Markham Stouffville Hospital

Emergency Department Physician Orientation Guide

By Dr Carolyn Arbanas

Last major update: January 2023 *(updates ongoing)*

A digital reference guide for physicians regarding work in the Markham Stouffville Hospital Emergency Department

Sensitive material - please do not share or circulate

This document is subject to change at any time and may not be the most up to date version. Please always check the MSH intranet for the most up to date information.

***For all COVID related information please reference the MSH intranet ***

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Section 1: Key Contacts

Quick Reference List

Markham Stouffville Hospital
381 Church St, Markham, ON L3P 7P3
Phone: 416-242-1000

Locating 0

Emergency Dept
Phone: 905-472-7111
Yellow Zone Fax: 905-472-7599
Orange Zone Fax: 905-472-7026
Green Zone Fax: 905-472-7053

ER Chief – Dr. Andrew
ArcandAArcand@oakvalleyhealth.ca

Business Manager/AFA Lead – Dr. Cristina Popa
cpopa@oakvalleyhealth.ca

ER Physician Scheduling Manager – Dr. Wendy Iseman
wiseman@oakvalleyhealth.ca

ER Billing Agents
Carrie Walsh carrie.msh.edgroups@gmail.com
Kelly Brooks msh.edgroup@gmail.com
Phone: 905-554-6491

Clinical Lead – Julia Johnson
jjohnson@oakvalleyhealth.ca

Professional Practice Leader – Jessica Luo
Email: jluo@oakvalleyhealth.ca
Phone: x6038

Coordinator, Medical Administration –
Trevor Whyte
trwhyte@oakvalleyhealth.ca
Phone: 905-472-7373 x 6965

Director Medical Education –
Dr. Elizabeth Poon
epoon@oakvalleyhealth.ca

ED Physician Clinical Lead –
Dr. Elizabeth Poon
epoon@oakvalleyhealth.ca

ED Physician Project Lead –
Dr Tara Byrne
tbyrne@oakvalleyhealth.ca

ED Physician Simulation Lead –
Dr Corey Boimer / Dr. Justin Morgenstern
cboimer@oakvalleyhealth.ca
jmorgenstern@oakvalleyhealth.ca

ED Physician Education Lead –
Dr. Ryan Aalders
raalders@oakvalleyhealth.ca

Charge Nurse	**1118**
Yellow Flow RN	**1107**
Yellow Zone	**7003**
Green Zone	**6566**
Orange Zone	**6147**
Blue/Red Zone	**7115**
Purple Zone	**7652**
Triage	**6142 / 6891**
Medicine On Call	**1193**
ICU On Call	**1199**
Pediatrics On Call	**1146**
RT	**1184**
Ortho Tech	**1277**
GEM Nurse	**1108**
Crisis	**Page through locating**
Pharmacist	**Page through locating**
Pharmacist After Hours	**416-715-7147**
OT	**416-520-1557**
PT	**416-457-2095**
Registration	**7113**
Main Lab	**7048**
Security	**6650 / 1472 / 1269**
DI Tech	**416-904-7614**
Housekeeping	**25-347**
Porter	**2200**

Hospital CEO – Joann Marr
Chief of Staff – Dr. Caroline Geenan
Chief of Medicine – Dr. Anand Doobay
Chief of Surgery – Dr. Stephen McMahon
Chief of Family Medicine – Dr. Allan Grill
Chief of OBGYN - Dr. Jeff Gilmour
Chief of Pediatrics - Dr. Joe Wiley
Chief of Diagnostic Imaging - Dr. Mitesh Mehta
Chief of Psychiatry - Dr. Rustom Sethna
Chief of Anesthesia - Dr. Paul Lokoff
Chief of Lab Medicine – Dr Golnar Rasty

Section 2: Starting Out

Checklist

Contact Trevor White trwhyte@oakvalleyhealth.ca 905-472-7373 ext. 6965 in the Medical Administration Office for the following:

- Complete the application for hospital privileges.
- Complete record of immunization.
- Obtain Photo ID, computer access, and dictation ID.
- Organize Meditech training – Trevor will email you contact information
- Obtain access to the scrub machine (A scrub machine is located beside the ED elevators on the main floor). Contact Mike Cabral at mcabal@oakvalleyhealth.ca
- Obtain info on purchasing a parking pass.

The Markham Site uses the I-PASS parking system through Precise Parklink for Professional Staff Parking.

There are 2 ways to register for I-PASS:

1. Call the Precise Customer Service line at (416)243-6990, M-F, 9am-5pm EST.
2. Register on-line at https://ipass.preciserd.com/clientlogin/.
3. Set up hospital email address and arrange to meet with IT for smartphone access to email/offsite
   access to Meditech (if necessary).

Independently:

- Obtain your WSIB (Workplace Safety and Insurance Board) billing number. https://wsibregistration.telushealth.com/en/#_ga=2.131948559.144269576.1529067342-1431105327.1529067342.
- Contact Carrie Walsh at the business office for the Emergency Physicians at carrie.msh.edgroup@gmail.com 905-554-6491 to organize all information to get setup in the billing system.
- Speak to Dr. Andrew Arcand to set up a buddy shift with a suitable ER doctor.
- Begin process of Faculty Appointment with U of T. For assistance, please contact Dr. Elizabeth Poon epoon@oakvalleyhealth.ca, Director Medical Education and MD Lead, and/or Lyn Sarceda, Education Coordinator, lsarceda@oakvalleyhealth.ca 905-472-7373 x7006.
- Before your first shift, ensure your contact information is correct on MetricAid.

Department Areas

The Emergency Department is made up of 7 clinical areas – Red, Blue, Orange, Yellow, Green, Offload, and Purple zone. There are two triage areas - Ambulatory Triage and EMS Offload. See **Appendix B** for floor map.

Ambulatory Triage

Patients arriving ambulatory (non-ambulance) proceed to the main triage area, just outside yellow zone. A small room next to triage is available for ECGs and occasional bloodwork.

Respiratory Waiting Room

Across from triage there is a waiting room for patients requiring droplet precaution until they can be placed in an appropriate room. Currently confirmed COVID + patients wait in this room.

EMS Triage

Patients arriving via ambulance are triaged in the offload hallway right outside offload. Whenever possible, they are directed immediately to an available room in the appropriate zone.

