to be acceptable. A protocol exists at FMC and RVH under the Acute Pain Service (APS) for treating acute-on-chronic pain to opiate tolerant individuals following spinal surgery as well as abdominal surgery patients and trauma patients. There remain some concerns as LDKCII is an APS specialized clinical competency and an RN-ER may not be allowed to administer. Further work is required.
- 7) The committee extensively examined and revised the ED Analgesic and Antiemetic order set.

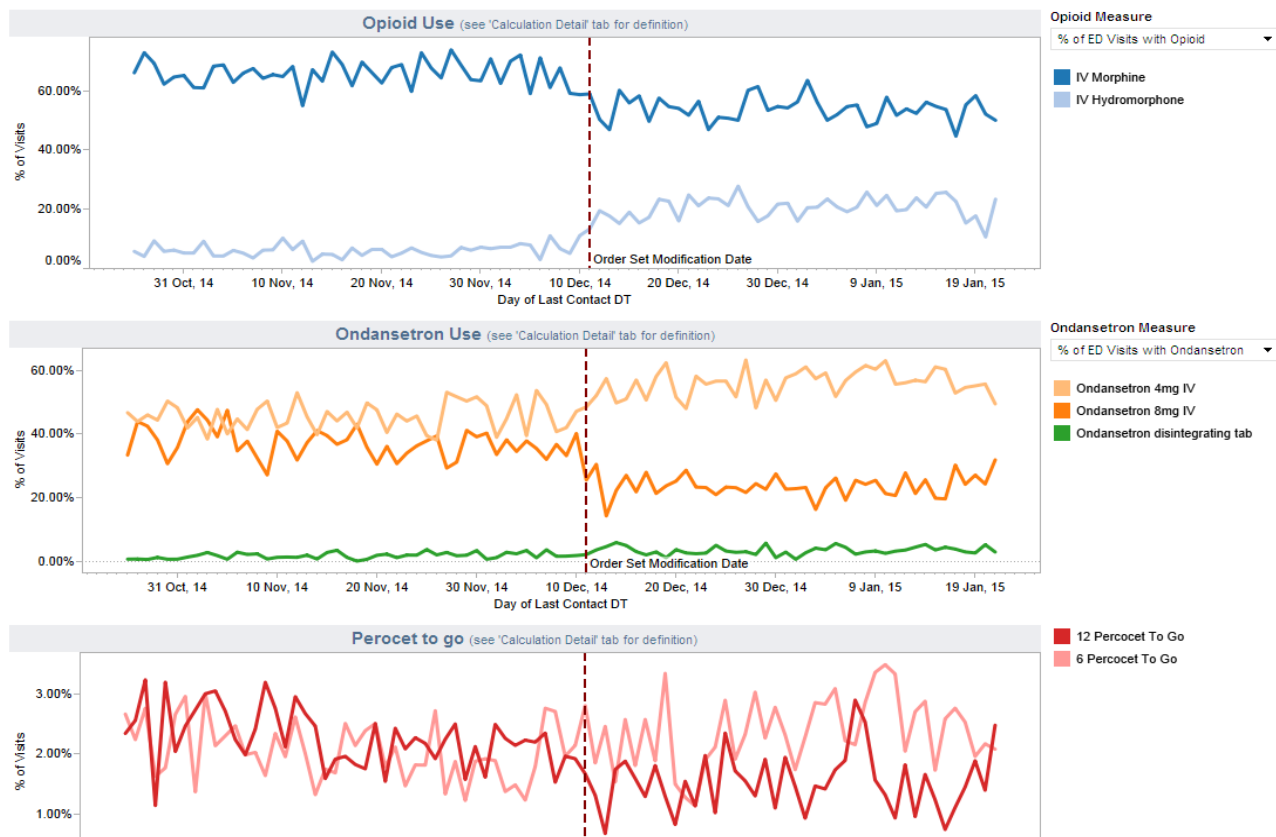
Key points of the new order set

- i) Emphasis on hydromorphone over morphine due to extended activity and better side effect profile Rational: a lower incidence of histamine release and less renal accumulation, with improved patient satisfaction.
- ii) Ondansetron injection as an anti-emetic dosing has now been changed to 4 mg (IV push in the ED).Rationale: There is limited evidence of increased efficacy of the 8 mg dose. There is also a regional policy that 8 mg can only be given by slow IV piggyback which adds a significant cost to delivery of the medication as nursing preparation and bag hang time is

increased; emphasis on oral tablets if possible, and regular release tablets vs. “quick dissolve” sublingual tablets to decrease cost.

