



Hôpitaux Shriners
pour enfants®
Shriners Hospitals
for Children®

Canada

2019 ANNUAL REPORT

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Introduction

2019 was an exceptional year of growth in all areas of the organization with a specific focus on person centeredness (patients, families & staff). In order to do so, we moved forward with the integration of *Planetree* concepts that saw participation from over 150 staff, volunteers, board members and patients and families.

Executive Summary

Clinical

In 2019, we reached the all-time high of 25,005 ambulatory care encounters. If we look back at transition planning, we see that we have reached this benchmark one year prior to our goal, which was set for end of 2020. This is an increase from 16,900 when we left the legacy site in 2015.

Just like the rest of the system, we are focusing energy on increasing our points of contact with families in their own community reaching 284 outreach encounters.

Overall, the total number of surgeries (1,244) has seen unprecedented growth. Day Surgeries account for 55% of total surgeries performed at Shriners Hospitals for Children – Canada.

11,492 rehabilitation sessions were completed in 2019; out of these, 8,628 sessions were in physiotherapy and 2,864 were in occupational therapy.

In 2019, activity in our motion analysis center doubled with 324 physician referrals.

Our In-Patient Unit received the Press Ganey Guardian of Excellence Award for the fourth year in a row. In addition, we received the Pinnacle Award.

Financial

We are extremely proud to share we were successful in completing 2019 with a balanced budget.

Human Resources

2019 was a very busy year for our Human Resources Department. As a result of our new reality, we are continuing to grow.

Education

Our partnership with McGill University is widely recognized with our impressive training program for medical residents and the increase in utilization of the Pediatric Simulation Center.

Research

Our research – fundamental, clinical and translational – continues to foray into new territory and discovery keeping Shriners Hospitals for Children – Canada at the forefront.

Financials

Hospital Financial Results

The Hospital operations expenses finished the year in a favorable variance to budget of \$319K on a \$29.3M budget or -1.1%.

The revenues coming from the Province of Quebec came in at \$27.7M compared to a budget of \$24M, a favorable variance of \$3.7M or 15.5%. This variance is due to the authorized reversal of a payable to the Government as part of the negotiation of the 2018-2023 financial agreement.

Research expenses are under budget by \$99K on a budget of \$2.6M. A carry over to 2020 was requested.

Donations

Shriners Hospitals for Children – Canada reached an impressive **\$7,902,348.55** in fundraising efforts. This includes a total donation amount of **\$1,701,083.92** from our 17 affiliated Shrine Temples.

Our Temples consist of:

- Al Azhar, Al Shamal, Bektash, Cairo, Gizeh, Karnak, Khartum, Luxor, Mazol, Media, Mocha, Mt. Sinai, Oriental, Philae, Rameses, Tunis and WA WA

Daughters of the Nile & Ladies' of the Oriental Shrine of North America

We are forever grateful to our Ladies' organizations, including Daughters of the Nile and Ladies' Oriental Shrine of North America for their munificent support of our philanthropy.

The total amount of gifts received from the Daughters of the Nile was **\$212,450.00**.

The total amount of gifts received from the LOSNA was **\$107,358.08**.

Human Resources and Personnel

Performance Indicators – 2019¹

Indicators	Results 2017	Results 2018	Results 2019	Tendency	Mtl Network
Absenteeism rate (global)	10.50	11.06	Data not available due to an upgrade of the SIRH	▲	18.65
Turn-over rate	7.34	9.28		▲	10.93
Turn-over rate – Nurses	7.34	6.90		▼	12.35
Overtime rate	0.61	0.96		▲	6.75
Retention	93.33	83.83		▼	86.06

Recruitment and Retention

Indicators	Results 2017	Results 2018	Results 2019	Tendency	Mtl Network
Number of employees as of Dec. 31	329	338	349	▲	NA
Permanent	248	253	262	▲	
Temporary	81	85	87	▲	
Number of external hires	59	64	72	▲	NA
Permanent	30	20	26	▲	
Temporary	29	44	46	▲	
Number of departures	50	54	65	▲	NA
Permanent	20	21	28	▲	
Temporary	30	33	37	▲	

Occupational Health and Safety

Indicators	Results 2017	Results 2018	Results 2019	Tendency	Mtl Network
CSST Rate	0.30	0.10	Data not available due to an upgrade of the SIRH	▼	1.29
Salary Insurance Rate	4.63	4.22		▼	7.04

¹ Data extracted from SIRH at P10 (Système d'information des ressources humaines) - Permanent positions only

Patient Safety Employee Recognition Program

- National Patient Safety week activities were put in place (November 2019).
- Information kiosks in collaboration with Occupational Health and Safety committee members to promote safety were in place over a three-day period.
- Staff Safety nomination campaign - 13th Awards Ceremony
 - 11 nominations received and five were retained.

Social Activities

The Social Activities Committee (SAC) is made up of seven employees who volunteer their time to organize and promote activities for the staff, allowing them to connect with one another in a fun and relaxing way. The overall objective of this committee is to increase staff morale. Some of the activities managed by the SAC include the Staff Christmas Dinner, staff Children's Christmas party, Halloween as well as the Staff BBQ. We also support staff initiatives throughout the year such as curling, staff golf tournament, bowling, and sugar shack. Fundraising for these activities includes the Jeans Days as well as the various seasonal baskets.

Volunteers

We are proud to share that we had 54 active volunteers, donating a total of 2675 hours of their time in 2019 with a wide scope of activities; including assisting in child life, cleaning toys in the clinic area and family room, greeting patients and families at reception, conducting administrative tasks such as envelope stuffing and visiting with patients on the unit. We also had five Shriners volunteers who focus on patient transport. We are extremely grateful to our volunteers for their time and dedication.

Education

- In February of 2019, the Rehabilitation Department created and hosted the inaugural Bi-Annual Rehabilitation Symposium for the local Montreal region. There were over 100 participants from partnering institutions who came to learn about pediatric orthopedic rehabilitation expertise.
- In November of 2019, Dr. Argerie Tsimicalis and Dr. Catherine Ferland co-hosted the PICH2Go (Pain in Child Health) conference which was a conference that included over 150 individuals including scientists, trainees, clinicians, families and children. This meeting served as a transformative example of uniting world-leaders in child pain research whereby evidence is translated into practice. The conference began with 'Coping Circus' which was a pain management seminar aimed at demonstrating various coping mechanisms to reduce pain. PICH indicated that this was the most successful Coping Circus ever!

- Staff are providing training and practical experiences to students for educational rotations in the areas of medicine (33), nursing (90), nutrition (1), physical (6), occupational (4), art (1) and recreational therapies (3), respiratory therapy (6), radiology (24), and social services (2).
- Dr. Argerie Tsimicalis, Dr. Noemi Dahan-Oleil, and Dr. Catherine Ferland all provide lectures or teach entire courses at McGill University. In addition, the Rehabilitation Therapy team provided a total of nine course days at McGill University, and one course day at Dawson College. Furthermore, Marie-Josée Beaulieu is now a guest lecturer for the Pediatric Nurse Practitioner program at McGill University.
- In 2017, it was mandated by the Ministry to deploy the “Formation concernant l’évaluation de la condition physique et mentale d’une personne symptomatique” (Physical and Mental Assessment in a Symptomatic Person training) for DEC (diploma) Nurses. The coach was trained by one of our Nurse Advisors and 7 nurses are in the final stages of their mandatory training. The project will continue until 2020. Monthly updates are required to the Ministry.
- The Hospital continues to encourage registered nurses to pursue a BSN education which aligns with the Home Office goal that all nurses acquire their BSN by 2020. 67% of our nursing staff have already attained their BSN. 15.7% are Master’s prepared and 14.3% are completing their BSN at the present time. In addition, we have one PhD prepared nurse scientist, two RNs completing their Nurse Practitioner studies, and one RN completing her Masters.
- 748 SHINE Modules were completed by employees.
- 11 educational capsules on Infection Control practices were delivered to Patient Care Attendants, Kitchen and Housekeeping personnel.
- 76 educational sessions / webinars / visio conferences were delivered in 2019.
- 23 In-Services and 3 staff led presentations occurred for our Peri-Operative Services team specifically related to improved services in the Peri-Operative care delivery.
- Two radiology technicians completed their mandatory 5 hours of training to retain their certification in ‘hip ultrasound.’
- One radiology technician is pursuing the management training "Le programme de relève des cadres" at Université du Québec.

Pediatric Simulation Centre

The Shriners Pediatric Simulation Centre had a total of 111 educational simulation based activities / workshops with a total of 2,088 healthcare professionals in attendance for 2019.

There is a growing demand for simulation based educational activities to be integrated into the curriculum for residency training, nursing training, maintenance of skills for current practitioners, team training and training on the use of new devices and surgical techniques. The Simulation Centre held courses for orthopaedic residents, practicing orthopaedic surgeons, nurses and allied healthcare professionals from the Shriners Hospital.

Communications, Marketing & Donor Development

2019: A Year of Transition

The Communications, Marketing & Donor Development Department is transforming itself through change management and an extended team. After conducting a status review, the department took time to define its vision so as to become a strategic player able to support the organization's overall objectives. The analysis of this status review was submitted to the Board of Governors and a second phase to define the activities necessary to achieve the established objectives will continue in 2020.

Eye-In Media (internal network of television screens)

The department devised an entire new strategic approach to maximize the potential of this powerful communication tool. This very dynamic strategy consists in showcasing activities, events and partnerships as well as medical teams, employees and Shriners by highlighting their daily contributions, their efforts and their successes through visually creative screens displaying messages that impact internal and external audiences.

Mainstream media coverage

- Creation of MUSCO: Montreal's four leading pediatric institutions are revolutionizing the treatment given to children living with musculoskeletal disorders thanks to an exceptional donation of \$10 million by The Mirella & Lino Saputo Foundation. MUSCO's mission is also to help families navigate the healthcare system. This collaboration among the pediatric institutions was announced at a press conference held on June 5, 2019. There was abundant media coverage at this event attended by over fifteen reporters from mainstream Quebec and Canadian media without counting ample social media and internet coverage.
- Visit by the legendary rock group FOREIGNER: during the band's North American tour in 2019 and on the occasion of the Shriners Hospitals for Children's "I Want to Know What Love Is" campaign, our department organized the different phases of the one-day hospital visit by certain band members and their meeting with patients. Quebec media also covered this visit with televised and written reports.

- Wonder Race: Quebec media covered this fundraising event with televised and radio reports.
- Shrine Bowl: Quebec media covered the launch of this event with televised and radio reports.

Production of the *Un, deux, trois, partez!* video (One, two, three ... Go!)

A real virtual tour of the rehabilitation department that explains the paramount importance of this team of healthcare professionals in our pediatric orthopaedic hospital. This video is intended for donors and Shriners temples. It can also be viewed on social media and may be used at future conferences.

Event planning and graphic support

- External partnerships: Communications & Marketing coordinate conferences that are held at our hospital. We provide a link between the external conference organisers, and the specific departments within the hospital. We also help facilitate the conference by coordinating the Kitchen, Maintenance, Audio Visual, Graphic Design and Translations. We provide assistance with registration websites, and promote the conferences on our social media platforms. In 2020 we have organized: The Rehabilitation Symposium, The Growth Modulation Course, The Canadian Connective Tissue Conference, and PICH2GO.
- Logistic support to other hospital departments: more than twenty events such as, the Rehabilitation Department Symposium, Social Services and Operating Room Open House, National Osteogenesis Imperfecta Awareness Week, Employee BBQ, etc.
- Communications department event planning such as, monthly visit by Air Canada pilots, Shrine Bowl, Blue Metropolis Festival, Saint Patrick's Day and Santa Clause parades, visits by the Montreal Canadiens and the Alouettes, etc.

Social Media

OI Awareness Week and Doctor's Day are among the major social media events of 2019. These events involved the creative participation of our patients and doctors alike. As the number of social media subscribers is always increasing and, in collaboration with Head Office, we have implemented the Hootsuite Platform to facilitate the management of various social media. A new social media strategy is being drawn up and will take effect in 2020.

Website

The Appointments – Ambulatory Care Services page was completely rethought and redesigned for several reasons, namely to:

- clarify and facilitate the appointment scheduling process depending on where the patient comes from (local, national, international)

- adapt the internet site page to the ambulatory clinic's new internal request management process
- harmonize the internet site with the implementation of the ambulatory clinic's new telephone system.

The clubfoot page was completely rethought and redesigned with Dr. Thierry Benaroch in order to answer much of the questions families are asking and to guide them through the different phases of treatment.

The new system to accelerate the correction of translations of the site's French pages was implemented in collaboration with Head Office.

In anticipation of Shriners Hospitals network-wide microsite renewal process, the current site's strengths and weaknesses as well as future needs for the Canada microsite were analyzed and will be shared with the project leaders at Head Office.

DRTV Commercial

In August 2019, we hosted the filming of the "Best Part of My Day" Commercial for the Donor Relations team. We had incredible participation from our families and children, staff and Shriners. We are very proud of the outcome and hope to be engaged again.

Our Newsletters

We have two newsletters: FlashInfo for the institution's employees and E-Orthopedik for an external audience, both were published in 2019. However, after analysis, the communications department questions the effectiveness of the E-Orthopedik newsletter in particular. Several reasons would suggest that a marked improvement of the formula would be necessary, especially upon analysis of the opening statistics and reading of the e-newsletter, the database state and the way the content is presented. The process to modify the tool is underway and will continue in 2020.

Spartan Race Canada

In 2019 Shriners Hospitals for Children – Canada was selected as the National Charity Partner for the Spartan Race once again. Our Hospital and the Spartan Race share a core value: empowering individuals to realize their full potential and to be the best that they can be.

Exceptional Ride for Exceptional Kids

On Sunday, September 15, 2019, Shriners Hospitals for Children – Canada hosted a unique event allowing young patients of the Canadian Hospital to enjoy an amazing opportunity to ride in a Ferrari.

Shrine Bowl Canada

The Canada Shriners Hospital held the 32nd edition of the Canada Shrine Bowl on Saturday, September 7 at Concordia Stadium. The public is always invited to attend this annual football event.

The Wonder Race

On June 14, 2019, it was an event like no other! The objective of the Wonder Race is to bring together teams of young professionals to compete against one another in a unique race that will test and challenge their physical abilities, intellectual capacities and general common knowledge. **2019 brought in \$73,012.**

Canada Shriners Hospital Invitational

The Canada Shriners Hospital Invitational was launched in 2011 supporting the Exceptional Care for Exceptional Kids Campaign. The 9th Annual Canada Shriners Hospital Invitational was held at the prestigious Elm Ridge Golf & Country Club on August 5th, 2019. There were 56 foursomes raising over **\$639,106**. Since 2011, our exceptional golf tournament has raised almost \$4 million dollars. It has grown into one of the most sought-after events of the year.

Community Events

Our generous community events raised a total of **\$451,183** through 91 events organized in 2019.

Special Recognition

- Dahan-Oliel N, recipient of a FRQS clinical research scholar bursary Junior 1, 2019-2023
- Tsimicalis A, recipient of a FRQS research scholar bursary Junior 1, 2019-2023
- Montpetit K, recipient of the Health Care Professional -Quality of Life 4OI Award for improving quality of life for persons with OI. It was given at the first International Conference on Quality of Life 4 OI, Amsterdam, Netherlands November 2019.
- Dr. Tsimicalis was the recipient of the Chercheur-Boursier Junior 1, Fonds de recherche Québec-Santé (FRQS; Quebec Medical Research Council). Dr. Tsimicalis ranked 3/30 and received a score of 93.91/100.
- Former research assistant and patient of the Shriners Hospitals for Children®-Canada, Ms. Khadidja Chougui, BA, was awarded a Canadian Institutes for Health Research (CIHR) master's fellowship to begin her doctoral psychology program at the University of Montreal. She ranked 10/84 for PhD applicants and 38/180 for doctoral psychology applicants.

- The Hospital was awarded its fourth Guardian of Excellence Award from Press Ganey. They were in competition with over 550 other nursing units. As well, for the first time they were awarded the Pinnacle of Excellence Award which recognizes the top performers in each category based on the performance on designated award survey measures for the three-year award period. Only one winner selected for pediatric units.
- Dr. Fassier was recognized by Governor General of Canada, on February 14, 2019, Honorary Recipient of the Meritorious Service Cross (Civil Division) for the development of the new Implant treating Osteogenesis Imperfecta the Fassier-Duval Telescoping IM.
- Dr. Glorieux received 3 honorary awards:
 - Élu Fellow, Royal Society of Medicine, UK
 - RL Cruess Academic Excellence Award, McGill Division of Orthopaedic Surgery
 - Inaugural ASBMR Pediatric Working Group Award for Contributions to Children's Bone Health
- Academic promotion: In 2019, Dr. Rauch submitted the tenure dossier for promotion to the academic status of 'Full Professor of Pediatrics with Tenure'. The Departmental Tenure Committee approved the promotion dossier. The final approval from the University Tenure Committee will occur in 2020.
- Dr. Ouellet, was the first Professor of Pediatric Orthopedic Surgery to make the Honor list at McGill for Educational Excellence 2019-2020.
- Dr. Ouellet put together and co-chaired the First Canadian Spinal Growth Course at the Shriners Hospital in September highlighting our in-house and Canadian expertise in growth-sparing knowledge for early-onset scoliosis. Dr. Ouellet and Dr. Parent from Ste-Justine, with our collaborators from IWK Hospital Dr. Elhawary and Dr. Mianji from UBC Children Hospital hosted 30 surgeons from across the world teaching our innovative treatment using our live transmission facilities with two simulative operative cases being done in the OR and transmitted in our conference room.

Research

Annex 1 provides a full listing of all papers and presentations by our Basic and Clinic Research teams as well as our Medical team for 2019.