EMS Offload

Patients arriving via ambulance are triaged in the offload hallway right outside offload. Whenever possible, they are directed immediately to an available room in the appropriate zone. However, if a room in another more appropriate zone is not available there are four beds that patients can occupy in this zone. Charts for patients in this zone can be found beside the offload nurse in the offload hallway. Sometimes it can be challenging to do full assessments in this area. Whenever possible draw the curtains for patient privacy. Patients may receive all their treatment and be discharged from the offload area at times - or they may be transferred into another zone when necessary. Orders for patients in this area should be left with the offload nurse.

EMS Hallway

This is a temporary area by the ambulance bay with chairs for COVID positive or suspected patients that are ambulatory and waiting for investigations/disposition. Charts for these patients can be found in Purple Zone.

Red Zone

This zone comprises one decontamination room (Red 4), one main resuscitation room (Red 5), three monitored rooms/procedure rooms (Red 6-8), three mental health rooms that are monitored with closed circuit cameras (Red 1-3) and a multipurpose room (MP). Charts for patients to be seen are in the chart racks in the red/blue nursing station. Charts for mental health patients in Red 1, Red 2, or Red 3 may be found at the triangle nursing station in the

offload area or in the Red/Blue nursing station. Mental health patients should be medically cleared by the ED physician before they are seen by the crisis worker and/or psychiatrist. In many cases, no medical work up is required. If there is a concern about an ingestion / intoxication / comorbid condition, investigations can be ordered. If the patient requires monitoring (e.g. ingestions/CIWA/unstable) the doctor should ask the charge nurse for the patient to be moved to Blue Zone or Red 5-8. In general, procedural sedations are done in Red 6-8. There is a cast cart and portable suture cart in Red 8. Orders for patients in this area should be left in the Red Zone orders bin at the Red/Blue nursing station. Any supplies, specialty trays/kits (e.g. central line kit, etc.) that cannot be found in the rooms in Red Zone may be found in the Red Zone JIT room. Temporarily Red 4 and the multipurpose room (MP) can be used for patients with respiratory illnesses +/- COVID suspected patients requiring limited investigations (e.g. CXR or throat swab only). Please talk to the Purple nurses/Charge nurse before placing a patient in this room.

Blue Zone

This zone comprises nine rooms that are all equipped with cardiac monitoring. Many of the patients brought here are medically complex and can be quite ill. Charts for patients to be seen are located in the chart racks in the Red/Blue nursing station. Orders for patients in this zone go in the Blue zone orders bin in the Red/Blue nursing station.

Purple Zone

In general, this area contains COVID + or suspected patients and those on droplet precaution. There are also two negative pressure rooms in this zone for patients with airborne precautions (e.g. require aerosol generating procedures such as intubation/optiflow). Charts for these patients can be found at the Purple nursing station.

Orange Zone

This zone comprises fourteen rooms, most of which have monitored beds. There are also two negative pressure rooms to see patients with airborne precautions (room 28 and 34). When the department is full, additional "hallway" spots are created in this zone. Many of the patients brought here are either non-ambulatory, elderly, or medically complex. The charts for this area can be found in the Orange nursing station either on the chart racks or at the patient's corresponding nurse's desk. The Charge Nurse is stationed at the desk in Orange Zone. The internal medicine consultant can also often be found at the consultant computer in Orange Zone.

Yellow Zone

- The vast majority of patients that we see in a given day come through this zone. There are ten rooms. Typical complaints may include chest pain, abdominal pain, headaches, and vaginal bleeding.

- Patients are called in from the waiting room by the Yellow Flow Nurse and are then placed into an assessment room until they are seen by a physician. After the initial assessment patients are asked to go to one of four large blue reclining chairs. Once sitting in these

chairs, the nurse will obtain blood work, provide medications, and then ask the patient to proceed to either Diagnostic Imaging, or to the Inner Yellow Waiting Room. If all four chairs are being used or if the area is very crowded patients should be directed to the Inner Yellow Waiting Room until they are called by the nurse for their bloodwork, medications, etc.

- If patients only need x-rays, the physician should direct the patient to the x-ray department and ask them to return to the Inner Yellow Waiting Room. There are also treatment chairs (usually 4) available in Room 37 (can be used for people receiving transfusions, waiting to see a consultant, etc.) and occasionally a stretcher is available for very symptomatic yellow patients.

- It is not unusual to transfer a few patients to Orange or Blue Zone if they are deemed too unstable for Yellow Zone. If this needs to occur please tell the Yellow Float Nurse, the Charge Nurse, and write the order on the chart if you feel the patient requires a higher level of monitoring.

- Charts for patients to be seen are in a black box on the Yellow Zone clerk's desk. They are arranged in order of who is next to be seen. The next to be seen is on the front and they are arranged sequentially by time/CTAS/and clinical status by the yellow zone flow nurse. Orders to be entered go in the box located on the same desk. Charts with completed orders or require reassessment will be in the chart rack under the corresponding MRP name.

- There are no designated gynecology beds but rather a gynecology cart and gynecology wedge that can be brought to any room. Please make sure to clean this wedge with a Caviwipe after use and/or if grossly contaminated advise nursing staff so it can be cleaned appropriately by EVS before the next use.

- There is one ENT room with an ENT chair and cart. If you require the NP scope and it is not in the room, please ask the yellow zone clerk for it. There are only two available and one or both may be being cleaned. If you require a headlamp, they are in the closet in the middle of the yellow zone nursing station.

- There are also two suture carts that can be moved to any room as appropriate. Please note Dermabond is in the yellow zone medication room.

- Most extra supplies, trays, etc. can be found in the JIT room in the Yellow Zone. There is one slit lap located in Room 42.

- All necessary ophthalmology medications should be on the cart in that room. The Tonopen is located in the Yellow Zone medication room. The Algar brush is located in the green zone. After using the Algar brush please make sure the tip is placed in a urine container and given to the green nurse so it can be sent for appropriate cleaning.

- See **Appendix D** for more information on Yellow Zone patient criteria.