- iii) There is a new section with pre-built lower dosing for “At Risk” patients defined as “Susceptible Patients”. These include the elderly, frail, those with a low body mass index, those who are systemically unwell, or who are on other medications that cause sedation or reduced blood pressure. Rationale: patient safety, minimize dosing errors for at risk patients.
- iv) Oral NSAID (ibuprofen) use recommended with suggested pre-composed oral dosing and scheduling, and currently may be underutilized and often under dosed. Rationale: ibuprofen acutely in a target population is safe, effective and inexpensive; sedation is minimal, and ibuprofen possesses analgesic, antipyretic, and anti-inflammatory properties.
- v) Oral opiate analgesic “to go packs” should be used for bridging purposes only (up to 12 hours until the patient can get to a pharmacy.) To reflect this change to go packs are limited to a 12 hour supply, a number deemed sufficient to allow the patient time to fill an appropriate prescription (including opioids through a triplicate pad if necessary) upon discharge from the ED. All ED physicians should carry a triplicate pad for when opioids are required and appropriate. Rationale: increased patient and family member safety, minimizing drug diversion, decreasing health care costs.

Preliminary results show the effectiveness of these changes with increased use of hydromorphone over morphine, increased use of ondansetron 4 mg over 8 mg, and decreased use of the quantity 12 of acetaminophen 325 mg/oxycodone 5 mg (Percocet equivalent). Analysis is ongoing. More detailed information can be found in the following table:



Emergency Medicine Research



Dr Andrew McRae, MD PhD
Research chief

2014 marked another year of growth and productivity for the Calgary Emergency Medicine Research team. Researchers in the DEM were awarded over \$1'000.000 in research funding for projects evaluating optimal biomarker use for patients with suspected acute coronary syndromes (Andruchow, McRae), to increase evidence-based utilization of CT scans for patients with suspected pulmonary embolism and minor head injury (Lang, Andruchow, McRae), and to identify optimal metrics for the evaluation of ED crowding (McRae). The team welcomed back Dr. Grant Innes, who has returned after a sabbatical year spent pursuing a MSc degree in health services research. He has immediately begun spearheading projects to improve quality of care for patients with renal colic and is actively contributing to the above-mentioned projects led by other team members.



Tiffany Junghans
Research Coordinator

The research assistant team, led by research coordinator Tiffany Junghans, successfully completed enrolment of ED patients in several multicenter observational studies that are seeking to identify predictors of poor outcomes for patients with COPD, congestive heart failure, atrial fibrillation, syncope and minor trauma. These data will ultimately be used to guide evidence-based disposition decisions for patients with these high-risk conditions.

The Department hosted a successful research day in April which featured research presentations from staff physicians and trainees, along with a keynote address by Dr. Renee Hsia from the University of California, San Francisco.

With the success in increasing our pool of peer-reviewed grant funding in 2014, the team is looking forward to a massively productive 2015, with expected recruitment of additional data analysts and graduate students, and publication of early results from multiple investigator-initiated studies.

2014 and ongoing Research work and Grants

1. Empirical Validation of Emergency Department Crowding Metrics. Canadian Institutes of Health Research Open Operating Grant. \$197,087. 2014-16.
2. Prediction of mortality and adverse cardiac outcomes with highly sensitive troponin T assays. Canadian Institutes of Health Research Open Operating Grants Competition. \$169,530. 2013-15.
3. Improving Diagnostic Imaging Stewardship in Alberta Emergency Departments. PI: Eddy Lang. Alberta Innovates-Health Solutions PRIHS competition. \$750,000. 2014-17.
4. Enhanced Multidisciplinary Care for Inner City Patients with High Acute Care Use. PI: Ginetta Salvalaggio. Alberta Innovates-Health Solutions PRIHS competition. \$750,000. 2015-18.
5. The impact of spaced instruction on Emergency Medical Services (EMS) provider long-term retention of pediatric resuscitation performance: a randomized controlled trial (RCT). Canadian Association of Emergency Physicians. CAEP 2015. \$3,635.00.