The Research Centre of Shriners Hospitals for Children - Canada has maintained a high level of research activities aligned with the hospital's patient population and focusing on fundamental, translational, and clinical aspects of pediatric bone diseases, with 43 peer-reviewed articles published in the year of reference, including several articles in high impact journals such as the *Journal of Biological Chemistry*, *Molecular and Cellular Biology*, *Scientific Reports*, *Journal of Bone and Mineral Research*, and *Bone*. The publications demonstrate the intra- and inter-collaborative projects between the three research themes: 'Genetics of metabolic bone disease', 'Target identification for bone regenerative medicine', and 'Clinical & applied pediatric orthopaedic research'.

Members of the scientific staff have experienced continued success in extramural peer-reviewed funding competitions. Dr. Willie has received a 5-year, \$200,000 (total) grant from the Natural Sciences and Engineering Research Council of Canada (NSERC). In collaboration with a colleague at McGill University, Drs Murshed, Hamdy and Willie are co-Principal Investigators on a 3-year, \$767,187, NSERC partnered Collaborative Health Research Project grant. Drs. Svetlana Komarova and Bettina Willie were awarded a 5-year, \$573,750 grant from the Canadian Institutes for Health Research (CIHR), while Dr. Monzur Murshed received \$615,060 from the same funding agency. Dr. Murshed was also awarded a three-year research grant from the European Joint Program on Rare Diseases, in collaboration with three European laboratories. The Murshed laboratory will be the coordinating laboratory for this project. This is a significant accomplishment for a Canadian laboratory within the European Joint Program funding system.

From the pharmaceutical industry, Dr. Francis Glorieux, Emeritus Director of Research has secured a 4-year extension of a grant from Amgen for a total of \$123,000: Long-term assessment of treatment with Denosumab in children with OI. Dr. Glorieux is also the global Principal Investigator for a one-year longitudinal natural history study sponsored by Mereo Biopharma on pediatric OI patients and healthy controls to establish normative data for the HR-pQCT scanner. Co-Investigators are Bettina Willie and Frank Rauch.

Of particular note, two members of the scientific staff of the Research Centre have obtained competitive salary support awards from the *Fonds de recherche Québec – Santé* (FRQS): Dr. Noémi Dahan-Oliel and Dr. Argerie Tsimicalis were each awarded a Research Scholar Junior 1 Career Salary Award.

Concerning intramural support from Shriners Hospitals for Children, Dr. Jean-Pierre Farmer with colleague Dr. Bettina Willie were awarded a two-year developmental grant to study the impact of selective dorsal rhizotomy on the musculoskeletal health of cerebral palsy patients.

One student successfully defended his Ph.D. thesis and thus completed his training. One student graduated with a Master's degree. Four new students joined the Research Centre to begin their graduate degree under the supervision of members of the scientific staff. Within the cohort of current trainees, nine received an independent salary award to pursue their graduate studies.

And as a source of considerable pride, Dr. William Addison, research assistant in the laboratory of Dr. St-Arnaud from 2016-2019, has accepted an independent faculty position as assistant Professor at Kyushu Dental University (Division of Molecular Signaling and Biochemistry), in Japan.

Of note in fundamental research:

- The protein phosphatase PP1A was shown to dephosphorylate the α NAC transcriptional coregulator to regulate osteoblast differentiation;
- The endoplasmic reticulum protein TLC domain 3B2 (TLCD3B2) and its enzymatic product lactosylceramide were shown to enhance chondrocyte maturation.

Of note in clinical/translational research activities:

- Researchers from Shriners Hospitals for Children – Canada and McGill University have demonstrated increased expression of interleukin-8 in the cerebrospinal fluid of patients with chronic low back pain and validated it as a potential therapeutic target in a pre-clinical mouse model;
- A novel pharmacological approach for the treatment of severe osteogenesis imperfecta, the ligand trap for Activin Receptor IIB, has been tested in a pre-clinical mouse model by researchers at Shriners Hospitals for Children – Canada.

Of note in clinical/outcomes research activities:

- A collaborative team including researchers from Shriners Hospitals for Children – Canada, Philadelphia, Portland and Northern California reported their pilot registry findings on the research platform for children with arthrogryposis multiplex congenita;
- The dental and craniofacial characteristics of atypical Osteogenesis Imperfecta type VI were reported by a team from McGill University and Shriners Hospitals for Children – Canada.

Saputo Initiative

The Saputo Foundation has donated funds to pediatric hospitals in the Montreal area towards major, innovative projects that lead to improved patient diagnosis and treatment. The projects are clinical or translational in nature.

With these parameters in mind, the medical and research leadership of Shriners Hospitals for Children – Canada is continuing to pursuing the **Saputo Pediatric Bone Disease Genome Project**, a state-of-the-art clinical genomics program to better diagnose and treat children with metabolic bone disease.

In addition to the research arm, the clinical team is working with a Patient Navigator to help facilitate seamless care for patients and families who require care from the Shriners Hospitals for Children – Canada as well as other partnering institutions.

Clinical research initiatives and success

During 2019, the medical team led a large variety of clinical research initiatives with many contributions in the following domains: arthrogryposis, scoliosis, cerebral palsy, sports medicine, osteogenesis imperfecta and metabolic and genetics. We were successful in obtaining important funding grants from competitive research institutes and also through the Shriners institution.

Conferences Held at Shriners Hospitals for Children – Canada:

- February 22 (pm) and February 23 (am), 2019: Post SPORC course held: Pediatric Pelvic & Femoral Osteotomies

- February 25-27, 2019: OI tutorship conference (3 guests): Dr. Jill Flanagan, Atlanta, Georgia; Dr. Claire Shannon, Baltimore, Maryland; Dr. Monica Payares, Miami, FL
- June 6, 2019: Hosted Bruce Williams Day, Dr. David Spiegel as our invited guest
- June 18, 2019: Held the 1st McGill Orthopedic Surgery Alumni Academic Half-Day Teaching
- September 12, 2019: Hosted 34th Eugene Rogala Visiting Professor Day, Dr. Benjamin Stephens Richards, Dallas, Tx

Clinical Excellence

Patient Volumes

In 2019, we achieved a record number of surgeries; 1,244 as compared to 1,181 in 2018 (5.3% increase), with an OR utilization rate of 80%.

Overall, our patient volume numbers in clinic hit a record 25,005 Outpatient visits (11.7% increase) with the number of new referrals remaining stable.

- 5,575 new patients were seen in the ACS in 2019.
- The number of Canadian patient visits increased by 20.8%, the number of outreach visits has increased by 65.1%, Pre-Operative Clinic Visits increased by 2.2%, and total radiological technical units increased by 8.6%.
- The number of In-Patient Unit days was 3,157 as compared to 3,228 in 2018 and average daily census was 8.7 in 2019 compared to 8.5 in 2018.
- Within Rehabilitation Services, there was a 17% (PT) increase and 5% (OT) decrease in overall patient days and a 21% (PT) increase and 10% (OT) decrease in patient care hours. The abnormal decrease in OT numbers was related to an absence from one of our key orthopedic surgeons in 2019.
- The number of nutrition referrals increased to 207 as compared to 187 in 2018.
- There were 2,532 interventions provided by Social Services, and 131 referrals to Psychology.
- The Acute Pain Service provided consultative care to 235 patients, with an average of 2.8 visits per patient and an average of 53 min devoted to each patient.
- The Chez Fezzy Food Bank was created by the Social Services Team to support food security for patients and families who may be struggling to provide basic essentials. This initiative has been acknowledged by families as a much appreciated addition to the Shriners Magic already provided at SHC-Canada.

Optimization

Our Director of Patient Care Services / Nurse Executive is the Co-Lead for the Lippincott Procedures Project. In 2019, the project review of 1200 procedures for system wide was completed.

The Automated Appointment Confirmation System was activated in October 2019. Each patient with an outpatient appointment receives an automated phone reminder 72 hours prior to the appointment date. The implementation of this system has decreased the amount of patient phone calls for simple appointment confirmation, has decreased the no-show rate in ACS by 50%, and has facilitated families rebooking appointments when necessary.

In 2019, the Nursing Optimization project was actualized. Countless hours were spent by the Clinical Transformation Specialist and a team of clinical staff who met routinely to provide input on development of the system nursing documentation fields, and then to support staff education and implementation. The ultimate goal of the project was to improve our Electronic Health Record in a way that allowed staff to spend less time documenting on the computer and more time caring for their patients. Phase 1 went live in March, & Phase 2 in October.

The Shriners Hospital system is the first organization to implement Cerner's new Pediatric Admission documentation process. Goals of the phase 1 project included reducing the time it takes for nurses to complete patient history documentation through standardization to include only essential history information necessary to meet patient safety, best practice, and regulatory needs. Modifications reduced the number of documentation elements on the Admission History Form from 282 to 110, and elements on the Outpatient Intake Form from 282 to 182.

Quality Improvement Projects

- Fifteen (15) best practice / new law or regulations / quality projects were undertaken in 2019 of which two were completed and the remainder currently active.
- Unsigned charts and orders was addressed as a priority by the medical staff and the Medical Committee resulting in a significant improvement throughout 2019.
- Operating Room waitlist – New directives from the *Ministère de la Santé et Services sociaux* were implemented with regards to the six month target for elective surgeries.

Medical Administration

Throughout the year 2019, the medical division demonstrated excellence in clinical care, research and education in a diversity of settings. The medical staff at the SHC-Canada are internationally recognized key opinion leaders in many areas. The excellent level of care provided at SHC-Canada is widely recognized and, in some domains, serves as a template for other institutions worldwide. This is highlighted by the fact that medical staff at SHC-Canada is frequently invited to present at national and international meetings. Our research efforts have again resulted in a large number of publications in scientific journals.

Invited Speaker Engagements by our Medical Team

Our surgeons and physicians have been invited as guest speakers in a large number of contexts, from local meetings to international conferences. This is testament to the high visibility of our medical staff among their peers, and the high esteem in which our organization is held.

Dr. Hamdy

- Was invited as Guest Speaker in Tel Aviv, Israel, in May teaching on limb deformity in OI, unstable congenital knees and algorithm for management of lower limb deformities post growth plate arrest.
- He also spoke in August at the Association for the Study and Application of the Method of Ilizarov and the International Limb Lengthening and Reconstruction in UK. He was asked to teach and moderate on a series of pediatric orthopedics issues.

Dr. Ouellet

- Gave the International Guest Lecture at the International Brazilian Spinal Association and The AO Spine Conference – in Brazil in April & May 5. He was asked to provide the updated management of complex spine surgery in neuromuscular scoliosis, correction of kyphosis and spondyloptosis. He also presented to the International Combined Meeting of Orthopaedics on advancement of translational research highlighting his work and that of his co PIs Dr. Ferland and Dr. Haglund, funded by Shriners. “Recent Advances in Scoliosis Research: Biological Signatures and Morphological Features” in June, Montreal.
- Participated to a webinar hosted by the American Academy of Orthopedic Association on – Emerging Non-Fusion Techniques in Pediatric Scoliosis Surgery on August 27.
- Was invited as a pediatric spinal deformity surgeon at the International Expert Symposium held in the Netherlands for AO Foundation in September.
- Was the International Guest Lecturer at the Neurosurgery Annual Congress of Chile and the International Neurosurgery Congress Held in Buenos Aires in October. He addressed the congress on pediatric cervical spine trauma; complex

malformations of crano-cervical junction and addressed both assemblies talking about surgical treatment of sagittal balance and planning of osteotomies in adult degenerative scoliosis.

Dr. Janelle

- Presented at the Canadian Orthopedic Association (COA) Annual Meeting
Topic: Unexplained wrist pain – Where to start? How to approach it?

Dr. Costa

- Presented on 7 December 2019, Journée organisée par MUSCO – La paralysie cérébrale, parlons-en! Two presentations given: *Hip Surveillance* et *Non Surgical Approaches to Lower Extremity Complications*

Dr. Bernstein

- Was Invited Faculty at the Limb Lengthening Specialty Course, Jacksonville, FL
October 10: Lecture: Taylor Spatial Frame, Trauma/Foot & Ankle

Dr. Benaroch

- Presented at le Soutien à la pratique professionnelle (SPP) Québécoise
Topic: Pot-pourri de problèmes musculo-squelettiques chez les enfants de 0-5 ans

Dr. Fassier

- April 25-29, 2019, Invited Speaker at the 64th National Meeting of Orthopedics and Traumatology of Mexico», Querétaro, Mexico.
 - “Ostéogenèse imperfecta: manjo ortopédico”
 - “Évolucion en el tratamiento quirurgico de la OI”
 - “Epifisiolistasis femoral proximal”
 - “Como logre disenar el clavo Fassier Duval”

Dr. Pauyo

- December 12: Guest Speaker at the MCH Pediatric Surgical Grand Rounds
Pediatric and Adolescent Sports Medicine: The Good, The Bad, The Ugly

Dr. Saran

- September 15-16: Faculty for the Canadian Spinal Growth Modulation Symposium

Dr. Rauch

- Dr. Rauch was chair of the scientific program committee in two international conferences, and thus was responsible for the scientific content of these conferences. The first was the International Conference on Children’s Bone Health, Salzburg, Austria. This is the largest international conference on pediatric metabolic bone diseases and this year had 600 attendees from all continents. The second conference was the Quality of Life 4 OI Conference in Amsterdam, Netherlands, which had 250 attendees, mostly from Europe and North America.
- Was invited to present at 10 conferences, including 7 conferences with a national or international scope:

- Osteogenesis Imperfecta – Genetics and Medical Therapy. Shriners Symposium. Shriners Hospital for Children – Chicago, Chicago, IL, 01-Mar-2019.
- Osteogenesis Imperfecta: Diagnosis and Treatment. Pediatric Bone Symposium, New York University, New York, NY, 15-Mar-2019.
- Heritable Bone Fragility in Children – Causes and Treatments. Endocrine Grand Rounds NIH, Bethesda, MD, 03-May-2019.
- Muscle and bone in X-linked hypophosphatemic rickets. *4th Annual Canadian Pediatric Bone Health Working Group Meeting*. Ottawa, ON, 21-Feb-2019.
- Diagnosing and treating osteoporosis in children. *Canadian Pediatric Endocrine Group 2019 Annual Scientific Meeting*. Ottawa, ON, 22-Feb-2019.
- Anti-TGF- β Treatment in a mouse model of severe OI. *19th Annual OI Foundation Scientific Meeting*. Chicago, IL, 11-Apr-2019.
- The muscle-bone crosstalk and implications for neuromuscular conditions. Symposium on muscle-bone interaction in Duchenne muscular dystrophy. Salzburg, Austria, 21-Jun-2019.
- Novel treatments for osteogenesis imperfecta. 35th Ernst Klenk Symposium in Molecular Medicine. Cologne, Germany, 17-Sep-2019.
- Anabolic therapies for osteoporosis in childhood. *58th Annual Meeting of the European Society for Pediatric Endocrinology (ESPE)*. Vienna, Austria, 19-Sep-2019.
- Bisphosphonates in children – how are we doing it? Quality of Life 4 OI Conference. Amsterdam, Netherlands, 23-Nov-2019.
- Program chair, International Conference on Children’s Bone Health, Salzburg, Austria, 22 to 25-Jun-2019.
- Conference Co-Chair, “Muscle and Bone Interactions: The Mechanical and Beyond”; Indianapolis, IN, 15 to 18-Aug-2019
- Quality of Life 4 OI Conference. Amsterdam, Netherlands, 22 to 25-Nov-2019

Dr. Glorieux

- Annual Pediatric Grand Rounds, Nemours/Alfred I. DuPont Hospital for Children, Wilmington DE - Title: My Journey through Science and Pediatrics

Active 2019 Outreach Program

Several members of our medical team participated in an active outreach program in order to ensure that we provide patient care while reaching provincial and international regions where access to care and services is limited. With our program, 62 outreach clinics were held for the benefit of 940 patients and families.

The following physicians participated in our provincial and national program: Dr. Hamdy, Dr. Janelle, Dr. Benaroch, Dr. Fassier, and Dr. Rauch.

Pursuit of Excellence

- The Clinical Laboratory performs highly specialized laboratory techniques which continue to beat the cutting edge of scientific development. We continue to perform next-generation sequencing for bone fragility disorders and rickets, and bone histomorphometry for diagnosing bone disorders and evaluate treatment effects.
- The 2019 acquisition of the Illumina nex-seq550 next generation sequencer is expanding our capabilities with whole exome sequencing and RNA sequencing.
- In 2019, the Clinical Biomedical Laboratory performed 5328 internal (i.e., on patients seen at our hospital) diagnostic procedures. This represents a 32% increase in diagnostic procedures performed by the Clinical Lab from the previous year. This is in line with a notable increase in the number of patients seen in the Ambulatory Clinic (34% increase). The number of procedures sent to referral laboratories (such as the central laboratory of the MUHC) for the year 2019 was 11237. This volume increased from 2018 by 9%.
- In 2019, a combined total of 87 group and individual training sessions (including recertification activities) were held for a total of 56 participants, mainly nurses and respiratory therapists. All recertification activities also involved an audit element with a goal of identifying areas for improvement and educational needs. There were a total of 53 point of care audits.
- The Clinical Laboratory continued to develop training modules to add to the SHINE repertoire. A total of seventeen (17) laboratory-related modules geared toward nursing and respiratory therapists have been developed.
- The laboratory technologists were audited by the 'Ordre professionnel des technologistes médicaux du Québec (OPTMQ)'. The final report stated that all clinical practices were in compliance with applicable regulations.

Biochemistry:

Muscle-Bone interactions in Canadians: a national, population-based study from the Canadian Health Measures Survey (CHMS) division of Statistics Canada; number of tests performed in 2019 (CTX and P1NP): one-thousand three hundred forty-nine (1349) and two thousand five hundred and ninety-four (2594), respectively.