Green Zone

Typically, Green Zone patients include fractures, laceration, minor head injuries, abscesses, and as well as non-traumatic back and limb pain. There are 4 unmonitored rooms which include an eye room and a casting room. You may need to transfer patients to Yellow Zone if an extensive work-up is required. If this is the case, please notify the green zone nurse such that they can flip the patient to the Yellow Zone. Charts for patients to be seen are in the black chart box on the wall in the Green Zone at the nursing station labelled MD2C. Charts are arranged in order of patients that are next to be seen. Orders should be left in the orders box at the Green Zone nursing station. Please note that patients requiring procedural sedation need to be transferred to Red/Blue Zone. If this is the circumstance, please notify the Green Zone nurse and the Charge Nurse. See **Appendix E** for Green Zone patient criteria.

Shift Structure

Here is the shift grid. You will receive email updates whenever changes are proposed and/or implemented.

Sunday Monday	Clean Up	CALL BACK	Main and Yellow	Yellow Zone Focus	Green (as needed and no later than)
1. 630- 1330	.5		630-830	830-1030	When open (1030)
2. 830-1600	.5		830-1000	1000-1300	1300
3. 1000-1700	.5		1000-1100	1100-1500	1500
4. 1100-1830	.5		1100-1200	1200-1630	1630
5. 1200-2000	.5		1200-1400	1400-1800	1800
6. 1300-2200	.5	1300-1400	1400-1530	1530-1930	1930
7. 1530-2230	.5		1530-1700	1700-2030	2030
8. 1700-0030	.5		1700-1830	1830-2130	2130– closes green
9. 1700-0100	2.5	1700-1800	1800-2000	2000-0100	If needed (rarely)
10. 1900-100	3		**Floats between**	**Yellow/Green**	If needed
11. 2000-200	4.5		2000-2400	2400-0200	
12. 2200-400	**Orange zone 22:30-00:00; Otherwise floats between Yellow/Purple**				
13. 2400-800	2		2400-0800		

All shifts with the exception of the 19:00 float shift begin with coverage of the Acute Zones including Red, Blue, Offload, and Orange Zone. The most recently arrived doctor in this area is designated as the 'Acute Doc' and may be called overhead to a resuscitation.

The 'Acute Doc' is most likely to be shown ECGs of patients from triage to confirm absence or presence of a STEMI (and determine if patient requires ASA, BW, and/or a monitored bed). However, the EKG may be presented to the closest physician to decrease any delay.

Additionally, the 'Acute Doc' takes calls from other hospitals wishing to repatriate patients - i.e. Stroke bypass of patients from the MSH catchment area. (Note: please ensure the Charge Nurse is aware of any transfers coming and if a transfer does not arrive during your shift please handover the information to the most recently arrived doctor (e.g. Acute Doc).

The 'Acute Doc' is also responsible for answering the Red Patch Phone located in the Orange Zone (See Section 6 for more information on this) until 19:00 when the "Float Doctor" is the designated doctor answering the phone. Ultimately the patch phone needs to be answered in a timely fashion so if the phone is ringing and you are the nearest physician, please answer it. Do not wait for someone else to come.

Based on the shift grid you will move to Yellow (+ Purple) Zone and depending on the shift grid you will finish your shift in Green Zone (except for the 18:00, 19:00, 20:00, 22:00, and 24:00 shift). In general, follow the posted grid to avoid times of no physician coverage in each

zone. At times where there are no available patients to be seen, you are encouraged to see patients in other zones after first discussing it with the physician in that zone. This is particularly true for Green Zone where a courtesy phone call/conversation is expected.

Two shifts per day include an hour of "Callbacks"- see Section 6 for details.

The 22:00 shift is mostly responsible for yellow/purple patients. Additionally, they are responsible to see orange patients from 22:30 – midnight. The 22:00 is the second doc on resuscitations from 22:00 to shift completion. The 22:00 shift has a 04:00 departure unless the department is caught up and there is communication with overnight doc. The 22:00 should pick up cases between 02:30-04:00 that enable end of shift departure. The 22:00 will avoid complicated/long stay patients after 01:00. If the night doc is overwhelmed with a case/cases the 22:00 can see 'any patient, anywhere' with appropriate communication. The presence of the 22:00 shift should assist the 18:00,19:00,20:00 shifts not having to stay too far past their end of shift time. If the 17:00 shift needs 'help' closing green they need to ask before/at 23:00pm. They should ask the 19:00 shift first then 18:00 – however this does not absolve the 18:00 and 19:00 from still managing yellow/purple new cases. The 20:00 doc should feel as though they could ask for help from the 22:00 doc at any time with respect to workload sharing.

Please note procedural sedations should be done by second most acute (recent) doc. E.g if it is 1 pm the second most acute doc would be the 11am doc. This decision is made <u>when the decision to do the sedation is made</u> not when the patient is ready for the sedation. The exception is in the evening. The 19:00 is the sedation doc until midnight. After midnight the 22:00 is the sedation doc until their departure when the 24:00 doc takes over.

People in Your Neighbourhood

Facilitating Nurse (FN) aka. 'The Charge Nurse'
They are essentially mission control, assigning monitored rooms to new patients, shifting around nurses when there are surges of patients, doing a myriad of other tasks and generally trying to keep the department running smoothly.

Yellow Zone Flow Nurse
This nurse is dedicated to managing flow in the Yellow Zone. They are responsible for bringing new patients and patients requiring reassessment into rooms in the Yellow Zone.

Nurses
In general, the Red Zone and Blue Zone are staffed exclusively by Registered Nurses except in the case of break coverage. All other zones are staffed by both Registered Practical Nurses and Registered Nurses.

Physician Assistant (PA)
In general, there are two physician assistants working each day. They work primarily in the green, yellow, and purple zone.

Purple Zone Nurse Practitioner (NP)
There is a relatively new NP role in the ED that started February 2022. The NPs works an equitable distribution of 10-hour shifts (day/eve/night) 4 days/week. They are assigned to purple zone (if Purple has no clinical need they can be 'relocated'). Their role includes: flow/order entry /nursing tasks/being a provider for patients. They distribute physician reporting in an equitable fashion e.g. reviewing cases with physicians as per our usual process

Respiratory Therapist (RT)
There is a designated RT for the ER department. During the evening/night they may be in other areas of the hospital assisting in code blues/pinks. If you need an RT you can ask the nurse or clerk to page them or call directly x1184. RTs have a variety of roles including setting up oxygen (nonrebreathers, nasal cannulas, venti-mask, etc.), BIPAP, CPAP, high flow oxygen, managing airways, providing bag-valve-mask ventilation, intubating patients, managing ventilators, administering puffers and nebulized medications, and providing asthma teaching. When performing procedural sedation an RT should always be in the room.