6. Reassessment of Clinical Practices for Patient Presenting to the Emergency Department with Upper Gastrointestinal Bleeding. AIHS-PRISH. \$699,000
7. The RASET TRIAL: A Phase III, Multi-centre, Randomized Trial to Compare Rivaroxaban with Placebo for the Treatment of Symptomatic Leg superficial Vein Thrombosis. CIHR, Ontario Clinical Oncology Group.
8. D-dimer Testing, Tailored to Clinical Pretest Probability, to Minimize Initial and Follow-up Ultrasound Testing in Suspected Deep Vein Thrombosis: A Management Study. The Designer D-dimer DVT Diagnosis (4D) Study. CIHR. \$ 424,757
9. High-sensitivity troponin T: Associations with mortality and optimal assay utilization in emergency department patients. CIHR. \$ 126,466 (2013-2015)
10. Development and planning of a theory-based implementation of a national wiki-based reminder system promoting best practices in trauma care. HSPR – CIHR. \$24,956.
11. Needle Fears in Children undergoing Medical Procedures: Knowledge Synthesis, Practice Guidelines, and Dissemination Strategies. CIHR. \$99,936.
12. D-dimer testing, tailored to clinical pretest probability, to reduce use of CT pulmonary angiography in suspected pulmonary embolism: A management study. (PE Graduated D-dimer [PEGED] Study). CIHR. \$ 329,928.
13. GRADE-Based Analgesia Management through Dedicated Emergency Department Order Sets. AIHS-KTH. 25.000 (2013-2014).
14. A Multicenter prospective Cohort Study of Adverse Events Among Patients Discharged with Sentinel Cardiovascular Emergency Department Diagnoses. CIHR. \$370,121 (2012-2015).
15. A comparison of Electronic Health Record Use in Alberta. Canada Health Infoway. \$25.000 (2012-2016).
16. System Transformation and Re-Engineering for Acute Medical Services. AHFMR. \$300.000 (2012-2015).
17. Helmet use and risk factors for injury among skiers and snowboarders. Alberta Children's Health Research Institute. \$49 972 (2012-2014).
18. Completion of the Derivation of a Clinical Decision Rule to Predict Mobility Decline among Independent Seniors with Minor Injuries in the Emergency Department (Phase 1B). CIHR. \$ 472 096 (2012-2014).
19. Translating Emergency Knowledge for Kids (TREKK). Networks of Centres of Excellence (NCE). \$1,595.000 (2011-2014).
20. A Study to Derive a Clinical Decision Rule to Predict Short Term Cardiac Outcomes in Adult Syncope Patients after ED Discharge. CIHR. \$500.000 (2011-2014).
21. Implementation and evaluation of Electronic Clinical Practice Guideline (eCPG) in Alberta. CIHR-PHSI. \$379 293 (2012-2015).
22. The Canadian Emergency departments team initiative (CETI) of mobility after an injury in seniors. CIHR. \$1,125,000 (2010 2016).
23. Nursing Administered Intravenous Lines with Echo Detection - Does this Intervention beat Tradition? The NAILED - IT Study.
24. Ultrasound-assisted Distal Radius Fracture Reduction Study.
25. Expert Consensus on Evaluation and Standards for U/S Guided Paracentesis and Thoracentesis

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2. Hohl CM1, Wickham ME, Sobolev B, Perry JJ, Sivilotti ML, Garrison S, Lang E, Brasher P, Doyle-Waters MM, Brar B, Rowe BH, Lexchin J, Holland R. The Effect of Early in-Hospital Medication Review on Health Outcomes: A Systematic Review. *Br J Clin Pharmacol*. 2015 Jan 7. doi: 10.1111/bcp.12585.
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New Appointment



Dr. Shawn Dowling, MD
EM Clinical Content Lead
Effectiveness Coordinator

Emergency Medicine Clinical Content/Effectiveness Coordinator

Dr. Shawn Dowling, MD, FRCPC has recently accepted the position of Emergency Medicine Clinical Content Lead/Effectiveness Coordinator. Having completed his residency in Calgary in the Royal College EM program during which Shawn completed a 1 year research Fellowship at the University of Ottawa, under the tutelage of Dr. I. Stiell. He is excited to step into this newly created position to combine his passion for clinical medicine and his interest in evidence-based medicine and in particular his interest in knowledge translation and standardizing care in the ED. The goal of this position is to provide clinicians with the most up-to-date ED order sets and clinical decision support tools to provide the safest, most effective and efficient care possible. Considerable work will be done to create linkages with other departments on ED protocols and provincially with the Emergency Strategy Care Network. Another key component of

this position will be ensuring that the clinicians are provided with resources and educational support to ensure that revisions and changes in practice are fully adopted. Ultimately, patient and process of care outcomes will be assessed to guide further interventions and strategies.