Molecular Diagnosis:

In 2019, collaboration with other Shriners institutions led to an increased volume of patient samples for genetic sequencing. In 2019, the molecular diagnosis laboratory

received Seventy-nine (79) samples from Shriners hospitals located in Chicago, Houston and Pasadena.

Professional Development

- Members of personnel attended 15 conferences on or off-site training, and/or participated in continuing education activities. A total of 93 hours of internal or external training/ conferences or seminars was attended by different groups within the department.

Technical Services

Activities

The new facility still has ongoing deficiencies. The main deficiency is water infiltration, this issue was noticed during winter in 2015/2016 and SHC mandated an outside consultant, CLEB , now UL Inc. to look into our issue. In 2017, we mandated CLEB for the second phase of the water infiltration and a final report was received in March 2018. The remedial work for the water infiltration is planned for Spring 2020.

The technical service department also maintained the building and grounds on Cedar. Head office is responsible for all the costs. The building was sold on December 17, 2019 and is no longer our responsibility.

The activity in 2019 comprised of 5,257 new work requests at the SHC facility. This is an increase of 20.5% from 2018.

Office Space Requirements

- With the increase of activities in clinic, OR, donor development and clinical research, Shriners Hospital for Children – Canada increased the number of workstations to support the increase in staff in those areas to house the employees in the most strategic and cost-effective locations.

Innovation

Active projects from the Center of Innovation

- Remotely-controlled Internal Fixator for Bone Distraction (in collaboration with Ecole Polytechnique)
 - Went from proof of principle to a manufactured prototype
 - Established and validated sterilization of device
 - Masters student did more comprehensive in vitro testing
 - Presented technology at TechConnect Summit
- Virtual Reality (3 projects)
 - Masters student working on SHC-led VR project to test feasibility of technology

- Study in collaboration with St. Justin to use VR for distraction during Pin removal procedures at SHC
- Working with a company to establish a VR module for training residents on specific procedures
- 3D Printing Program
 - 3D printed complex patient-specific anatomies for pre-surgical planning
 - 100+ skeletal anatomies 3D printed to train residents
 - 5 departments within SHC benefiting from 3D printing
 - Generated \$2,600 in revenue from fulfilling external 3D printing requests
- Halo Traction Project
 - Halo Ease team refined prototype
 - Market assessment done by 3rd party was positive
 - Pilot study being planned
 - Looking for a licensing partner
- Healthcare Value Metric
 - Medical student got scholarship and did research over the summer
 - Data on surgery cancellations was collected and analyzed
- Robotics Project with the Motion Analysis Lab
 - Refinements were done to improve robot performance within MAL

Motion Analysis Center

Since its inauguration, the MAC has increased its activity from 5 patients per month in 2017 to 16 in 2018 and to 30 in 2019. These 2019 numbers were achieved despite the fact we were understaffed by 0.6 FTE physical therapist for most of the 2019 fall session. This is an 87% increase compared to 2019.

The budget in 2018 was \$176,000 and it increased by 29% up to 228,000\$ in 2019. To account for its growth, the MAC has received a 60% increase in budget for 2020. Most of this increase is attributable to human resources. The MAC is always seeking to improve patient care through research projects. Numerous grants have been obtained with success.

Business Development

2019: A Year of Transition

2019 saw the creation of a stand-alone directorate for Business Development and Shrine Liaison at Shriners Hospitals for Children — Canada. This, in itself was a challenge as this created a change in structure and how certain projects are managed.

- Worked closely with Home Office and Robert A. MacDougall, Executive Vice President of Jones Lang LaSalle towards the sale of the legacy Cedar Avenue location. Organized and

led more than 20 tours of the location and obtained support from former facility manager to answer technical building questions. We were proud that the building sold for \$17.5 M Canadian in December 2019.

- Along with Sylvain Rondeau, worked with the City of Montreal as well as partners from interest groups and historical societies to produce a document evaluating the historical value of the legacy site. This document was presented to our Board of Governors, staff and local Shriners. It also passed on to the buyer at the time of the purchase for continued work with the City.
- First Nations: With the support of Jim Doel, met and followed up with political attaché to Federal Minister for Aboriginal Affairs, process to continue in 2020. With J. Boissonneault also met with Northern Bridge with a potential site visit to occur in 2020. With D. Merrett, met, evaluated and worked on establishing a possible Telehealth link with Osoyoos Band Clinic in Central BC, process to be continued in 2020.
- Telehealth / teleteaching / telerehab: supported J. Boissonneault and Dr. Fassier following preliminary talks with St-John's, New Brunswick, these are to continue in 2020. Other potential telehealth locations include Oliver BC, Iles de la Madeleine QC, Gander NF.
- Analysis of current outreach and of potential locations. Outreach must be adapted to each location. General discussion in progress with potential partner at IWK.

Fraternal Activity

- Held most attended Canadian Hospital Seminar with more than 100 registered. The Seminar allows Shriners and Ladies to learn more about the hospital and return to their temples with tools, presentations and stories that they can share with their members. The highlights included bringing together patient ambassadors Kaleb and Alec for a special presentation, a mini-symposium on teaching activities at the hospital showcasing this important part of our mission and a presentation from our Donor Development team on the secret to putting together a successful fundraising event.
- Close to 1,500 guests visited Shriners Hospitals for Children – Canada in 2019 The majority of visitors are Shriners who organize bus tours. The tours are offered in collaboration with guides from Karnak Shriners, past patient, parents and the Business Development & Shrine Liaison team.
- S. Rondeau tours the museum with all new hospital employees. He explains the Shrine, ladies organizations, the history of Shriners Hospitals for Children and Shriners Hospitals for Children – Canada as well as the incredible advancements our hospital has brought to the medical field.
- Business Development & Shrine Liaison held quarterly conference calls with affiliated temples to give them an opportunity to interact with Hospital managers, ask questions and obtain personalized updates on hospital activities. The entire senior management team participates and additional staff members join in for special presentations.

- Director of Business Development, along with the Social Services Department and the Chairman of the Transport and Lodging Committee trained 7 Temple Transport Chairmen and their teams on how to use the free airfare vouchers and points from our transport partners West Jet / Hope Air and Air Canada Foundation. Support from these incredible partners results in an average of \$65,000 in savings for transport costs in each Temple annually. The remaining Temples will be receive the training in 2020.
- Received the official visit of the Supreme Queen and organized a personalized tour for the group.
- Prepared presentations and assisted Temples with material for Installations and Ceremonials.

Museum & Arts and Memorabilia Committee

- The museum received more than 30 new pieces of Shrine memorabilia during the year, including a history of the Karnak Clown Unit, a prosthetic leg, surgical rods, historical photos and much more. Each piece is photographed, properly evaluated and entered into the museum database.
- On May 26, 2019, the hospital participated in Museum Day in Montreal, opening our museum and a special exhibit on the history of medical imaging to the public. Thanks to our staff and volunteers, 100 visitors were able to visit and learn more about the hospital and the Shriners fraternity.
- After 3 years of planning and dedication, Shriners Hospitals for Children — Canada was proud to dedicate the remarkable sculpture entitled “Coeur d’Enfant” (The Heart of Children). This gift came to us thanks to the Quebec Centre for Contemporary Art. Located at the intersection of St-Jacques street and Decarie Blvd. The sculpture stands 21’ x 12’ x 6’ and is the symbol of the love that the hospital staff and the Shriners fraternity have for children.
- The museum exhibit changed over twice in 2019. Information panel updates are budgeted and in the works for mid-2020.
- As part of our collaboration with other museums in Montreal, we were invited to participate in “*Culture Days*” at the end of September 2019 with the support of the Contemporary Art Museum. This was an opportunity to engage patients, staff, volunteers and the Shrine.

Nutrition, Environmental & Laundry Services

For the year of 2019, the food services department has served the following:

- 12,020 patient meals were served
- 65,847 visitor transactions took place
- 12,095 Quebec Subsidized meals were sold
- 10,001 Total main meals served
- \$345,368 total revenue

The catering food revenue for outside contracts was \$50,763.72 for 2019, this is up from \$34,374.92 in 2018, an increase of \$16,888.80.

Information Technology

Updates, Implementation, Current Projects

Objective:

Update or implement various software, platforms or others to adequately meet head office requirements.

On the Shriners' side

- Review Active Directory accounts
- Review access groups, distribution lists, contacts and format standardization to be compliant with the audit
- Yearly update of the GestLab application
- Yearly update of the HemoCue Tool
- Install new Imprivata Privacy Policies for screen savers
- Plan the migration from Windows 7/Outlook 2010 settings to meet the requirements of IT standards and the lifecycle of Windows7.
- Review the backup server and modify backup tasks to meet new server changes and retain copies of critical files.
- Implement Security Strategies (GPO) to replace startup scripts on client workstations.
- Implement Security Strategies (GPO) to replace printer installation scripts on client workstations.
- Update the Windows 10 system image for computers to meet IT standards.
- Remove admin rights from workstations to meet Shriners' standard security requirements.

Visibility & Networking

Objective: Develop and participate in projects, activities or committees that increase IT staff visibility and outreach.

- Clinical analysts actively participate in numerous meetings related to hospital and head office activities. Following is an overview of the meetings:

Meetings	
NM-AMM	1/month
Accident & Incident	1/month
CTC	1/week
CA call	1/month
Pharmacy committee	1/3months
Telehealth	1/week
CAPO project	1/week

- Clinical analysts participate in nursing optimization, a very demanding project in terms of the evaluation and integration of clinical practices and documentation. This same project will continue in 2020.
- Our new IT analyst has a strong presence and works closely with different departments in access and application projects within the hospital.

Medical Archives

Analysis and coding: there has been an average of a 6.5% increase in the number of charts analyzed and coded over the last two years. It is to be noted that the outpatient and inpatient surgeries are coded in three separate databases.

Year	# Of OUTpatient surgeries CODED	# Of INpatient surgeries CODED	Total	Variance %	2017 vs 2019
2017	535	729	1264		13%
2018	627	752	1379	8%	
2019	729	694	1423	3%	

Medical research: the number of charts pulled does not reflect the number of electronic charts identified for review. This will be corrected for 2020.

Medical Research	2018	2019	Variance %
Research projects	20	14	-43%
Number of charts pulled	506	379	-34%

Scanned documents: in 2019, 62,780 documents were scanned compared to 52,534 in 2018, thus, a 19.5% increase.

Correspondence: as replicated in the overall volume increases throughout the hospital, there has been significant increases in the area of correspondence.

Correspondence	2018	2019	Variance %
Request for information	2152	2566	16%
Applications \ Certificates	73	122	40%
Attestations	41	56	27%

The significant increase in volume and move to the Hospital required an important readjustment to staffing and processes in the health information department. This department received no increase in personnel within the last five years.

Home Office Interactions

- Many clinical staff members continue to participate in regular Corporate-sponsored meetings/conference calls, such as calls with Administrators, Chief of Staff, Director of Patient Care Services/Nurse Executives, HIM, Patient Access, Clinical Analyst, Nursing Directors and Managers, Educators, Public Relations, Performance Improvement, Discharge Planning, Utilization Review, Rehabilitation, Revenue Cycle, Credentialing, Information Services, POPs, and others.
- Our DPCS/NE is the Co-Lead for implementation of the Lippincott Procedures.
- Kathryn Fournier is a member of both the Home Office Quality Metrics and the Perception of Care Workgroups that recommends development or changes to the system wide tools and processes.
- Lyne St-Jean is a member of both the Home Office rL6 Task Force and Compliance 360 Workgroup that provides system support and maintenance.
- Emmanuelle Rondeau participates in bi-weekly phone conferences with the Telehealth team
- Administrative personnel continue to participate in regular Home Office-lead meetings / conference calls.

Dashboard Performance Summary

- *Canada Shriners Hospital's Dashboards attached in Annex 2.*

The following is the Press Ganey Dashboard Summary:

Summary of Patient Experience Program

- Press Ganey Patient satisfaction overall mean scores for all three survey areas (ambulatory surgery, inpatient care and outpatient services) continues to be monitored and are all in good standing.

Ambulatory Surgery Mean Score Target 92	2018	2019
Std Overall	94.8	97.4
Overall	95.1	96.2

Inpatient Mean Score Target 91	2018	2019
Std Overall	95.5	94.8
Overall	95	94.4

Outpatient Mean Score Target 94.5	2018	2019
Std Overall	94.2	94.6
Overall	92.2	93.1

Strategic Plan

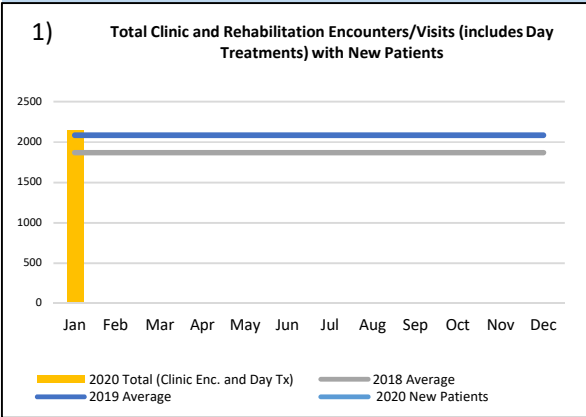
We are continuing to move forward with a focus on the below:

- Developing a Center of Excellence in OI and possibly other specializations
- Exploring the possibility of a dentistry program for OI, arthrogyrosis and cerebral palsy patients
- Enhancing and growing outreach in Canada in coordination with the International Strategy that is being developed by Home Office

Conclusion

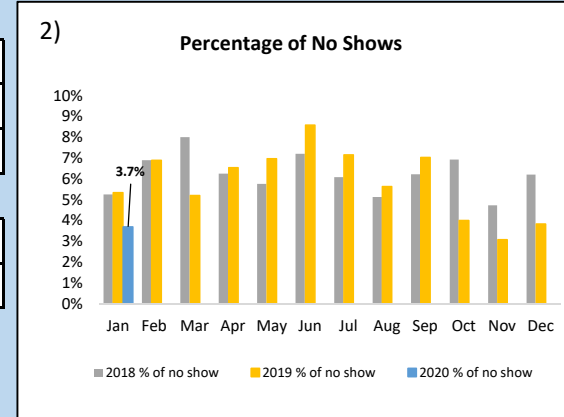
Outlook for the Upcoming Year

- With the resignation of Dr. Reggie Hamdy as Chief of Staff, we will be hiring a new Chief of Staff for the organization in 2020
- We will be hiring a new Director of Human Resources
- Our leadership team is involved in developing the International Strategy with Home Office
- Outreach continues to be an important dossier



YTD Variance	17%
2019 Total	1842
2020 Total	2147

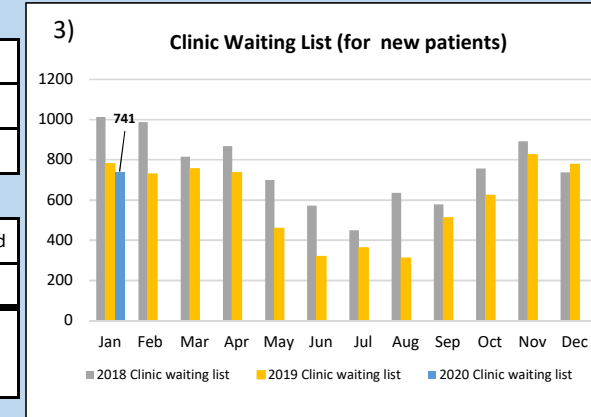
2020 Target	% attained
24824	7%



YTD Variance	-31.2%
2019 Total	5.3%
2020 Total	3.7%

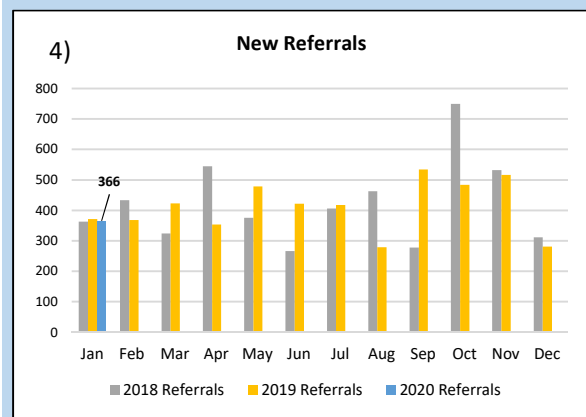
2020 Target	% attained
Less than 10%	3.7%

Number of patients no show	82
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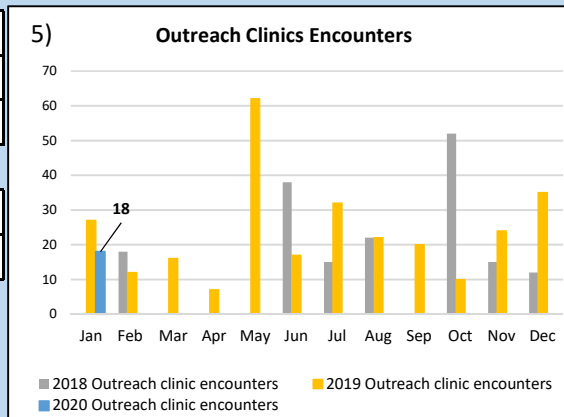
YTD Variance	29%
2019 YTD Total	7
2020 YTD Total	9