Clerks
Clerical staff are located in the Orange and Yellow zone. Rarely their may be a clerk in purple zone. Their roles include but are not limited to order entry and separating charts after completion by MDs for scanning to health records, faxing attached referrals, and pulling the billing sheets for processing by the billing agents. They may assist you with paging consultants, contacting Criticall, etc. If a clerk in your zone is on break, the clerk in the adjacent zone will assist. The scheduling clerk who books certain outpatient clinic appointments (chest pain clinic, pediatric ambulatory clinic, etc.) has an office in the hallway connecting Blue Zone to Offload.

Geriatric Emergency Medicine Nurse (GEM nurse)
We are fortunate to have several GEM nurses who are crucial in assistance with disposition planning for our geriatric patients. They can often obtain useful collateral information about a patient's home situation, existing home care resources, and will assist with contacting family members. If a geriatric patient arrives in the evening or overnight and has no further medical issue but for whom social issues remain, it is reasonable to hold the patient for morning for "GEM to see" as long as the patient is handed over to another MRP and a CDU form is filled. See **Appendix C** for general criteria for consulting GEM. Please note GEM coverage is 7 days a week from 8:30-16:30. From 8:30-16:30 please ask the ED clerks to page GEM at x1108 and enter referral into Meditech. If it is afterhours, please write 'GEM to follow up' on ED facesheet. Please fill out GEM referral form (See **Appendix C**) and attach it to chart so ED clerks can enter referral into Meditech.

Cast Technicians
They assist physicians in the application of casts and splints. They work mainly in Green Zone but can assist in other zones if they are called such as during a reduction done in Red Zone. You can call them directly at x1740. In general, they work 7 days a week; Saturday-Monday: 10:00-20:00 and Tuesday-Friday: 12:00-20:00.

Security Guards
They provide security in the ER department and the hospital as a whole. They respond to all code whites. When a patient is placed on a Form 1 please ensure that nursing calls security to watch over patient in order to relieve the accompanying police officers as soon as possible. Security guards are also responsible to watch patients that need to stay in the hospital under the Duty of Care Act if they are deemed to not have capacity to make decisions (e.g. intoxicated person in MVC requiring CT scan but instead wanting to leave AMA).

Crisis Workers
Crisis workers provide assessment of those in psychiatric/psychosocial crisis. They will review the case with you and often provide a provisional plan. They will also liaise with the psychiatrist for follow up plans and/or orders if the patient is admitted. In order to page crisis, you must go through locating. The crisis shifts are Monday to Friday 8:00-16:00, 16:00-20:00, and 19:30-7:30. On weekends there are two shifts 8:00 to 20:00 and 19:30-7:30.

X-Ray Technicians
They come to do portable x-rays on patients when ordered. It is important to note that there is one x-ray technician at midnight that does all x-rays/CT scans overnight so imagining may take longer during this time.

Porters
They transport patients to/from diagnostic imaging, as well as, up to the wards.

Environmental Services
They perform general housekeeping activities including cleaning the rooms.

Personal Support Assistants
They make sure the rooms are properly stocked.

Social Work

There are two social workers that work 7 days a week during business hours.

Physiotherapy (PT) /Occupational Therapy (OT)
There is no dedicated PT/OT for the ER. PT/OT usually will come down to see admitted patients when they are consulted. During business hours PT and OT may be able to come down to see a patient in the ER if necessary.

Speech Language Pathologist (SLP)
There is no dedicated SLP for the ER. SLP usually will come down to see admitted patients when they are consulted. During business hours SLP may be able to come down to see a patient in the ER for a swallowing assessment although this is rarely done.

Child Life Specialists
Child life specialists can be called down for admitted pediatric patients. They are rarely called down for non-admitted patients. They provide iPads and videogames for patients in the ER (these are located in the Blue Zone nursing station) as well as toys that can be given to pediatric patients. These toys can be found at the nursing station in Yellow Zone.

Computer Systems

Meditech is the electronic health record used at MSH. In the Emergency Department we use the patient tracker and the electronic chart (consultant reports, DI reports, labs, vital etc.). In general ED documentation is done on the paper ED chart however increasingly more physicians choose to dictate (using the phone dictation system) or type documentation in a physician note. We currently use paper orders that are written directly on the chart and/or orders sheet. If you have issues during your shift with hardware or software, contact the IT Service Desk at servicedeesk@oakvalley.ca or Ext. 6000. If you need help with dictation (including MModal), please email Rita Walsh (Team Lead, Transcription) at rwalsh@oakvalley.ca or 905-472-7373 x 6221. Please see **Appendix F** for instructions on dictation.

When seeing a patient be sure to sign up for them on the tracker by changing the name from "Doctor, Emergency" to your name. This then stops the clock so that we have accurate Physician Initial Assessment (PIA) times. Please also change the status from MD2C to TXIP or ORDERS so that they are removed from the MD2C list for there to be an accurate representation of patients waiting to be seen. When the patient is discharged please immediately change the status to D/C'd, D/C w ORD, or D/C w appt. This is important for statistical tracking.

IMPAX is the Diagnostic Imaging software. You can view images, enter your preliminary report, and view the radiologist's final reports here. It is important to always enter your preliminary report especially in the evening and overnight so that if there is a discrepancy with the final radiology report this cues the radiology to notify the ER and this report can be entered into the daily Callbacks. If you have trouble with IMPAX please email IT Service Desk at servicedeesk@msh.on.ca or Ext. 6000. Try your best to view images in IMPAX instead of in Meditech as IMPAX allows better functionality and allows you to input your provisional diagnosis in the Ibox so that the radiologist is aware of your findings and measures can be taken (callback/phone call) if there are any discrepancies.

Connecting Ontario Clinical Viewer is a web-based portal that provides access to digital health records including dispensed medications (from the digital health drug repository - DHDR), labs, consultant and DI reports. You should automatically have access to Connect Ontario but if you are experiencing issues email IT Service Desk at servicedeesk@msh.on.ca or Ext. 6000.

To use Connecting Ontario from within a patient's chart in Meditech. Click on:

Summary tab → External Data (at the bottom of the screen) → select Connecting Ontario

MModal is a dictation software that uses microphones or personal cellphones with a downloaded app. This is an ongoing IT trial and only a set number of licences currently. If you are interested in using this software, please contact Andrew Arcand aarcand@oakvalleyhealth.ca

Section 3: Scheduling

Shift scheduling

The ED physician is released in two-month blocks. Scheduling is done by Dr. Wendy Iseman (Wiseman@oakvalleyhealth.ca). When prompted by Dr. Wendy Iseman please enter your work preferences into Metricaid so she can create the group schedule. In general, the schedule is made two-three months ahead of time.

Vacations

You may make requests under work preferences on MetricAid such as 'no Tuesdays' (i.e. if you have clinic), or no shifts during a certain week. Once the schedule is released on MetricAid, it may be possible to trade or give away shifts to accommodate vacations/personal commitments but that is left up to the individual physician.

On Call

Each physician is assigned one or two 'on call' shifts per month. On call begins at 06:30h and continues until 06:29h the following day. Be aware of flanking shifts on either side. You may be called in due to physician illness or if open shifts cannot be filled. In general, the 'on-call' physicians are not called for excessive patient volume unless there are exceptional circumstances. If you do get called in, be sure to inform Carrie (Billing Clerk) and Dr. Andrew Arcand / Dr. Cristina Popa via email so that you receive appropriate compensation. You are also eligible for Special Visit Codes when billing, and these can be indicated on your billing sheets. When you are on call you are expected to be reachable via the phone number listed in MetricAid. Therefore, it is pertinent that the number be accurate, and your phone be turned on and audible during the entire on call period.

Section 4: Finances

Getting Set Up

Prior to starting you should receive a welcome email from Carrie Walsh the Office Administrator at Markham Stouffville Emergency. Her email address is carrie.msh.edgroup@gmail.com and office phone is 905-554-6491. Make sure to get setup with all elements required for billing with Carrie Walsh.

Section 5: Education

Faculty Appointment

Staff physicians without a Facility Appointment at the University of Toronto are strongly encouraged to apply for one. This represents a commitment to education, teaching and education sponsorship. For Assistance with an application, please contact:

Dr. Elizabeth Poon, Director Medical Education
epoon@oakvalleyhealth.ca

and/or

Beverly Nutt, Program Assistant, Family Medicine Teaching Unit
bnutt@oakvalleyhealth.ca
905-472-2200 Ext. 227
Fax: 905-472-5662

and/or

Lyn Sarceda, Education Coordinator
lsarceda@oakvalleyhealth.ca
905-472-7373 Ext. 7006

Teaching

Markham Stouffville Hospital has an active educational partnership with the University of Toronto. Medical students and residents have rotations in the ED, and many consulting services have learners as well. Dr. Ryan Aalders coordinates the ED learners in the Emergency Department. If you are assigned a learner, you should receive an email introducing the learner to their learning team. It will also be indicated on MetricAid. You are expected to supervise the learner on shift, provide a written evaluation and let Dr. Ryan Aalders know if there are any concerns (i.e. learner did not show up, or major knowledge gap, etc.). There are online evaluations. The QR code/website to access these are on the wall beside the computers in the ER physician office. They should be filled at the end of each shift with the learner as you give them constructive feedback.

Continuing Medical Education

A variety of CME opportunities are available at the hospital. Regular hospital wide rounds occur which often count for CME credits. There is also opportunity to attend relevant rounds from other departments. Notice of these rounds will be emailed to your MSH email address. We also run Journal Club, offsite, hosted by various ER physicians. There are also regular simulation sessions that occur in the emergency department together with nursing and respiratory therapy organized by Dr. Corey Boimer and Dr. Justin Morgenstern. Simulation dates are emailed to the group and physicians can sign up based on a first come first serve basis. The expectation is that all physicians participate in these equally.

Section 6: While on Shift

Hospital Phones

Physicians are expected to carry a hospital phone on all shifts. This allows for easier communication with nurses, family members and consultants. At present, a set phone extension is assigned to each shift. The phones are located on the desk in the ER physician office. Please verify the correct phone number on the shift grid above the phones at the start of your shift. Please return the phone to the correct charging station at the end of your shift.

Paging

Generally, paging is done via locating, dial 0. You may ask the Orange Zone or Yellow Zone clerk to page a consultant to your phone. Several consultants carry hospital phone, such as medicine (x1193), ICU (x1199), and pediatrics (x1146). It may be faster in these cases to just call yourself as the call will be put through. Be sure to record the time of the consult request on the chart.

Nursing Directives

(aka. medical directives)

Many nursing directives exist for nurses to perform bloodwork, ECGs, obtain diagnostic imaging or provide analgesia or antipyretics. When you submit your appointment/reappointment application you will consent to the medical directives applicable to the ER department.

Order Sets and Pre-Printed Orders Sets (PPOs)

Several order sets exist in the ED to order sets of commonly ordered tests and treatments. Please See **Appendix H**. There are also several Pre-Printed Orders Sets (PPOs) specifically for the ER. These can be found printed in the Blue Zone nursing station. Please have a look at the various PPOs in Blue Zone so you are familiar with what exists.

High Sensitivity Troponin

As of June 2019, MSH has been using the high sensitivity troponin assay. Please see **Appendix I** for troponin FAQs and the troponin algorithm used at MSH.

Prescriptions

A blank prescription is found attached to most charts. Extra blank forms can be found at all nursing stations and in the Green Zone doctor room. Please place a sticker with all the patient demographics (e.g. address, OHIP number, etc.) on the white copy and the sticker with the patient barcode on the yellow copy. Please give the patient the white copy only. The yellow copy will be scanned into the patient chart. If you are prescribing antibiotics for a patient, please clearly write the name of the medication in the diagnosis box on the chart (e.g. UTI {Macrobid}) so that it makes it easier for the call back doctor to recognize if the patient is on antibiotics and determine if the bacteria is sensitive to that specific antibiotic.