2019 Total	150
2020 Total	9



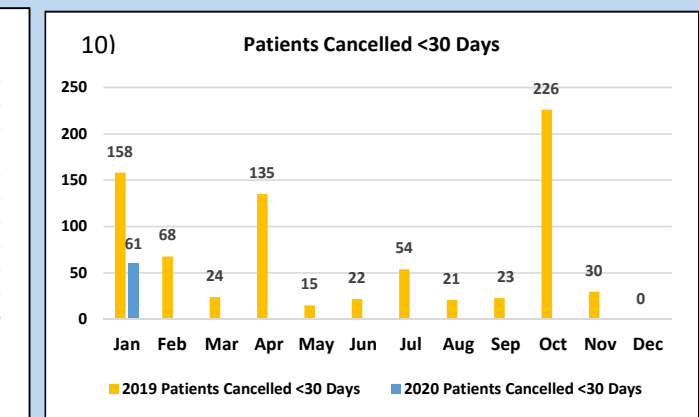
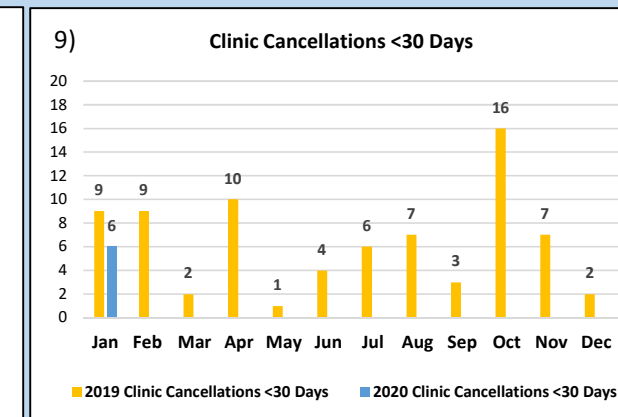
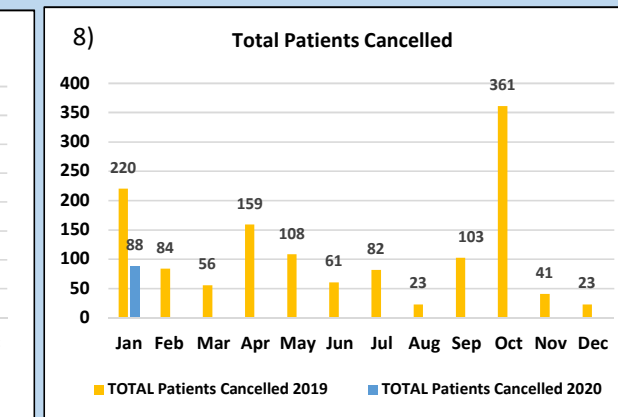
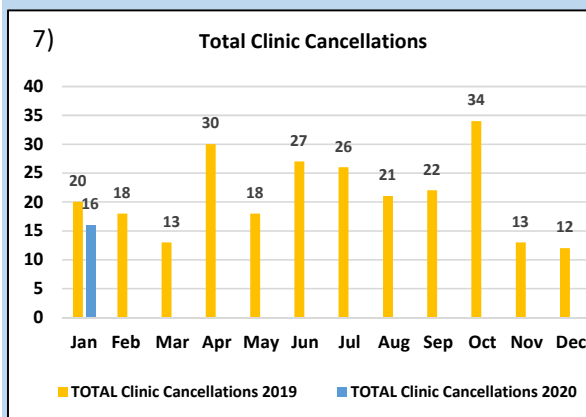
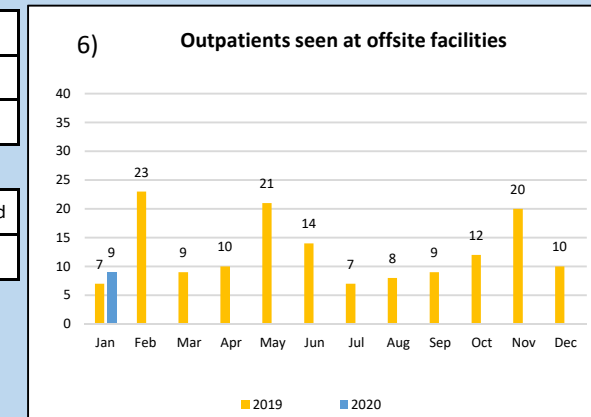
YTD Variance	-1%
2019 Total	371
2020 Total	366

2020 Target	% attained
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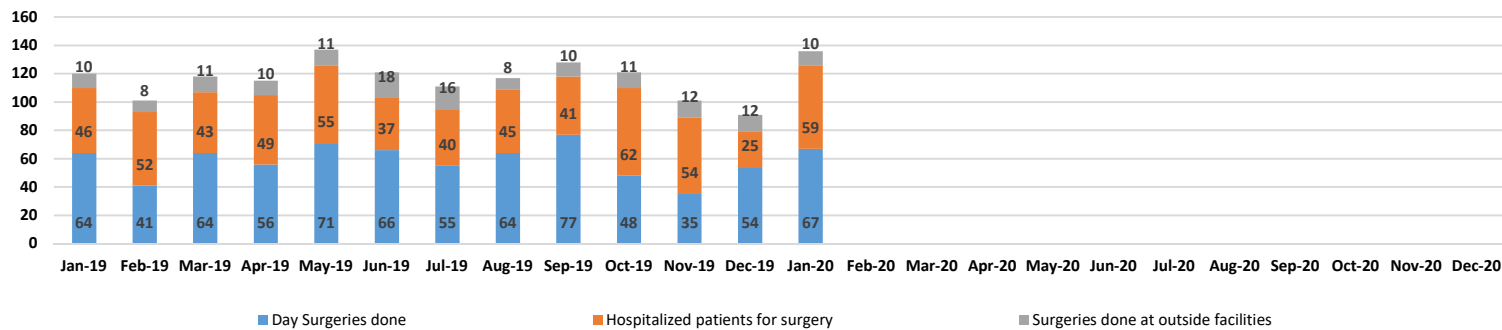


YTD Variance	-33%
2019 Total	27
2020 Total	18

2020 Target	% attained
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11) Outside surgeries performed, Day Surgeries and hospitalized patients admitted for surgery

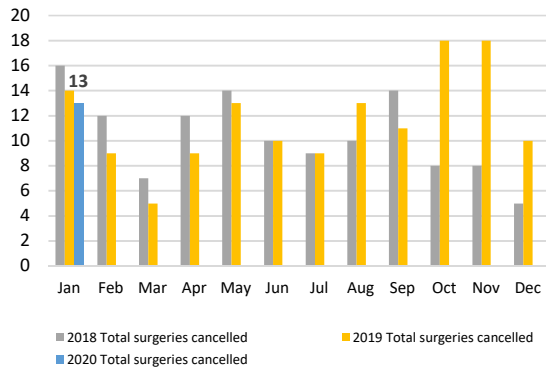


Day Surgery YTD Variance	5%	Admit pts for OR YTD Variance	28%	Outside surgeries YTD Variance	
2019 Total	64	2019 Total	46	2019 Total	10
2020 Total	67	2020 Total	59	2020 Total	10
2020 Target	701				
% attained	10%				

Total Surgeries at SHC - YTD Variance	14%
2019 Total	111
2020 Total	126

2020 Total Surgeries Target	% attained
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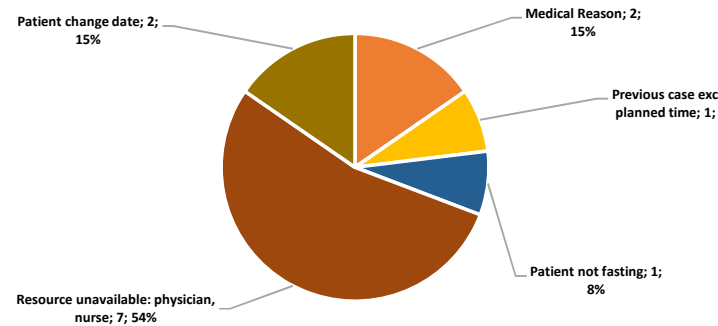
12) Cancelled Surgeries



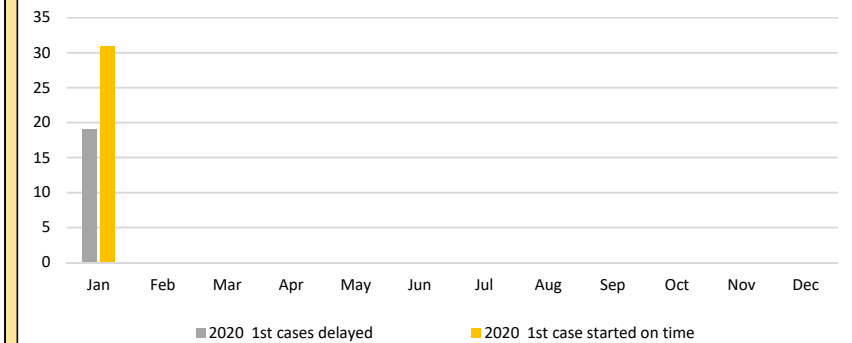
YTD Variance	-7%
2019 Total	14
2020 Total	13

2020 Target	% attained
5-10%	1%

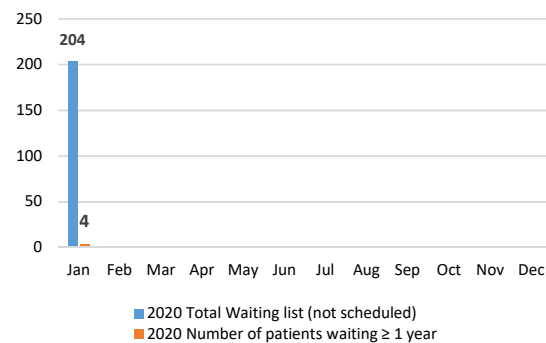
13) 2020 YTD Cancellation reasons



14) 2020 1st case started on time versus delayed

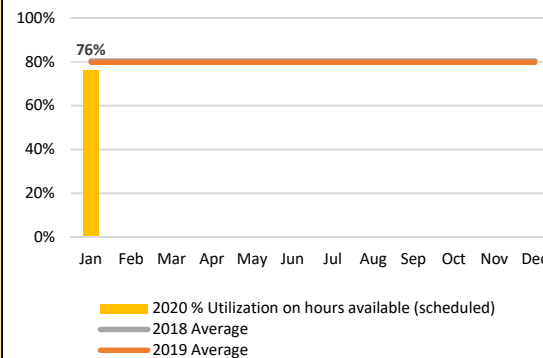


15) 2020 OR Wait List



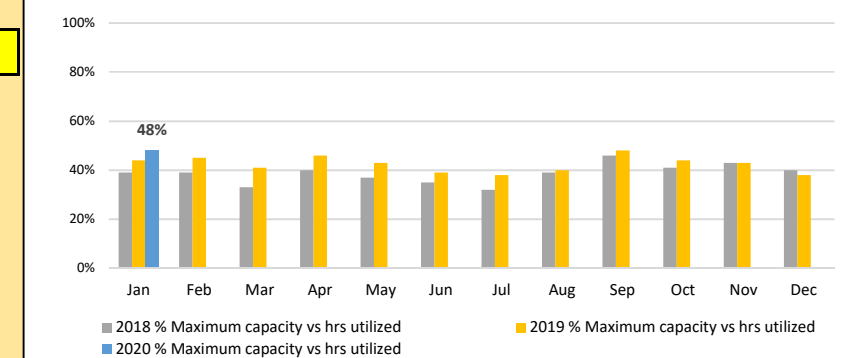
Patients on waiting list (not scheduled)	
0-3 mths	149
3-6 mths	33
6-9 mths	15
9-12 mths	3
Waiting ≥ 1 year	4

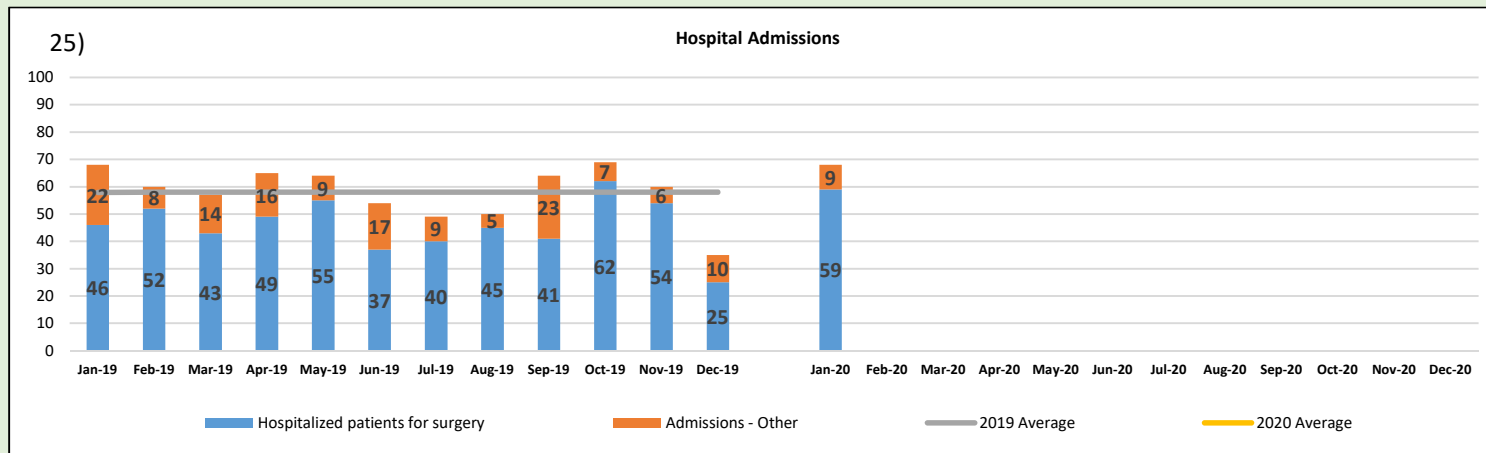
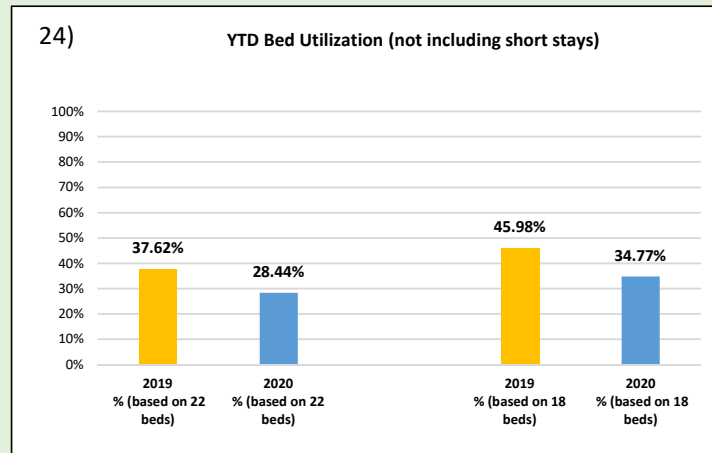
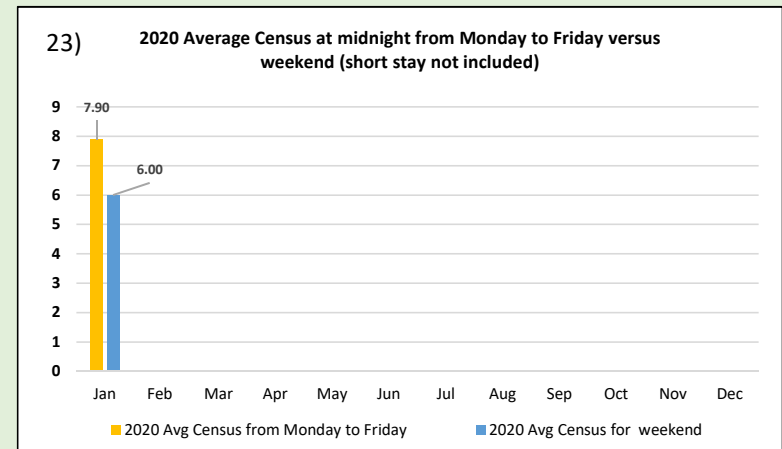
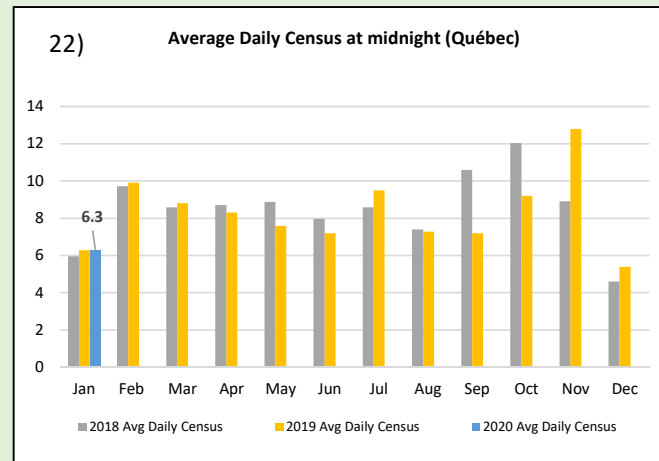
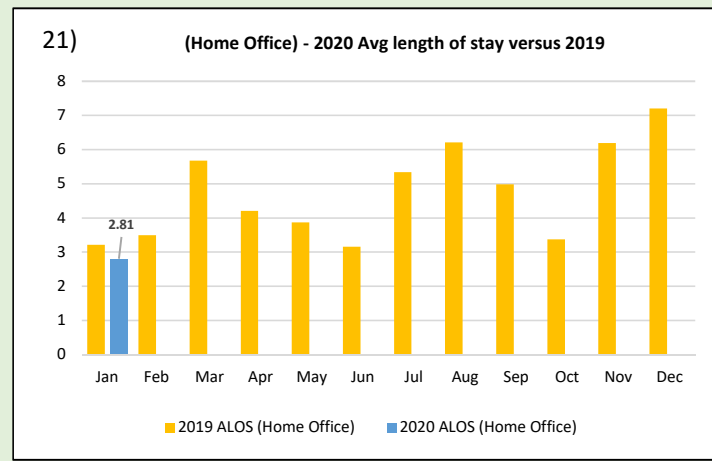
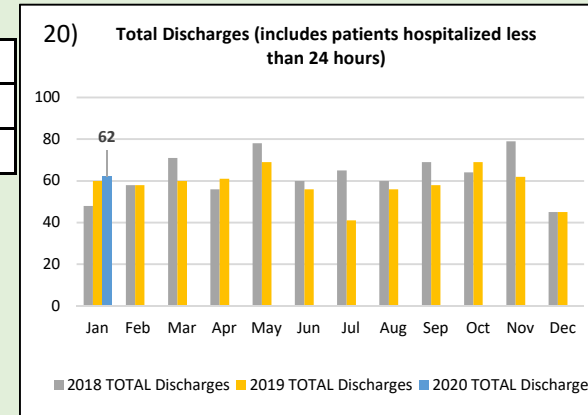
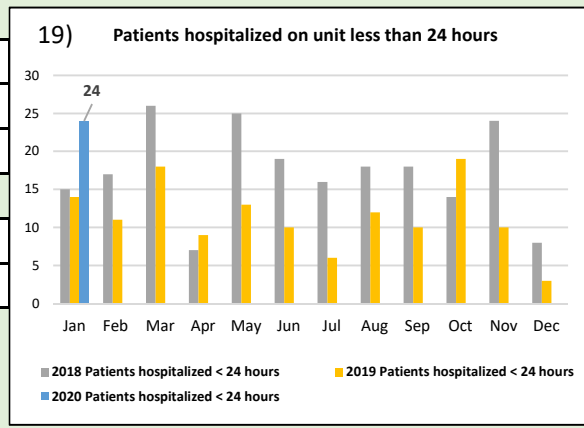
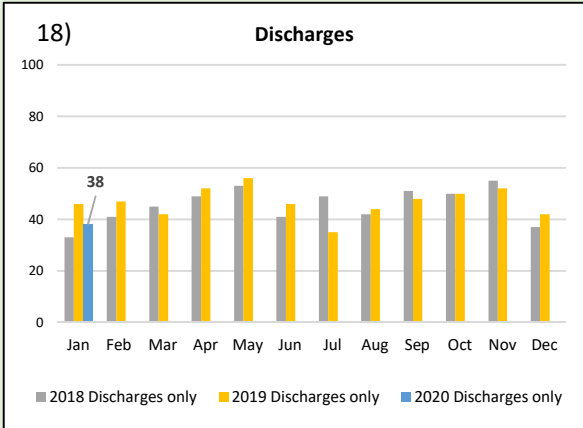
16) OR utilization based on staffing