Outpatient Clinic Referrals

See **Appendix J** for outpatient clinic referral sheet.

These clinics include:

- plastics
- oncology symptom management clinic
- pediatric ambulatory clinic
- newborn clinic
- pediatric endocrine clinic
- pediatric diabetes clinic
- pediatric elimination clinic
- pediatric lifestyle and nutrition clinic
- early pregnancy clinic
- postpartum clinic
- breastfeeding assessment clinic
- child and adolescent crisis
- crisis team adult
- outpatient mental health
- adult diabetes clinic
- stroke prevention clinic
- chest pain clinic
- infectious disease clinic
- senior's health clinic
- DVT/PE clinic
- post-surgical wellness clinic
- hospital to home clinic
- sleep disorder clinic
- asthma education clinic
- COPD clinic

See **Appendix K** for referral criteria for outpatient clinics.

When filling out this referral form please give the patient the yellow copy of the form, so they can call to book their appointment in 2-3 business days. Some clinics are booked while the patient is in the ER. The patient will receive their appointment day and time before they leave.

Booked by Clerk (Patient gets appointment date/time before they leave)	**Requires Triaging** (Patient called for appointment date/time)
Asthma Breastfeeding Chest Pain DVT Early Pregnancy ECHO, Holter, EEG, PFT, Stress Test Fracture Clinic Newborn Clinic Nuclear Medicine (except Gallium) Pediatric Ambulatory Clinic Persantine Cardiolite Postpartum Clinic Post-Surgical Wellness Clinic Ultrasound	CT COPD Diabetes EMGs GIM clinic Gallium Infectious Disease Clinic MRI Mental Health Clinic Pediatric Respiratory Clinic Plastics Clinic Seniors Health Clinic Sleep Disorder Clinic Stroke Prevention Clinic Video

See **Appendix L** for fracture clinic referral. Referral criteria can be found on the back of the fracture clinic referral page. **The patients will receive their appointment while in the ER. If the booking clerk is unavailable the patient will be called for their appointment.** For acute orthopedic surgical cases (need operation, need admission, or not sure how to manage the case) you should discuss the case with ortho on call. When in doubt, discuss with ortho on-call.

See **Appendix M** for the Breast Health Clinic referral form. **The patients will be called for their appointment**. Typically, the clerical staff will instruct the patients. (*Opinion: consider telling your patients to call if they haven't heard anything within 2-3 business days either way).*

Outpatient Medicine/Surgery Subspecialty Referral/Follow-Up

See **Appendix N** for the Outpatient Medicine Subspecialty follow-up referral form. Please choose the name of the physician that is on call on the day of the referral (the exception being ophthalmology and ENT). When filling out this referral form please give the patient the yellow copy of the form. In some cases, patients will receive a call from a clinic and in other cases **the patients will be expected to call to make their appointment** – typically the

clerical staff will instruct the patients. (*Opinion: consider telling your patients to call if they haven't heard anything within 2-3 business days either way).*

See **Appendix O** for the Outpatient Surgery Subspecialty follow-up referral form. Please choose the name of the physician that is on call **on the day of the referral**. When filling out this referral form please give the patient the yellow copy of the form. In general **patients will be expected to call to make their appointment** (*Opinion: consider telling your patients to call within 2-3 business).*

SPECIAL CASES

Ophthalmology:
Please note when referring patient to Ophthalmology please choose the physician who is **on call the next day**. The patient should be instructed to call the Ophthalmologist's office the next day ~9:00am for an appointment that day. On the weekend instructions for referring to ophthalmology will be posted in yellow and green zone. These is often an Ophthalmologist that provides cross coverage for several hospitals that has a clinic where patients show up with their referral letter and copy of their ER facesheet at a particular time. If you think the patient needs more urgent follow-up, please call the Ophthalmologist on-call. If in doubt call the Ophthalmologist on-call.

ENT:
Please note when referring patient to ENT please choose the physician who is o**n call the next day**. The patient should be instructed to call the ENT doc's office the next day ~9:00am for an appointment that day. On the weekend please choose the ENT physician working on Monday (you may have to call locating to ask who this is) and instruct the patient to call the ENT doctor's office on Monday at ~9:00am for an appointment that day. If you think the patient needs more urgent follow-up, please call the ENT doctor on-call. If in doubt call the ENT doc on-call.

Inpatient Consults

See **Appendix P** for detailed consultation guidelines. To see who is on call check the list posted in all nursing stations, ask the clerk or check the schedule on the Intranet:

Schedules → On Call

In House:

- Internal Medicine: The vast majority of our consultations go to Internal Medicine. They have two dedicated shifts per day (day and evening/night) specifically for ED consults. ICU is in house until 5pm. After 5 pm, ICU is covered by the Internist on call.
- Pediatrics: 24 hour in house call
- Ob/Gyn: 24 hour in house call
- Anesthesia: 24 hour coverage with exceptions

Home call: Services are available by phone 24 h/day unless otherwise indicated on the On Call Schedule, but please exercise judgment when phoning the on-call physician if after hours.

- General Surgery
- Urology
- ENT
- Orthopaedics
- Ophthalmology
- Plastics
- Radiology
- Subspecialty: Nephrology, Neurology, Respirology, Endocrinology, ID, Heme/Onc, Palliative, Rheumatology, Gastroenterology

Criticall: (see below for further details)

- Neurosurgery
- Trauma
- Spine (with exception)
- Vascular

When requesting a consultation, you must speak to the consultant directly. Please also change the status on Meditech from TXIP to CONMED, CONSURG, etc. Transfer of care is not assumed until the consultant has seen your patient. **If you are finished your shift and the consultant has not yet seen your patient, you should inform another ER MD so that they can be MRP should any urgent issues come up. Medico-legally you continue to act as the MRP until the consulting physician assumes care.**

Occasionally, a consultant's opinion is needed even though the patient does not require admission. Examples of consultants reachable by phone include: Hematology, Infectious Diseases and Palliative Care.

"Special Consults"

Code Stroke – This is currently a work in progress. Currently if you suspect an acute stroke that is in the intervention window you should order a stat CT head +/- CTA (if indicated). Then call Mackenzie Health Stroke Team either before or after the scan depending on how much time if left in the stroke window. The Stroke Team at Mackenzie Health will accept patients if they are in the window for lytic therapy or if the patient needs a CTA with perfusion for consideration of endovascular therapy (if approved by the stroke neurologist). *(There is an ongoing conversation between the ED and radiology to proceed with CTA in acute stroke or TIA patients. Erring on the side of caution, call the radiologist to ensure the CTA scan gets completed if indicated. This is especially true after hours/on weekends).*

See **Appendix Q** for the Toronto Code Stroke pathway for some guidance. Caution this is not the current approved pathway for MSH.

Code STEMI - if a STEMI is identified, the physician completes the STEMI algorithm. See **Appendix R**. The clerk notifies EMS and Southlake Cath lab, and the patient is transferred. No MD-MD discussion is required. In borderline cases (i.e. STE in AvR with diffuse ST depression) you may ask to speak to interventional cardiology at Southlake. Generally, during this consultation with the interventional cardiologist, they will require that you will then fax the ECGs and discuss the case.

Trauma - for multi system trauma cases, call the TTL on call via Criticall (see **Appendix S** for criteria). They will advise on the case and may accept in transfer. *(Note: Rule of thumb is that it is better to call early if you think it might be necessary).*

Criticall - Mainly used by MSH for Neurosurgical cases and most often for ICH. Ask the clerk to call Criticall and provide the patient information. When a specialist is available, they will review the case and the imaging (automatically pushed onto the ENITS server), and either approve or refuse transfer. If your patient has a small ICH that you feel is likely non-operative, our internists request that we "clear" patients with neurosurgery prior to requesting a medical admission for observation, repeat CT, etc. (see **Appendix T** for more information)

Hospital for Sick Children (HSC or "Sick Kids") - while we have pediatrics on site, occasionally a child must be transferred out. Examples include certain fractures (call our ortho first), certain surgical cases (intussusception), or critical cases (i.e. intubated child). Ask the clerk to call HSC. It is a closed ED, so an ED physician must accept the consult, rather than asking to speak to peds-subspecialist directly.

Spine Cases
We have two orthopedic surgeons that do spine cases. Dr. McMahon only does lumbar spine and Dr. Koo does cervical, thoracic, and lumbar spine. If neither of these physicians are on call for ortho consider touching base with Dr. Koo prior to calling Criticall if possible. If you cannot get in touch with Dr. Koo or the case is life or limb, ask the ED clerk to page Criticall for you.

Patients Requiring Dialysis
If a patient comes to the ER and only requires dialysis call Mackenzie Health Nephrology (they are our designated dialysis center) or call the center that the patient gets dialysis at regularly to facilitate this. If the patient has a medical issue + requires dialysis, consult medicine and they should facilitate this. MSH now has Sustained low-efficiency daily diafiltration (SLEDD) in the ICU for ICU patients.

Vascular Surgery
The Southlake vascular surgeons provide coverage at MSH. You can find the on-call person on the daily on-call schedule. Since this is new coverage there will be a bit of a lag time until we get 'consult follow up sheets' updated and replace. Please use the information on the on-call list in the meantime. Similar to other specialties cases go to the surgeon 'on call' that day. Please call the 'on call' surgeon for advice on co-managing patients/make decisions/arrange follow ups. The exceptions include any life-threatening cases should still

go through life/limb Criticall. Also, the vascular surgeons cannot operate at MSH or have inpatient privileges so patients will need transport to Southlake.

Obstetrical Patients
Any pregnant patient presenting to the Emergency Department for assessment will be assessed by the ED triage nurse or ED Facilitating Nurse (FN) upon arrival and if necessary, will be registered for further assessment and ED physician involvement. All pregnant patients at 16 weeks or more gestation that present to the ED for assessment, regardless of their condition, will prompt a call from the ED triage nurse or ED FN to the Childbirth & Children's Services (CCS) FN or perinatal RN to determine appropriate location of care and to coordinate resources for appropriate maternal and fetal monitoring and intervention. Pregnant patients less than 16 weeks' gestation will be registered to ED. See **Appendix U** for detailed algorithm.

Pediatric Mental Health Patients
All paediatric patients admitted from the Emergency Department or outpatient clinic for mental health concerns will be managed and treated at Markham Stouffville Hospital (MSH) until the patient is transferred to an accepting child adolescent mental health unit / facility (i.e. Southlake). See **Appendix V** for detailed algorithm.

Handovers

While the best handover is no handover, occasionally imaging or other results are still pending when your shift is over. Additionally, consults are sometimes still pending. It is important to have a clear summary and plan, ideally written on the chart/CDU form (i.e. 55y M with low risk chest pain. Initial troponin and ECG normal, awaiting serial troponin and ECG. Home with cardiology follow up if normal).

Once you assume care, you are fully responsible for the patient. It is important to review the history, all of the investigations and examine the patient to ensure you agree with the existing plan/disposition. Consider doing sign-over at the patient bedside.

Please be aware of "orphan patients". I.e. if you saw a patient in the evening or night who is awaiting GEM to see in the morning, you MUST communicate with an ED MD to ensure there is an MRP in the ED. At times this may result in multiple handovers, but it is still necessary.

NB: The ER Billing group has put together facts and guidelines for billing in handover situations to allow equitable billing. See below:

Handover and Reassessment Codes Schedule of Benefits Facts and Guidelines

Facts:

- You can only bill 2 reassessments per doc per patient.
- You need 2 hours between assessment and any further reassessments.
- For any patient there can only be 3 reassessments in a 24 hour period.
- If an assessment is done on the next calendar day you can bill a full assessment H1_2/3.
- You cannot bill reassessments H1_4 on G codes – you can bill G codes.
- You cannot bill a reassessment after a consult code H0_5.
- There will always be a small subset of patients where our billing codes will not represent their complexity.
- We are finding that the last doctor (often the day doctor) in a triple (overnight) hand over often has 'run out of codes' and does a fair bit of work. We would like to create an agreement so that a doctor at the 'end' of the handover chain that does a fair bit of work and holds the medicolegal burden disposition decision making and D/C is remunerated.