2020 Target	85%
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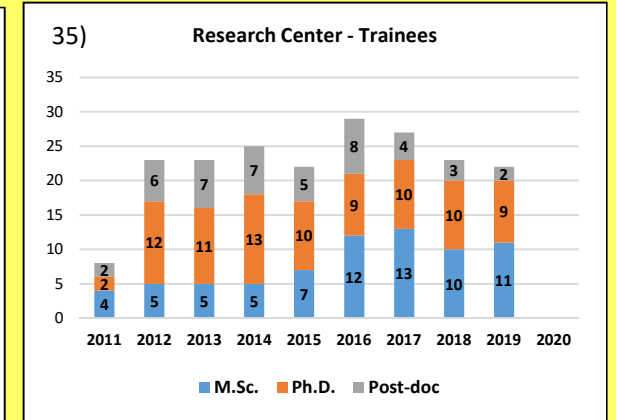
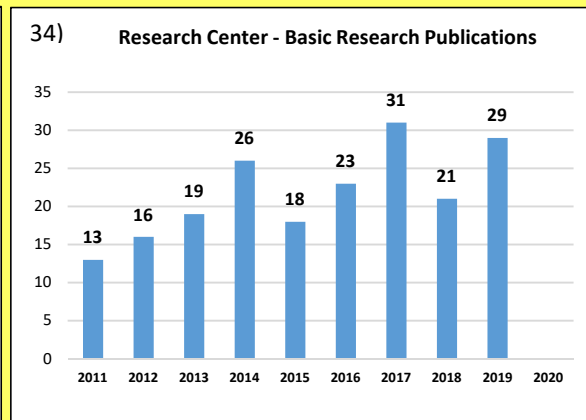
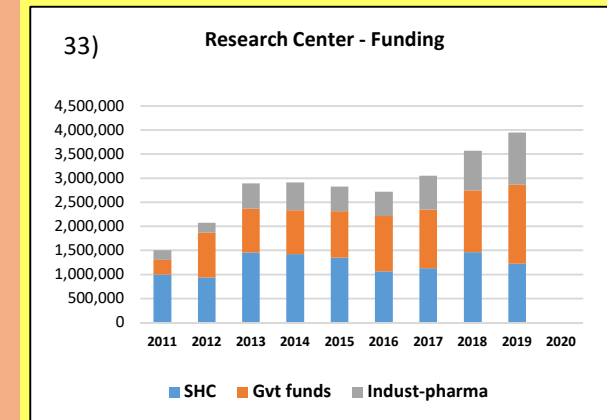
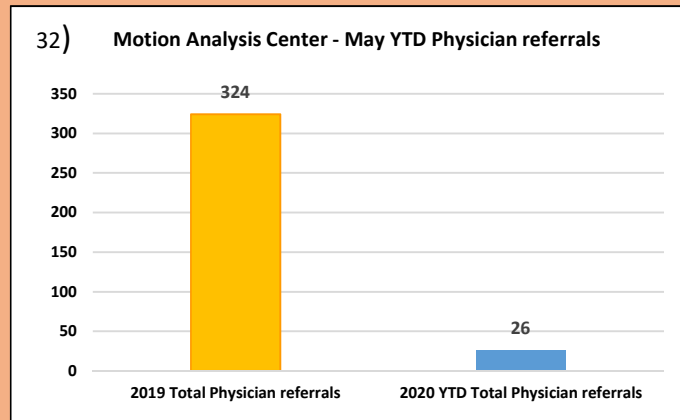
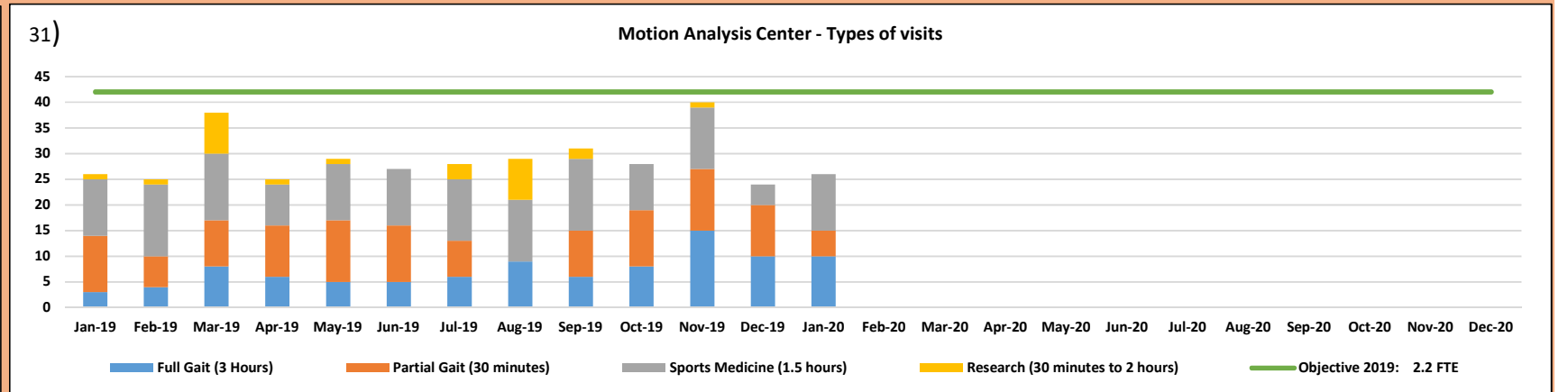
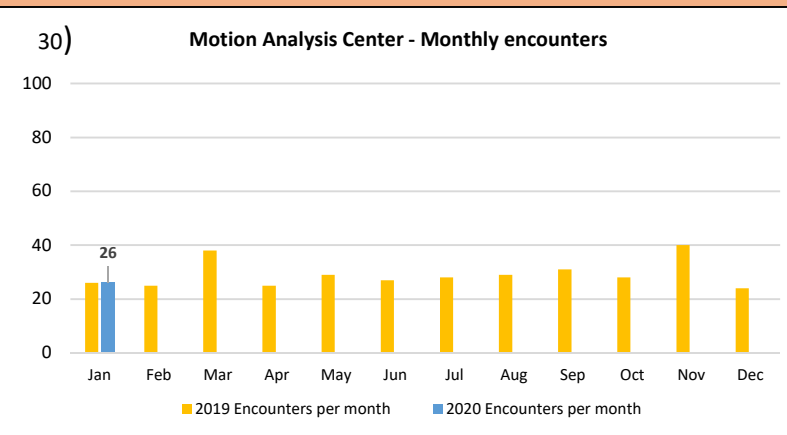
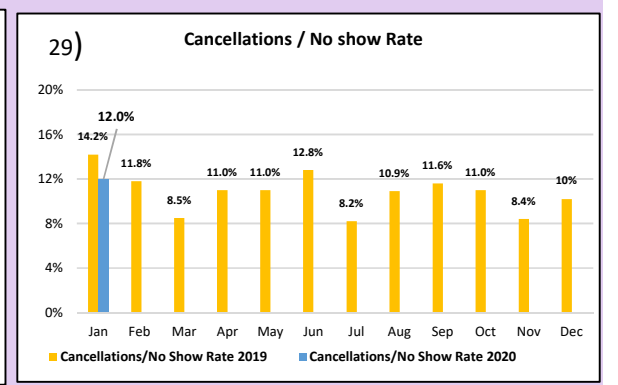
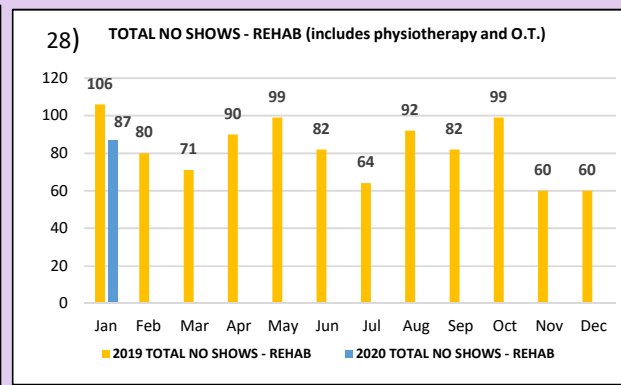
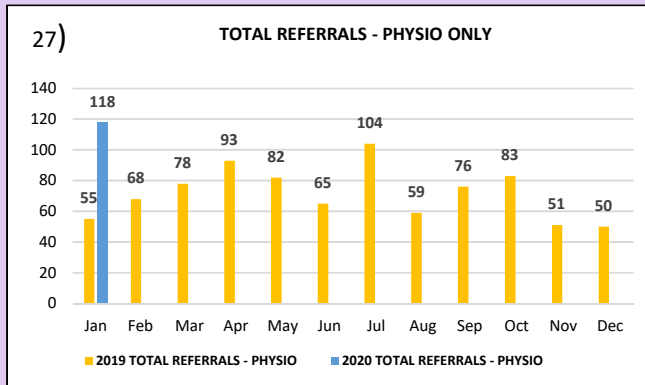
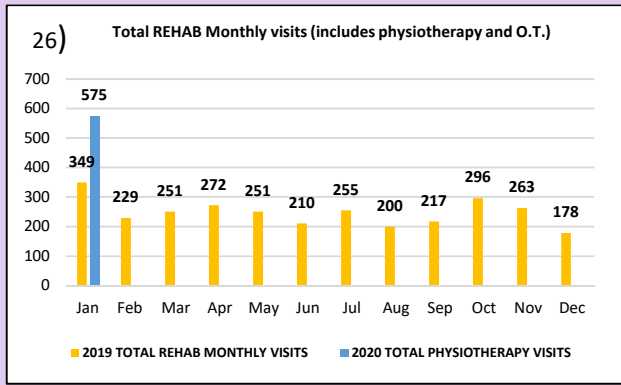
17) OR utilization based on capacity

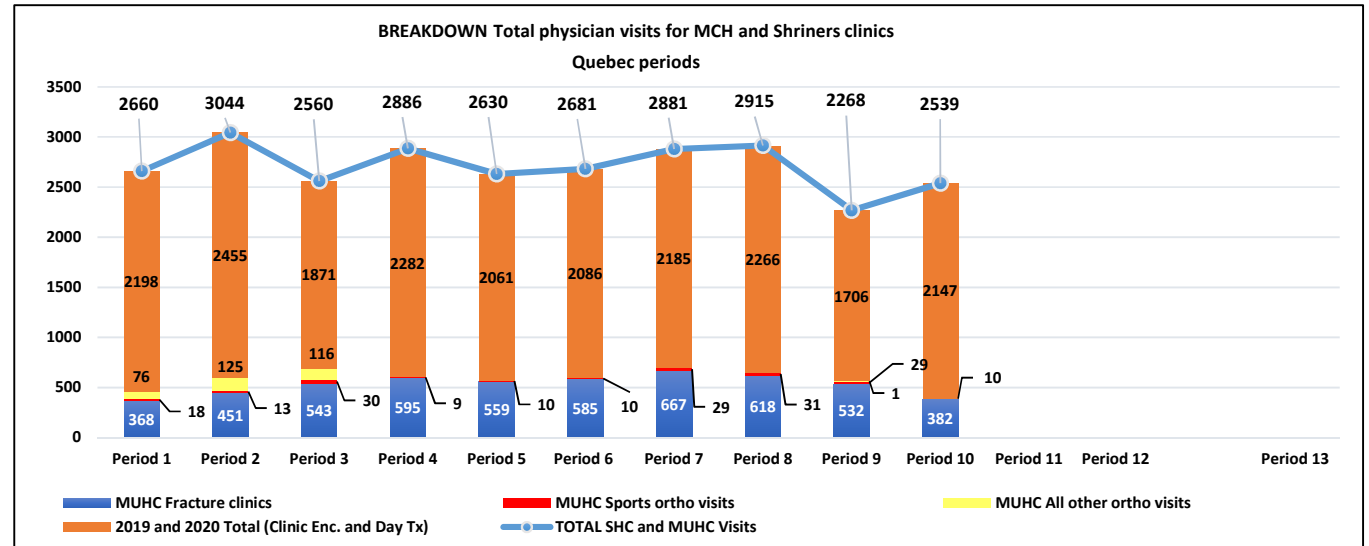
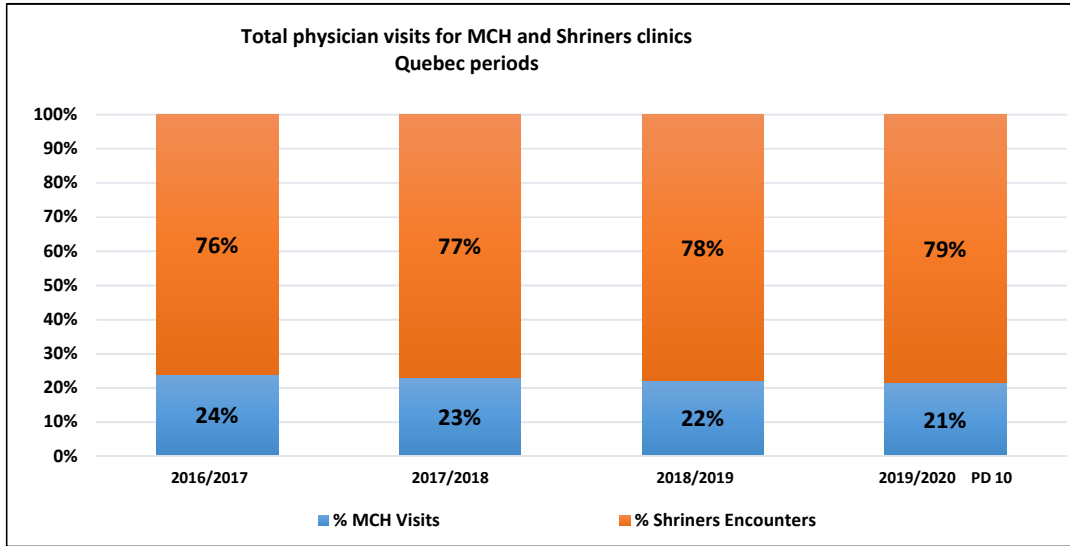




YTD Variance	
2019 Total	68
2020 Total	68

2019 Total	695
2020 Total	68





DEFINITIONS:

Graph Number

- | | | |
|------------|---|---|
| 1) | TOTAL Clinic Encounters (includes New Patients): | This is the total number of outpatient encounters and includes rehabilitation visits and Day Treatment visits. The number of new patients seen are included in the total number of encounters |
| 2) | Percentage of No Shows: | This is the percentage of scheduled patients who did not show for an appointment in the Outpatient Clinic versus the total number of Outpatient Clinic Encounters. |
| 3) | Clinic Waiting List: | This is the number of patients who have been referred to the hospital and are awaiting for a first appointment. These patients have been triaged and |
| 4) | New Referrals: | This is the number of referrals received and entered in the triage database. This includes out of province and foreign referrals. |
| 5) | Outreach Encounters: | This is the total number of Outreach visits. |
| 6) | Outpatients seen offsite: | The number of non-Shriner patients seen at off-site facilities. |
| 7) | Total Clinic Cancellations: | This is the total number of clinics that were cancelled in the month |
| 8) | Total Patients Cancelled: | This is the total number of patients that were cancelled in the month |
| 9) | Clinic Cancellations <30 Days: | This is the number of clinics that were cancelled within 30 days |
| 10) | Patients Cancelled <30 Days: | This is the number of patients that were cancelled within 30 days |
| 11) | Day Surgeries: | This is the total number of surgeries performed on an outpatient basis. |
| | Hospitalized patients admitted for surgery: | This is the total number of surgeries performed on patients who were hospitalized (this does not include day surgeries). |
| | Surgeries done at outside facilities: | The number of Shriners patients that undergo surgeries at outside facilities (i.e. Montreal Children's Hospital). |
| 12) | Cancelled surgeries: | The total number of surgeries that were cancelled. |
| 13) | YTD Cancellation reasons: | YTD reasons that surgeries were cancelled. |
| 14) | 1st case start time: | The number of first cases that start on time. The first case starts at 07:45 am. Except Thursday (anesthesia rounds), the first case starts at 08:45am. (Patient must be in the room). |
| 15) | OR Wait List: | The number of patients awaiting surgery who have not been scheduled and the number of patients awaiting surgery for more than a year. |
| 16) | OR Utilization (based on staffing): | The percentage of utilization of the surgical time on hours scheduled. (Roll in to roll out without turnover time). |
| 17) | OR Utilization (based on capacity): | The percentage of utilization of the OR based on the number of business days in the month x 4 ORs. |
| 18) | Discharges: | The total number of patient who complete an inpatient period of hospitalization. Does not include patients hospitalized on unit less than 24 hours (short stay admissions). |
| 19) | Patients hospitalized less than 24 hours (short stay admissions) | The total number of patients who are admitted and discharged in the same day. |
| 20) | TOTAL Discharges: | The total number of patients who complete an inpatient period of hospitalization INCLUDING patients who are admittes and discharged on in the same day. |
| 21) | Average length of stay (Home Office): | The average number of days for inpatients that have been discharged. This includes patients admitted on unit less than 24 hours (short stay admissions). |
| 22) | Average Daily Census: | The average number of inpatients per day and includes short stays but NOT day surgeries. |
| 23) | Average Census from Monday to Friday versus weekend | Midnight census |
| 24) | YTD Bed utilization: | The percentage of hospital beds occupied by patients based on the total beds available and staffed. |
| 25) | Hospital admissions: | This is the total number of patients who are admitted to the hospital nursing unit. |
| 26) | Total Rehab Monthly visits (includes physiotherapy and O.T.): | This is the total number of patients seen in occupational therapy and physiotherapy combined. This includes evaluation and treatment in clinic, in the rehabilitation department for outpatients, and for patients on the unit. |
| 27) | Total referrals - Physiotherapy only: | This is the total number of referrals received from doctors in the clinic for outpatient physiotherapy and entered into the rehab triage database. |
| 28) | Total No Shows Rehab (includes physiotherapy and O.T.): | This is the total number of patients who did not show up for their outpatient rehabilitation appointment in occupational therapy or physiotherapy, or called to cancel the same day as their appointment. |
| 29) | Percentage of Cancellation/No Shows | This is the percentage of patients who cancelled or did not show for an appointment |

- 30) **Monthly encounters:** This is the total number of rehabilitation encounters in the month
- 31) **Types of visits:** This is the total number of different types of visits in the month (includes: full gait; partial gait; sports medicine and research).
- 32) **Physician referrals:** This is the number of referrals received from physicians
- 33) **Research Funding:** These are the yearly funding amount received from different sources:
(**SHC** = approved projects; **Gvt funds** = CIHR-NIH-NSERC-RSBO; **Industry-Pharma**: Novartis-Ultragenyx, Kirin, Foundations RSBO fellows: SHC centers)
- 34) **Basic Research Publications:** This is the total number of yearly basic research publications
- 35) **Trainees:** This is the number of trainees (Masters, Ph.D, and Post-Doc) in a year



PUBLICATIONS

1. Elfassy C, Darsaklis VB, Snider L, Gagnon C, Hamdy R, Dahan-Oliel N.
Rehabilitation needs of youth with arthrogryposis multiplex congenita: Perspectives from key stakeholders.
Disabil Rehabil. 2019 Feb 11:1-7. doi: 10.1080/09638288.2018.1559364. [Epub ahead of print] PMID: 30741031
2. Martins G, Siedlikowski M*, Coelho AKS, Rauch F, Tsimicalis A.
Bladder and bowel symptoms experienced by children with osteogenesis imperfecta.
J Pediatr (Rio J). 2019 Feb 22. pii: S0021-7557(18)31108-2. doi: 10.1016/j.jpeds.2018.12.008. [Epub ahead of print] PMID: 30802423
3. Tauer JT, Abdullah S, Rauch F.
Effect of Anti-TGF- β Treatment in a Mouse Model of Severe Osteogenesis Imperfecta.
J Bone Miner Res. 2019 Feb;34(2):207-214. doi: 10.1002/jbmr.3617. Epub 2018 Nov 29. PMID: 30357929
4. Cherif H, Bisson DG, Jarzem P, Weber M, Ouellet JA, Haglund L
Curcumin and o-Vanillin Exhibit Evidence of Senolytic Activity in Human IVD Cells In Vitro. J Clin Med. 2019 Mar 29;8(4). pii: E433. doi: 10.3390/jcm8040433. PMID: 30934902
5. Brinkmann E, DiSilvio F, Tripp M, Bernstein M, Summers H, Lack WD
Distal Nail Target and Alignment of Distal Tibia Fractures.
J Orthop Trauma. 2019 Mar;33(3):137-142. doi: 10.1097/BOT.0000000000001358. PMID: 30779725
6. Ma MS, Najirad M, Taqi D, Retrouvey JM, Tamimi F, Dagdeviren D, Glorieux FH, Lee B, Sutton VR, Rauch F, Esfandiari S
Caries prevalence and experience in individuals with osteogenesis imperfecta: A cross-sectional multicenter study.
Spec Care Dentist. 2019 Mar;39(2):214-219. doi: 10.1111/scd.12368. Epub 2019 Feb 13. PMID: 30758072
7. Kishnani PS, Rockman-Greenberg C, Rauch F, Bhatti MT, Moseley S, Denker AE, Watsky E, Whyte MP.
Five-year efficacy and safety of asfotase alfa therapy for adults and adolescents with hypophosphatasia.
Bone. 2019 Apr;121:149-162. doi: 10.1016/j.bone.2018.12.011. Epub 2018 Dec 18. PMID:30576866
8. Gaudreau J, Mekhail M, Hamdy R, Villemure I.
Remote-controlled internal lengthening plate for distraction osteogenesis in pediatric patients.
Expert Rev Med Devices. 2019 Apr 1:1-7. doi: 10.1080/17434440.2019.1599283. [Epub ahead of print] PMID: 30931640

9. Delvin E, Alos N, Rauch F, Marcil V, Morel S, Boisvert M, Lecours MA, Laverdière C, Sinnett D, Krajinovic M, Dubois J, Drouin S, Lefebvre G, Samoilenko M, Nyalendo C, Cavalier E, Levy E.
Vitamin D nutritional status and bone turnover markers in childhood acute lymphoblastic leukemia survivors: A PETALE study.
Clin Nutr. 2019 Apr;38(2):912-919. doi: 10.1016/j.clnu.2018.02.006. Epub 2018 Feb 21. PMID: 29503055
10. Ouellet JA, Ouellet GM, Romegialli AM, Hirsch M, Berardi L, Ramsey CM, Cooney LM Jr, Walke LM.
Functional Outcomes after Hip Fracture in Independent Community-Dwelling Patients.
J Am Geriatr Soc. 2019 Apr 9. doi: 10.1111/jgs.15870. [Epub ahead of print]
PMID: 30964203
11. Robinson ME, Rauch F. Mendelian bone fragility disorders.
Bone. 2019 Apr 27. pii: S8756-3282(19)30159-0. doi: 10.1016/j.bone.2019.04.021. [Epub ahead of print] PMID: 31039433
12. Aaron M, Nadeau G, Ouimet-Grennan E, Drouin S, Bertout L, Beaulieu P, St-Onge P, Shalmiev A, Veilleux LN, Rauch F, Petrykey K, Laverdière C, Sinnett D, Alos N, Krajinovic M. Identification of a single nucleotide polymorphism within CDH2 gene associated with bone morbidity in childhood acute lymphoblastic leukemia survivors.
Pharmacogenomics. 2019 Apr 15. doi: 10.2217/pgs-2018-0169. [Epub ahead of print]
PMID: 30983502
13. Lu T*, Feng J*, Tadisetty S*, Xu S*, Zhang R*, Athanasoulis T, Brunelle J, Baker D, Bilodeau C, Caruzo M, Curtin M, Chan M, Champion F, Damas C, Donato M, Furtado L, Gugliotti A, Lafrance M, Napoletano G, Ouellet P, Provost M, Wong T, Rauch F, Tsimicalis A. Handle with Care: The Development of Best Practice Guidelines to Handle Children with Osteogenesis Imperfecta. McGill Journal of Medicine (MJM). 2019 April 7.
14. Wang YW*, Carnevale F, Ezcurra M, Chougui K, Bilodeau C, Siedlikowski S*, Tsimicalis A. The Moral Experiences of Children with Osteogenesis Imperfecta. McGill Journal of Medicine. 2019 April 7.
15. Tarchala M, Charbonneau M, Aduljabbar FH, Teles AR*, Weber M.
Preeducation Enhances the Success of Manual Training for Orthopedic Surgery Residents. J Surg Educ. 2019 Apr 8. pii: S1931-7204(18)30146-6. doi: 10.1016/j.jsurg.2019.03.005. [Epub ahead of print] PMID: 30975601
16. Teles AR*, O'cay DD*, Bin Shebreen A, Tice A, Saran N, Ouellet JA, Ferland CE.
Evidence of impaired pain modulation in adolescents with idiopathic scoliosis and chronic back pain. Spine J. 2019 Apr;19(4):677-686. doi: 10.1016/j.spinee.2018.10.009. Epub 2018 Oct 19. PMID:30343045
17. Aaron M, Nadeau G, Ouimet-Grennan E, Drouin S, Bertout L, Beaulieu P, St-Onge P, Shalmiev A, Veilleux LN, Rauch F, Petrykey K, Laverdière C, Sinnett D, Alos N, Krajinovic M. Identification of a single nucleotide polymorphism within CDH2 gene associated with bone morbidity in childhood acute lymphoblastic leukemia survivors.
Pharmacogenomics. 2019 Apr 15. doi: 10.2217/pgs-2018-0169. [Epub ahead of print]
PMID: 30983502
18. Birnie KA, Campbell F, Nguyen C, Lalloo C, Tsimicalis A, Matava C, Cafazzo J, Stinson J. iCanCope PostOp: User-Centered Design of a Smartphone-Based App for Self-Management of Postoperative Pain in Children and Adolescents.
JMIR Form Res. 2019 Apr 22;3(2):e12028. doi: 10.2196/12028. PMID: 31008704

19. Tsimicalis A, Stevens B, Ungar WJ, Castro A, Greenberg M, Barr R.
Shifting Priorities for the Survival of My Child: Managing Expenses, Increasing Debt, and Tapping Into Available Resources to Maintain the Financial Stability of the Family.
Cancer Nurs. 2019 Apr 3. doi: 10.1097/NCC.0000000000000698. [Epub ahead of print]
PMID: 30950931
20. Lavoie DCT, Robinson ME, Johnston D, Page M, Konji VN, Rauch F, Ward LM.
The Bone Phenotype and Pain Response to Pamidronate in Tyrosine Kinase Inhibitor-Treated Chronic Myelogenous Leukemia. J Endocr Soc. 2019 Mar 11;3(5):857-864. doi: 10.1210/je.2018-00268. eCollection 2019 May 1.
21. Ferland CE, Leonard G, Davis KD.
Is Enhanced Pain Facilitation And/Or Impairment in the Efficacy of the Endogenous Inhibitory Pain System an Important Contributing Factor in Chronic Pain? Symposia Abstracts, Canadian Journal of Pain, 3:1, A5-A49, DOI: 10.1080/24740527.2019.1599263
22. Ocay DD*, Li M*, Ye DL*, Ouellet JA, Pagé MG, Ferland CE.
Acute postoperative pain trajectories predicted by preoperative psychological and physical functional outcomes in adolescents undergoing spine surgery.
Research Poster Abstracts, Canadian Journal of Pain, 3:1, A73-A189, 2019. DOI: 10.1080/24740527.2019.1599266
23. Li M*, Ocay DD*, Teles AR*, Ingelmo P, Ouellet JA, Pagé G, Ferland CE.
Acute postoperative opioid consumption trajectories and long-term outcomes in paediatric patients after spine surgery. Research Poster Abstracts, Canadian Journal of Pain, 3:1, A73-A189, 2019. DOI: 10.1080/24740527.2019.1599266
24. St-Georges M*, Teles AR*, Ouellet JA, Ferland CE.
The Global Biomechanical and Morphological Assessment: Understanding Back Pain in Adolescent Idiopathic Scoliosis. Research Poster Abstracts, Canadian Journal of Pain, 3:1, A73-A189, 2019. DOI: 10.1080/24740527.2019.1599266
25. Imel EA, Glorieux FH, Whyte MP, Munns CF, Ward LM, Nilsson O, Simmons JH, Padidela R, Namba N, Cheong HI, Pitukcheewanont P, Sochett E, Högler W, Muroya K, Tanaka H, Gottesman GS, Biggin A, Perwad F, Mao M, Chen CY, Skrinar A, San Martin J, Portale AA. Burosumab versus conventional therapy in children with X-linked hypophosphataemia: a randomised, active-controlled, open-label, phase 3 trial. Lancet. 2019 May 16. pii: S0140-6736(19)30654-3. doi: 10.1016/S0140-6736(19)30654-3. [Epub ahead of print] PMID: 31104833
26. Pauyo T. Douleurs non-arthritiques de la hanche : Blessures athlétiques ou prédisposition anatomique? Association d'orthopédie du Québec, L'orthopode, Bulletin d'information de l'association d'orthopédie du Québec, Volume 23, numéro 1, mai 2019
27. Jeong S*, Chougui K, Mercier C, Wong T, Lafrance ME, Gagnon V, Plourde SA, Rauch F, Bilodeau C, Thorstad K, Tsimicalis A.
Development of the Good2Go MyHealth Passport for individuals with Osteogenesis Imperfecta: A knowledge-synthesis study.
Int J Orthop Trauma Nurs 2019;33:27-34. doi: 10.1016/j.ijotn.2018.11.005
PMID: 30910468
28. Teles AR, Jacobs WB, Nicholls F, Thomas K, Swamy G.
Mechanical Complications in Adult Spinal Deformity Surgery: Can the Alignment Explain Everything? In: Global Spine Congress 2019. Toronto – Ontario, Canada. Published in: Global Spine Journal 9 (2S): 263S

29. Teles, A.R., Ouellet, J.A., Weber, M.H., Santaguida, C., Jarzem, P., Reindl, R., Leonard, G. Pain Sensitivity and Modulation in Patients With Spinal Stenosis Selected for Lumbar Fusion. In: Global Spine Congress 2019. Toronto – Ontario, Canada. Published in: Global Spine Journal 9 (2S): 463S
30. Teles, A.R., Saran, N., Bote, S., Ouellet, J.A., Ferland, C.E. Why Do Some Patients Develop Chronic Pain After Surgery for Adolescent Idiopathic Scoliosis? A Longitudinal Study Exploring the Role of Neuroplastic Changes in Pain Processing. In: Global Spine Congress 2019. Toronto – Ontario, Canada. Published in: Global Spine Journal 9 (2S): 463S
31. Li MMJ, Ocaý DD, Teles AR, Ingelmo PM, Ouellet JA, Pagé MG, Ferland CE. Acute postoperative opioid consumption trajectories and long-term outcomes in pediatric patients after spine surgery. Journal of Pain Research, 2019. Volume 12: p. 1673-1684. doi: 10.2147/JPR.S191183
32. Jeong S, Chougui K, Mercier C, Wong T, Lafrance ME, Gagnon V, Plourde SA, Rauch F, Bilodeau C, Thorstad K, Tsimicalis A. Development of the Good2Go MyHealth Passport for individuals with Osteogenesis Imperfecta: A knowledge-synthesis study. Int J Orthop Trauma Nurs. 2019 May;33:27-34. doi: 10.1016/j.ijotn.2018.11.005. Epub 2018 Dec 5. Review. No abstract available. PMID: 30910468
33. Dahan-Oliel N, Hall J, Samargian A, Sawatzky B, van Bosse H. Summary of the 3rd international symposium on arthrogryposis. Am J Med Genet C Semin Med Genet. 2019 May 23. doi: 10.1002/ajmg.c.31705. [Epub ahead of print] PMID: 31120641
34. Sawatzky B, Dahan-Oliel N, Davison AM, Hall J, Van Bosse H, Mortenson WB; Registry Team. Development of an online registry for adults with arthrogryposis multiplex congenita: A protocol paper. Am J Med Genet C Semin Med Genet. 2019 May 17. doi: 10.1002/ajmg.c.31706. [Epub ahead of print] PMID: 31099966
35. Hohenfellner K, Rauch F, Ariceta G, Awan A, Bacchetta J, Bergmann C, Pozza SB, Cassidy N, Deschenes G, Elenberg E, Gahl WA, Greil O, Harms E, Herzig N, Hoppe B, Koepl C, Lewis MA, Levtchenko E, Nesterova G, Santos F, Schlingmann KP, Servais A, Soliman NA, Steidle G, Sweeney C, Treikauskas U, Topaloglu R, Tsygin A, Veys K, Vigier R, Zustin J, Haffner D. Management of bone disease in cystinosis: Statement from an international conference. J Inherit Metab Dis. 2019 Jun 8. doi: 10.1002/jimd.12134. [Epub ahead of print] PMID: 31177550
36. Razaghi M, Vanstone C, Sotunde O, Gharibeh N, Kimmins S, Wei S, McNally D, Rauch F, Jones G, Weiler H. Correction of Low Neonatal Vitamin D Status Using 1000 IU/d of Vitamin D Improved Body Composition (Lean Mass and Fat Mass) Compared to Using the Standard of Care by 6 Months of Age (P11-094-19). Curr Dev Nutr. 2019 Jun 13;3(Suppl 1). pii: nzz048.P11-094-19. doi: 10.1093/cdn/nzz048.P11-094-19. eCollection 2019 Jun. PMID: 31224079
37. Imel EA, Glorieux FH, Whyte MP, Munns CF, Ward LM, Nilsson O, Simmons JH, Padidela R, Namba N, Cheong HI, Pitukcheewanont P, Sochett E, Högler W, Muroya K, Tanaka H, Gottesman GS, Biggin A, Perwad F, Mao M, Chen CY, Skrinar A, San Martin J, Portale AA. Burosumab versus conventional therapy in children with X-linked hypophosphataemia: a randomised, active-controlled, open-label, phase 3 trial. Lancet. 2019 Jun 15;393(10189):2416-2427. doi: 10.1016/S0140-6736(19)30654-3. Epub 2019 May 16. PMID: 31104833

38. Dahan-Oliel N, Cachecho S, Barnes D, Bedard T, Davison AM, Dieterich K, Donohoe M, Fafara A, Hamdy R, Hjartarson HT, S Hoffman N, Kimber E, Komolkin I, Lester R, Pontén E, van Bosse HJP, Hall JG.
International multidisciplinary collaboration toward an annotated definition of arthrogryposis multiplex congenita. Am J Med Genet C Semin Med Genet. 2019 Jul 7. doi: 10.1002/ajmg.c.31721. [Epub ahead of print] PMID: 31282072
39. Boitor M, Gélinas C, Rauch F, Eufemia J, Le May S, Carrier JI, Bilodeau C, Tsimicalis A.
Validation of the Adolescent Pediatric Pain Tool for the Multidimensional Measurement of Pain in Children and Adolescents Diagnosed with Osteogenesis Imperfecta Canadian Journal of Pain, 18 Jul 2019 3:1, 148-156, DOI: 10.1080/24740527.2019.1626705
40. Griesbeck S, Michail E, Rauch F, Ogasawara H, Wang C, Sato Y, Edkins R, Zhang Z, Taki M, Lambert C, Yamaguchi S, Marder TB.
The Effect of Branching on One- and Two-Photon Absorption, Cell Viability and Localization of Cationic Triarylborane Chromophores with Dipolar vs. Octupolar Charge Distributions for Cellular Imaging. Chemistry. 2019 Jul 19. doi: 10.1002/chem.201902461. [Epub ahead of print] PMID: 31322301
41. Ramos MB, Falavigna A, Abduljabbar F, Rabau O, Ferland CE, Weber MH, Ouellet JA, Teles AR*. Assessing publication rate of abstracts presented in spine conferences as a quality benchmark: the example of the Canadian Spine Society Annual Meetings. World Neurosurg. 2019 Jul 26. pii: S1878-8750(19)32052-2. doi: 10.1016/j.wneu.2019.07.146. [Epub ahead of print] PMID: 31356976
42. Cirillo A*, Collins J, Sawatzky B, Hamdy R, Dahan-Oliel N.
Pain among children and adults living with arthrogryposis multiplex congenita: A scoping review. Am J Med Genet C Semin Med Genet. 2019 Jul 26. doi: 10.1002/ajmg.c.31725. [Epub ahead of print] PMID: 31347265
43. Gagnon M*, Caporuscio K*, Veilleux LN, Hamdy R, Dahan-Oliel N.
Muscle and joint function in children living with arthrogryposis multiplex congenita: A scoping review. Am J Med Genet C Semin Med Genet. 2019 Jul 27. doi: 10.1002/ajmg.c.31726. [Epub ahead of print] PMID: 31350946
44. Rodriguez LM, Bickley C, Russo S, Barnes D, Gagnon M*, Hamdy R, Veilleux LN.
Perspectives on gait and motion analysis in the management of youth with arthrogryposis multiplex congenita. Am J Med Genet C Semin Med Genet. 2019 Jul 29. doi: 10.1002/ajmg.c.31728. [Epub ahead of print] No abstract available. PMID:31359604
45. Dahan-Oliel N, van Bosse HJP, Bedard T, Darsaklis VB, Hall JG, Hamdy RC.
Research platform for children with arthrogryposis multiplex congenita: Findings from the pilot registry. Am J Med Genet C Semin Med Genet. 2019 Jul 29. doi: 10.1002/ajmg.c.31724. [Epub ahead of print] PMID: 31359631
46. Robinson ME, Trejo P, Palomo T, Glorieux FH, Rauch F.
Osteogenesis Imperfecta: Skeletal Outcomes After Bisphosphonate Discontinuation at Final Height. J Bone Miner Res. 2019 Jul 29. doi: 10.1002/jbmr.3833. [Epub ahead of print] PMID: 31356699
47. Reznikov N, Dagdeviren D, Tamimi F, Glorieux F, Rauch F, Retrouvey JM.
Cone-Beam Computed Tomography of Osteogenesis Imperfecta Types III and IV: Three-Dimensional Evaluation of Craniofacial Features and Upper Airways. JBMR Plus. 2019 Feb 7;3(6):e10124. doi: 10.1002/jbm4.10124. eCollection 2019 Jun. PMID: 31346560 **not reported in March*

48. Tauer JT, Robinson ME, Rauch F. Osteogenesis Imperfecta: New Perspectives from Clinical and Translational Research. JBMR Plus. 2019 Feb 20;3(8):e10174. doi: 10.1002/jbm4.10174. eCollection 2019 Aug. Review. PMID: 31485550. *not reported in March
49. Insogna KL, Rauch F, Kamenický P, Ito N, Kubota T, Nakamura A, Zhang L, Mealiffe M, San Martin J, Portale AA. Burosumab Improved Histomorphometric Measures of Osteomalacia in Adults with X-Linked Hypophosphatemia: A Phase 3, Single-Arm, International Trial. J Bone Miner Res. 2019 Aug 1. doi: 10.1002/jbmr.3843. [Epub ahead of print] PMID: 31369697
50. Wagner LV, Cherry JS, Sawatzky BJ, Fafara A, Elfassy C, Eriksson M, Montpetit K, Bucci T, Donohoe M. Rehabilitation across the lifespan for individuals with arthrogryposis. Am J Med Genet C Semin Med Genet. 2019 Aug 8. doi: 10.1002/ajmg.c.31729. [Epub ahead of print] PMID: 31397084
51. Robinson ME, AlQuorain H, Murshed M, Rauch F. Mineralized tissues in hypophosphatemic rickets. Pediatr Nephrol. 2019 Aug 8. doi: 10.1007/s00467-019-04290-y. [Epub ahead of print] PMID: 31392510
52. Tauer JT, Rauch F. Novel ActRIIB ligand trap increases muscle mass and improves bone geometry in a mouse model of severe osteogenesis imperfecta. Bone. 2019 Aug 13; 128:115036. doi: 10.1016/j.bone.2019.115036. [Epub ahead of print] PMID: 31419601
53. Lenczyk C, Roy DK, Nitsch J, Radacki K, Rauch F, Dewhurst RD, Bickelhaupt FM, Marder TB, Braunschweig H. Steric Effects Dictate the Formation of Terminal Arylborylene Complexes of Ruthenium from Dihydroboranes. Chemistry. 2019 Aug 21. doi: 10.1002/chem.201902890. [Epub ahead of print] PMID: 31433081
54. He J, Rauch F, Friedrich A, Sieh D, Ribbeck T, Krummenacher I, Braunschweig H, Finze M, Marder TB. N-Heterocyclic Olefins as Electron Donors in Combination with Triarylborane Acceptors: Synthesis, Optical and Electronic Properties of D-π-A Compounds. Chemistry. 2019 Aug 31. doi: 10.1002/chem.201903118. [Epub ahead of print] PMID: 31471986
55. Dahan-Oliel N, Hall JG. (Introduction to Special Issue) Collaborating to advance interdisciplinary care for individuals with arthrogryposis. Am J Med Genet C Semin Med Genet. 2019 Aug 31. doi: 10.1002/ajmg.c.31741. [Epub ahead of print] PMID: 31471949
56. Cachecho S, Elfassy C*, Hamdy R, Rosenbaum P, Dahan-Oliel N. Arthrogryposis multiplex congenita definition: Update using an international consensus-based approach. Am J Med Genet C Semin Med Genet. 2019 Sep;181(3):280-287
57. Hamdy RC, van Bosse H, Altiok H, Abu-Dalu K, Kotlarsky P, Fafara A, Eidelman M. Treatment and outcomes of arthrogryposis in the lower extremity. Am J Med Genet C Semin Med Genet. 2019 Sep;181(3):372-384. doi: 10.1002/ajmg.c.31734. Epub 2019 Sep 3. PMID: 31479584

58. Hohenfellner K, Rauch F, Ariceta G, Awan A, Bacchetta J, Bergmann C, Bechtold S, Cassidy N, Deschenes G, Elenberg E, Gahl WA, Greil O, Harms E, Herzig N, Hoppe B, Koepl C, Lewis MA, Levtchenko E, Nesterova G, Santos F, Schlingmann KP, Servais A, Soliman NA, Steidle G, Sweeney C, Treikuskas U, Topaloglu R, Tsygin A, Veys K, R VV, Zustin J, Haffner D.
Management of bone disease in cystinosis: Statement from an international conference.
J Inherit Metab Dis. 2019 Sep;42(5):1019-1029. doi: 10.1002/jimd.12134. Epub 2019 Aug 5. PMID: 31177550
59. Mak IL, Lavery P, Agellon S, Rauch F, Murshed M, Weiler HA.
Arachidonic acid exacerbates diet-induced obesity and reduces bone mineral content without impacting bone strength in growing male rats.
J Nutr Biochem. 2019 Aug 15;73:108226. doi: 10.1016/j.jnutbio.2019.108226 [Epub ahead of print] PMID: 31520815 **not reported in September*
60. Kruger KM, Caudill A, Rodriguez Celin M, Nagamani SCS, Shapiro JR, Steiner RD, Bober MB, Hart T, Cuthbertson D, Krischer J, Byers PH, Durigova M, Glorieux FH, Rauch F, Sutton VR, Lee B, Rush ET, Smith PA, Harris GF.
Mobility in osteogenesis imperfecta: a multicenter North American study.
Genet Med. 2019 Oct;21(10):2311-2318. doi: 10.1038/s41436-019-0491-4. Epub 2019 Mar 28. PMID: 30918359
61. Champagne M, Olivier P, Glavas P, Cantin MA, Rauch F, Alos N, Campeau PM.
A de novo frameshift FGFR1 mutation extending the protein in an individual with multiple epiphyseal dysplasia and hypogonadotropic hypogonadism without anosmia. Eur J Med Genet. 2019 Oct 9:103784. doi: 0.1016/j.ejmg.2019.103784. [Epub ahead of print] PMID: 31605817
62. Griesbeck S, Michail E, Rauch F, Ogasawara H, Wang C, Sato Y, Edkins RM, Zhang Z, Taki M, Lambert C, Yamaguchi S, Marder TB.
The Effect of Branching on the One- and Two-Photon Absorption, Cell Viability, and Localization of Cationic Triarylborane Chromophores with Dipolar versus Octupolar Charge Distributions for Cellular Imaging.
Chemistry. 2019 Oct 11;25(57):13164-13175. doi: 10.1002/chem.201902461. Epub 2019 Sep 17. PMID: 31322301
63. Iorio-Morin C, Yap R, Dudley RWR, Poulin C, Cantin MA, Benaroch TE, Farmer JP
Selective Dorsal Root Rhizotomy for Spastic Cerebral Palsy: A Longitudinal Case-Control Analysis of Functional Outcome.
Neurosurgery. 2019 Oct 17. pii: nyz422. doi: 10.1093/neuros/nyz422. [Epub ahead of print] PMID: 31620799
64. Lenczyk C, Roy DK, Nitsch J, Radacki K, Rauch F, Dewhurst RD, Bickelhaupt FM, Marder TB, Braunschweig H.
Steric Effects Dictate the Formation of Terminal Arylborylene Complexes of Ruthenium from Dihydroboranes.
Chemistry. 2019 Oct 22;25(59):13566-13571. doi: 10.1002/chem.201902890. Epub 2019 Sep 17. PMID: 31433081
65. Mikolajewicz N, Bishop N, Burghardt AJ, Folkestad L, Hall A, Kozloff KM, Lukey PT, Molloy-Bland M, Morin SN, Offiah AC, Shapiro J, van Rietbergen B, Wager K, Willie BM, Komarova SV, Glorieux FH.
HR-pQCT Measures of Bone Microarchitecture Predict Fracture: Systematic Review and Meta-analysis.
J Bone Miner Res. 2019 Oct 23. doi: 10.1002/jbmr.3901. [Epub ahead of print] PMID: 31643098

66. Rosenzweig DH, Fairag R, Mathieu AP, Li L, Eglin D, D'Este M, Steffen T, Weber MH, Ouellet JA, Haglund L.
Thermoreversible hyaluronan-hydrogel and autologous nucleus pulposus cell delivery regenerates human intervertebral discs in an ex vivo, physiological organ culture model.
Eur Cell Mater. 2018 Oct 25;36:200-217. doi: 10.22203/eCM.v036a15. PMID: 30370912
67. He J, Rauch F, Friedrich A, Sieh D, Ribbeck T, Krummenacher I, Braunschweig H, Finze M, Marder TB.
N-Heterocyclic Olefins as Electron Donors in Combination with Triarylborane Acceptors: Synthesis, Optical and Electronic Properties of D- π -A Compounds.
Chemistry. 2019 Oct 28;25(60):13777-13784. doi: 10.1002/chem.201903118. Epub 2019 Sep 26. PMID: 31471986
68. Insogna KL, Rauch F, Kamenicky P, Ito N, Kubota T, Nakamura A, Zhang L, Mealiffe M, San Martin J, Portale AA.
Burosumab improved histomorphometric measures of osteomalacia in adults with X-linked hypophosphatemia: A phase 3, single-arm, international trial.
J Bone Miner Res 2019;34:2183–2191. doi: 10.1002/jbmr.3843. Epub 2019 Oct 1
PMID: 31369697
69. Tauer JT, Rauch F.
Novel ActRIIB ligand trap increases muscle mass and improves bone geometry in a mouse model of severe osteogenesis imperfecta.
Bone. 2019 Nov;128:115036. doi: 10.1016/j.bone.2019.115036. Epub 2019 Aug 13. PMID: 31419601
70. Rauch F.
Review of: 'Bone dysplasia-an atlas of genetic disorders of skeletal development (fourth edition)' Edited by: Jürgen W Spranger, Paula W Brill, Christine Hall, Gen Nishimura, Andrea Superti-Furga, Sheila Unger. Published by: Oxford University Press, 2018. J Med Genet. 2019 Nov 26. pii: jmedgenet-2019-106634. doi: 10.1136/jmedgenet-2019-106634. [Epub ahead of print] No abstract available.
PMID:31772030
71. Rauch F, Glorieux F, Retrouvey JM, Esposito P, Rush E, Bober M, Eyre D, Gomez D, Hart T, Jain M, Krakow D, Krischer J, Orwoll E, Raggio C, Smith P, Tosi L. Pediatric Outcomes Data Collection Instrument is a Useful Patient-Reported Outcome Measure for Physical Function in Children with Osteogenesis Imperfecta. Genet Med. 2019 Nov 27. doi: 10.1038/s41436-019-0688-6. [Epub ahead of print] PMID: 31772349
72. Papanastasioiu C, Ouellet JA, Lessard L. The Effects of Breast Reduction on Back Pain and Spine Measurements: A Systematic Review. Plast Reconstr Surg Glob Open. 2019 Aug 12;7(8). PMID: 31592372.
73. Akoume MY, Elbakry M, Veillette M, Franco A, Nada D, Labelle H, Mac-Thiong JM, Grimard G, Ouellet J, Parent S, Rivard CH, Lombardi G, Colombini A, Banfl G, Brayda-Bruno M, Gorman KF, Moreau A. A Differential Hypofunctionality of Gai Proteins Occurs in Adolescent Idiopathic Scoliosis and Correlates with the Risk of Disease Progression. SCI Rep. 2019 Jul 11;9(1):10074. PMID: 31296888.
74. Krock E, Millecamps M, Anderson KM, Srivastava A, Reihesen TE, Hari P, Sun YR, Jang SH, Wilcox GL, Belani KG, Beebe DS, Ouellet J, Pinto MR, Kehl LJ, Haglund L, Stone LS. Interleukin-8 as a therapeutic target for chronic low back pain: Upregulation in human cerebrospinal fluid and pre-clinical validation with chronic reparixin in the SPARC-null mouse model. EBioMedicine. 2019 May; 43:487-500. PMID: 31047862.

75. Morcos MW, Hamdy RC, Fassier F, Saran N. Treatment of Femur Neck Fracture in Children with Osteogenesis Imperfecta: Two Case Reports. *JBJS Case Connect*. 2019 Dec;9(4):e0449. doi: 10.2106/JBJS.CC.18.00449. PMID: 31833977
76. Machol K, Hadley TD, Schmidt J, Cuthbertson D, Traboulsi H, Silva RC, Citron C, Khan S, Citron K, Carter E, Brookler K, Shapiro JR, Steiner RD, Byers PH, Glorieux FH, Durigova M, Smith P, Bober MB, Sutton VR, Lee BH; Members of the BBD Consortium, Nagamani SCS, Raggio C. Hearing loss in individuals with osteogenesis imperfecta in North America: Results from a multicenter study. *Am J Med Genet A*. 2019 Dec 26. doi: 10.1002/ajmg.a.61464. [Epub ahead of print] PMID: 31876392
77. Robinson ME, Trejo P, Palomo T, Glorieux FH, Rauch F. Osteogenesis Imperfecta: Skeletal Outcomes After Bisphosphonate Discontinuation at Final Height. *J Bone Miner Res*. 2019 Dec;34(12):2198-2204. doi: 10.1002/jbmr.3833. Epub 2019 Aug 26. PMID: 31356699
78. Cherrière C., Martel M., Fortin S., Raymond M.J., Veilleux L.-N., Lemay M. An adapted dance program for children with Charcot-Marie-Tooth disease: an exploratory study. *Journal of Bodywork & Movement Therapies*.
79. Chougui K., Addab S., Palomo T., Rauch F., Veilleux L.-N., Bernstein M., Tsimicalis A. Health Issues in Adults with Osteogenesis Imperfecta: An Integrative Review of Quantitative Studies and Case Studies. *Am J Med Genet Part A*.
80. Aaron M., Nadeau G., Ouimet-Grennan E., Drouin S., Bertout L., Beaulieu P., St-Onge P., Shalmiev A., Veilleux, L.-N., Rauch F., Petrykey K., Laverdière C., Sinnett D., Alos N., Krajcinovic M. Identification of a single-nucleotide polymorphism within *CDH2* gene associated with bone morbidity in childhood acute lymphoblastic leukemia survivors. *Pharmacogenomics*. 2019 Apr;20(6):409-420. doi: 10.2217/pgs-2018-0169. Epub 2019 Apr 15.
81. Nadeau G., Ouimet-Grennan E., Aaron M., Drouin S., Bertout L., Shalmiev A., Beaulieu P., St-Onge P., Veilleux, L.-N., Rauch F., Petrykey K., Laverdière C., Sinnett D., Alos N., Krajcinovic M. Identification of genetic variants associated with skeletal muscle function deficit in childhood acute lymphoblastic leukemia survivors. *Pharmacogenomics Pers Med*. 2019 Apr 11;12:33-45. doi: 10.2147/PGPM.S192924. eCollection 2019.
82. Gagnon M., Caporuscio K., Veilleux, L.-N., Hamdy R., Dahan-Oliel N. Muscle and joint function in children living with arthrogryposis multiplex congenita: A scoping review. *Am J Med Genet C Semin Med Genet*. 2019 Jul 27. doi: 10.1002/ajmg.c.31726.
83. Rodriguez L.M., Bickley C., Russo S., Barnes D., Gagnon M., Hamdy R., Veilleux L.-N. Perspectives on gait and motion analysis in the management of youth with arthrogryposis multiplex congenita. *Am J Med Genet C Semin Med Genet*. 2019 Jul 29. doi: 10.1002/ajmg.c.31728.
84. Kishnani PS, Rockman-Greenberg C, Rauch F, Tariq Bhatti M, Moseley S, Denker AE, Watsky E, Whyte MP. Five-year efficacy and safety of asfotase alfa therapy for adults and adolescents with hypophosphatasia. *Bone* 2019;121:149-162.
85. Dagdeviren D, Tamimi F, Lee B, Sutton R, Rauch F, Retrouvey JM. Dental and craniofacial characteristics caused by the p.Ser40Leu mutation in IFITM5. *Am J Med Genet* 2019;179A:65-70.

86. Delvin E, Alos N, Rauch F, Marcil V, Morel S, Boisvert M, Lecours M-A, Laverdière C, Sinnott D, Krajinovic M, Dubois J, Drouin S, Lefèbvre G, Samoilenko M, Nyalendo C, Cavalier E, Levy E. Vitamin D nutritional status and bone turnover markers in childhood acute lymphoblastic leukemia survivors: A PETALE study. *Clin Nutr* 2019;38:912-919.
87. Rauch F, Bardai G, Rockman-Greenberg C. ALPL mutations in adults with rheumatologic disorders and low serum alkaline phosphatase activity. *J Bone Miner Metab* 2019;37:893-899.
88. Insogna KL, Rauch F, Kamenicky P, Ito N, Kubota T, Nakamura A, Zhang L, Mealiffe M, San Martin J, Portale AA. Burosumab improved histomorphometric measures of osteomalacia in adults with X-linked hypophosphatemia: A phase 3, single-arm, international trial. *J Bone Miner Res* 2019;34:2183–2191.
89. Addison WN, Pellicelli M, St-Arnaud R. Dephosphorylation of the transcriptional cofactor NACA by the PP1A phosphatase enhances cJUN transcriptional activity and osteoblast differentiation. *J Biol Chem.* 2019;294(20):8184-8196
90. Albiol L, Büttner A, Pflanz D, Mikolajewicz N, Birkhold AI, Kramer I, Kneissel M, Duda GN, Checa S, Willie BM. Effects of Long-Term Sclerostin Deficiency on Trabecular Bone Mass and Adaption to Limb Loading Differ in Male and Female Mice. *Calcif Tissue Int.* 2019 Dec 23.[Epub ahead of print]
91. Antonyan L, Martineau C, St-Arnaud R. The ER protein TLC domain 3B2 and its enzymatic product lactosylceramide enhance chondrocyte maturation. *Connect Tissue Res.* 2019; DOI: 10.1080/03008207.2019.1657425
92. Bains JS, Carter EM, Citron KP, Boskey AL, Shapiro JR, Steiner RD, Smith PA, Bober MB, Hart T, Cuthbertson D, Krischer J, Byers PH, Pepin M, Durigova M, Glorieux FH, Rauch F, Slietka JM, Sutton VR, Lee B; Members of the BBD Consortium, Nagamani SC, Raggio CL. A Multicenter Observational Cohort Study to Evaluate the Effects of Bisphosphonate Exposure on Bone Mineral Density and Other Health Outcomes in Osteogenesis Imperfecta. *JBMR Plus.* 2019;7;3(5):e10118.
93. Borgiani E, Figge C, Kruck B, Willie BM, Duda GN, Checa S. Age-Related Changes in the Mechanical Regulation of Bone Healing Are Explained by Altered Cellular Mechanoreponse. *J Bone Miner Res.* 2019;34(10):1923-1937
94. Bucher CH, Schlundt C, Wulsten D, Sass FA, Wendler S, Ellinghaus A, Thiele T, Seemann R, Willie BM, Volk HD, Duda GN, Schmidt-Bleek K. Experience in the Adaptive Immunity Impacts Bone Homeostasis, Remodeling, and Healing. *Front Immunol.* 2019;10:797
95. Cherif H, Bisson DG, Jarzem P, Weber M, Ouellet JA, Haglund L. Curcumin and o-Vanillin Exhibit Evidence of Senolytic Activity in Human IVD Cells In Vitro. *J Clin Med.* 2019;8(4). pii: E433
96. Dagdeviren D, Tamimi F, Lee B, Sutton R, Rauch F, Retrouvey JM. Dental and craniofacial characteristics caused by the p.Ser40Leu mutation in IFITM5. *Am J Med Genet A.* 2019;179(1):65-70
97. Dahan-Oliel N, van Bosse HJP, Bedard T, Darsaklis VB, Hall JG, Hamdy RC. Research platform for children with arthrogryposis multiplex congenita: Findings from the pilot registry. *Am J Med Genet C Semin Med Genet.* 2019 (3):427-435

98. Fairag R, Rosenzweig DH, Ramirez-Garcialuna JL, Weber MH, Haglund L. Three-Dimensional Printed Polylactic Acid Scaffolds Promote Bone-like Matrix Deposition in Vitro. ACS Appl Mater Interfaces. 2019;11(17):15306-15315
99. Ferland CE, Teles AR, Ingelmo P, Saran N, Marchand S, Ouellet JA. Blood monoamines as potential biomarkers for conditioned pain modulation efficacy: An exploratory study in paediatrics. Eur J Pain. 2019;23(2):327-340
100. Fouillen A, Grenier D, Barbeau J, Baron C, Moffatt P, Nanci A. Selective bacterial degradation of the extracellular matrix attaching the gingiva to the tooth. Eur J Oral Sci. 2019;127(4):313-322
101. Hamdy RC, van Bosse H, Altiok H, Abu-Dalu K, Kotlarsky P, Fafara A, Eidelman M. Treatment and outcomes of arthrogyposis in the lower extremity. Am J Med Genet C Semin Med Genet. 2019 (3):372-384
102. Imel EA, Glorieux FH, Whyte MP, Munns CF, Ward LM, Nilsson O, Simmons JH, Padidela R, Namba N, Cheong HI, Pitukcheewanont P, Sochett E, Höglér W, Muroya K, Tanaka H, Gottesman GS, Biggin A, Perwad F, Mao M, Chen CY, Skrinar A, San Martin J, Portale AA. Burosumab versus conventional therapy in children with X-linked hypophosphataemia: a randomised, active-controlled, open-label, phase 3 trial. Lancet. 2019: S0140-6736(19)30654-3
103. Insogna KL, Rauch F, Kamenický P, Ito N, Kubota T, Nakamura A, Zhang L, Mealiffe M, San Martin J, Portale AA. Burosumab Improved Histomorphometric Measures of Osteomalacia in Adults with X-Linked Hypophosphatemia: A Phase 3, Single-Arm, International Trial. J Bone Miner Res. 2019;34(12):2183-2191
104. Jain M, Tam A, Shapiro JR, Steiner RD, Smith PA, Bober MB, Hart T, Cuthbertson D, Krischer J, Mullins M, Bellur S, Byers PH, Pepin M, Durigova M, Glorieux FH, Rauch F, Lee B, Sutton VR; , Members of the Brittle Bone Disorders Consortium*, Nagamani SCS. Growth characteristics in individuals with osteogenesis imperfecta in North America: results from a multicenter study. Genet Med. 2019;21(2):275-283
105. Kaufmann M, Martineau C, Arabian A, Traynor M, St-Arnaud R, Jones G. Calcioic acid: In vivo detection and quantification of the terminal C24-oxidation product of 25-hydroxyvitamin D₃ and related intermediates in serum of mice treated with 24,25-dihydroxyvitamin D₃. J Steroid Biochem Mol Biol. 2019;188:23-28.
106. Krock E, Millecamps M, Anderson KM, Srivastava A, Reihisen TE, Hari P, Sun YR, Jang SH, Wilcox GL, Belani KG, Beebe DS, Ouellet J, Pinto MR, Kehl LJ, Haglund L, Stone LS. Interleukin-8 as a therapeutic target for chronic low back pain: Upregulation in human cerebrospinal fluid and pre-clinical validation with chronic reparixin in the SPARC-null mouse model. EBioMedicine. 2019 May;43:487-500
107. Kruger KM, Caudill A, Rodriguez Celin M, Nagamani SCS, Shapiro JR, Steiner RD, Bober MB, Hart T, Cuthbertson D, Krischer J, Byers PH, Durigova M, Glorieux FH, Rauch F, Sutton VR, Lee B, Rush ET, Smith PA, Harris GF. Mobility in osteogenesis imperfecta: a multicenter North American study. Genet Med. 2019;21(10):2311-2318.
108. Li MM, Ocaý DD, Teles AR, Ingelmo PM, Ouellet JA, Pagé MG, Ferland CE. Acute postoperative opioid consumption trajectories and long-term outcomes in pediatric patients after spine surgery. J Pain Res. 2019;12:1673-1684

109. Lin Y, Umebayashi M, Abdallah MN, Dong G, Roskies MG, Zhao YF, Murshed M, Zhang Z, Tran SD. Combination of polyetherketoneketone scaffold and human mesenchymal stem cells from temporomandibular joint synovial fluid enhances bone regeneration. Sci Rep. 2019 24;9(1):472
110. Ma J, Siminoski K, Alos N, Halton J, Ho J, Cummings EA, Shenouda N, Matzinger MA, Lentle B, Jaremko JL, Wilson B, Stephure D, Stein R, Sbrocchi AM, Rodd C, Lewis VA, Laverdière C, Israels S, Grant RM, Fernandez CV, Dix DB, Couch R, Cairney E, Barr R, Atkinson S, Abish S, Moher D, Rauch F, Ward LM; Canadian STOPP Consortium. Impact of Vertebral Fractures and Glucocorticoid Exposure on Height Deficits in Children During Treatment of Leukemia. J Clin Endocrinol Metab. 2019;104(2):213-222
111. Ma MS, Najirad M, Taqi D, Retrouvey JM, Tamimi F, Dagdeviren D, Glorieux FH, Lee B, Sutton VR, Rauch F, Esfandiari S. Caries prevalence and experience in individuals with osteogenesis imperfecta: A cross-sectional multicenter study. Spec Care Dentist. 2019;39(2):214-219
112. Mak IL, Lavery P, Agellon S, Rauch F, Murshed M, Weiler HA. Arachidonic acid exacerbates diet-induced obesity and reduces bone mineral content without impacting bone strength in growing male rats. J Nutr Biochem. 2019;73:108226.
113. Manickam G, Moffatt P, Murshed M. Role of SMPD3 during Bone Fracture Healing and Regulation of Its Expression. Mol Cell Biol. 2019;39(4)
114. Martins G, Siedlikowski M, Coelho AKS, Rauch F, Tsimicalis A. Bladder and bowel symptoms experienced by children with osteogenesis imperfecta. J Pediatr (Rio J). 2019;S0021-7557(18)31108-2
115. McKee TJ, Perlman G, Morris M, Komarova SV. Extracellular matrix composition of connective tissues: a systematic review and meta-analysis. Sci Rep. 2019;9(1):10542
116. Mikolajewicz N, Komarova SV. Meta-Analytic Methodology for Basic Research: A Practical Guide. Front Physiol. 2019;10:203.
117. Mikolajewicz N, Sehayek S, Wiseman PW, Komarova SV. Transmission of Mechanical Information by Purinergic Signaling. Biophys J. 2019;116(10):2009-2022
118. Morita M, Siddiqui N, Katsumura S, Rouya C, Larsson O, Nagashima T, Hekmatnejad B, Takahashi A, Kiyonari H, Zang M, St-Arnaud R, Oike Y, Giguère V, Topisirovic I, Okada-Hatakeyama M, Yamamoto T, Sonenberg N. Hepatic posttranscriptional network comprised of CCR4-NOT deadenylase and FGF21 maintains systemic metabolic homeostasis. Proc Natl Acad Sci U S A. 2019 Apr 16;116(16):7973-7981
119. Nguyen-Yamamoto L, Tanaka KI, St-Arnaud R, Goltzman D. Vitamin D-regulated osteocytic sclerostin and BMP2 modulate uremic extraskeletal calcification. JCI Insight. 2019;4(13) pii: 126467.. eCollection 2019 Jul 11
120. Ostapienko BI, Lopez D, Komarova SV. Mathematical modeling of calcium phosphate precipitation in biologically relevant systems: scoping review. Biomech Model Mechanobiol. 2019;18(2):277-289

121. Rauch F, Bardai G, Rockman-Greenberg C. ALPL mutations in adults with rheumatologic disorders and low serum alkaline phosphatase activity. *J Bone Miner Metab.* 2019;37(5):893-899.
122. Retrouvey JM, Taqi D, Tamimi F, Dagdeviren D, Glorieux FH, Lee B, Hazboun R, Krakow D, Sutton VR; Members of the BBD Consortium. Oro-dental and cranio-facial characteristics of osteogenesis imperfecta type V. *Eur J Med Genet.* 2019;62(12):103606.
123. Robinson ME, AlQuorain H, Murshed M, Rauch F. Mineralized tissues in hypophosphatemic rickets. *Pediatr Nephrol.* 2019 doi:10.1007/s00467-019-04290-y
124. Robinson ME, Trejo P, Palomo T, Glorieux FH, Rauch F. Osteogenesis Imperfecta: Skeletal Outcomes After Bisphosphonate Discontinuation at Final Height. *J Bone Miner Res.* 2019;34(12):2198-2204
125. Ryan BA, Alhani K, Sellars KB, Kirby BJ, St-Arnaud R, Kaufmann M, Jones G, Kovacs CS. Mineral Homeostasis in Murine Fetuses Is Sensitive to Maternal Calcitriol but Not to Absence of Fetal Calcitriol. *J Bone Miner Res.* 2019;34(4):669-680.
126. Sadowska A, Hitzl W, Karol A, Jaszczuk P, Cherif H, Haglund L, Hausmann ON, Wuertz-Kozak K. Differential regulation of TRP channel gene and protein expression by intervertebral disc degeneration and back pain. *Sci Rep.* 2019;9(1):18889.
127. Tauer JT, Rauch F. Novel ActRIIB ligand trap increases muscle mass and improves bone geometry in a mouse model of severe osteogenesis imperfecta. *Bone.* 2019;128:115036
128. Teles AR, O'cay DD, Bin Shebreen A, Tice A, Saran N, Ouellet JA, Ferland CE. Evidence of impaired pain modulation in adolescents with idiopathic scoliosis and chronic back pain. *Spine J.* 2019 Apr;19(4):677-686
129. Tosi LL, Floor MK, Dollar CM, Gillies AP; Members of the Brittle Bone Disease Consortium: (Lee B, Nagamani SCS, Rauch F, Glorieux E, Retrouvey JM, Esposito P, Rush E, Bober M, Eyre D, Gomez D, Harris G, Jain M, Krakow D, Orwoll E, Raggio C, Smith P.), Hart TS, Cuthbertson DD, Sutton VR, Krischer JP. Assessing disease experience across the life span for individuals with osteogenesis imperfecta: challenges and opportunities for patient-reported outcomes (PROs) measurement: a pilot study. *Orphanet J Rare Dis.* 2019;14(1):23.
130. Wangler S, Peroglio M, Menzel U, Benneker LM, Haglund L, Sakai D, Alini M, Grad S. Mesenchymal Stem Cell Homing Into Intervertebral Discs Enhances the Tie2-positive Progenitor Cell Population, Prevents Cell Death, and Induces a Proliferative Response. *Spine (Phila Pa 1976).* 2019;44(23):1613-1622.
131. Ziouti F, Ebert R, Rummeler M, Krug M, Müller-Deubert S, Lüdemann M, Jakob F, Willie BM, Jundt F. NOTCH Signaling Is Activated through Mechanical Strain in Human Bone Marrow-Derived Mesenchymal Stromal Cells. *Stem Cells Int.* 2019:5150634. doi: 10.1155/2019/5150634