Suggested guidelines:

- The doc leaving and giving handover can bill the CDU H105.
- If you bill a consult and then hand the patient over (requiring reassessments) – don't bill the consult code; if a consult code is billed the later docs could adjust this in order to get paid.
- If G codes are billed, then reassessments are G codes.
- If a patient decompensates requiring G codes – the latter doc can bill G codes and the earlier doc can have their codes adjusted to G codes.
- If you are going to hand over a patient in the late evening that will need many reassessments bill your reassessment before midnight to free up the next calendar day for codes. If you do bill a reassessment after midnight and the next docs run out of codes – they may eliminate or move the reassess back to the calendar day before.
- If you don't see or do anything on an overnight handed over patient – don't bill anything.
- If you do – you can bill a full assessment if next calendar day – that leaves more reassessments for oncoming day physician.
- If the last doctor has run out of codes and feels the need to adjust some codes – consider changing the other codes but having the other docs 'approve the changes'.

Patch Phone

There is a red phone in Orange Zone that EMS use to communicate to the MSH ER which functions as the base hospital for the York Region EMS. The EMS will call for advice or orders for medications/procedures/death pronouncements. Prior to starting you should complete the online training and complete the attestation form. This can be found at https://www.lakeridgehealth.on.ca/en/ourservices/resources/articulate%20presentations/BHP_Patch_orientation/player.html.

The 'Acute Doc' is responsible for answering the red Patch Phone until 19:00 when the 'Float doctor' is the designated doctor answering the phone. **Ultimately the patch phone needs to be answered in a timely fashion so if the phone is ringing and you are the nearest physician please answer it. Do not wait for someone else to come.**

A patch form should be completed for every patch and filed just above the phone. You are not paid for the patch. Payment is provided to the group as a whole and managed by the Finance group.

Call backs

Two shifts each day have a dedicated hour for call backs. These shifts are the 2:30pm shift and the 6:00pm shift. The callback hour is one hour prior to the shift start time.

The callbacks are usually of three types:

1. Radiology call backs.
2. Positive cultures (blood, throat swabs, urine, and NAAT for Chlamydia and Gonorrhea) and serologies (HSV, Mumps, Zika Virus, etc.).
3. Clarification of prescriptions.

The call backs are located in a tray on the desk in Yellow zone between Rooms 40 and 41.

The facesheet of the chart is obtained by the ER unit clerk and attached to the discrepancy (whether imaging or positive culture). The call back physician decides whether any call is warranted. In many cases it is not. Common examples include: a physician indicating there is a small fracture and referred the patient to fracture clinic and radiology says no fracture; the ER physician says there is a pneumonia and the radiologist says x-ray is normal and patient has been started on antibiotic. Use your discretion. But if the reverse is true, for example, where the ER doctor says no pneumonia, but radiologist says there is pneumonia, it would require a call back.

If a call back to ER is required, the call back doctor calls the patient and/or next of kin and tells them what to do (i.e. come back immediately, come back tomorrow, see family doctor,

call in prescription to pharmacy etc. depending on the clinical scenario). This conversation should be documented in Meditech.

Click Document (right column in the patient chart) → New → "ED follow up/call" & Enter a quick note

If the patient is not answering the phone please leave a voicemail advising them to call back 905-472-7111 and Press 2 and speak to the call back doctor. Please document in Meditech and write on the paper advising message was left. Leave the paper sheet back in the callback tray for the next call back doctor to follow up on. Please note some critical call backs need dealing with before the call back shift, these are communicated to the 'acute doc' to deal with immediately.

If a recall is semi urgent and after multiple attempts, we are not able to get through one can consider contacting the family physician and fax the report to them. Finally, if there is no family doctor and multiple attempts are made a letter can be sent to the patient. When a contact number is given for a patient and you do not get a hold of them, it is important to look at the patient's information on Meditech. Often there is a next of kin or work number you can use to contact the patient or leave them a message. For a critically emergent call back, when you can't get hold of the patient or next of kin, and it is the last resort you may have to call the police for assistance.

Our patients may have tests ordered by consultants during their time in the ED. If there are discrepancies or abnormal cultures or illegible prescriptions, please ask the clerk to page the ordering physician directly or speak to the on-call physician for that service.

Diagnostic Imaging Callbacks *New as of May 2021*

All callbacks from DI will be sent as a notification via email to ercallback@msh.on.ca. You can log on through the main page by clicking "Webmail" and do not need to go through Acorn.

User: ercallback
Password: Emergdoc99

At the beginning of your callback shift, it may be more efficient to start with the DI inbox. Most callbacks can be managed by reviewing the chart. However, if you need to access a copy of the face sheet, **which has not yet been scanned to Meditech,** you do need to ask the reg clerk. If for whatever reason you cannot access the face sheet, and the discrepancy is NOT URGENT, you can defer it to the evening callback MD (when almost all face sheets should be scanned). In this instance, mark the callback as "Unread" so that the next MD knows that it needs to be reviewed.

After you have managed the call-back, DO NOT DELETE the email. Move to "Acknowledged" folder.

Documentation of callbacks is via our normal process- ER Callback Note in Meditech.

If you need to contact a patient and are unable to, the process would be: “mark as unread” and document as appropriate in Meditech. The next doc will see this as a new email and attempt to manage it.

If you have any issues with the above, please feel free to reach out to me via email or cell. I’m available at any time to troubleshoot any issues you may have. Again, instructions are posted in the doc office!

Section 7: Radiology

Ordering Images

Always clearly indicate the reason for the exam requested. All orders are written on the ED facesheet. Note that when ordering MRI, you will need to complete a separate requisition (can be located at clerk desk).

Plain film: available 24/7; no restrictions.

Ultrasound: Ultrasound is available until midnight however often the cut-off for new orders is ~22:00 so please check with the clerk around this time prior to entering orders. If an emergent ultrasound is necessary after midnight, please call the radiologist first for approval. NB: if you are highly suspicious of testicular torsion after midnight please call the urologist first rather than waiting for an ultrasound then consulting.

Additional notable exceptions include MSK ultrasound which is in general should be done as an outpatient as they are not emergent. Breast ultrasound ordered in the ER should only be done for r/o abscess. For breast r/o mass/concerning lesion, please send to breast health clinic urgently. See referral sheet in **Appendix M**.

CT: Non contrast CTs are available 24 hours/day (CT head and CT renal.) After ~20:00 you should call the radiologist for approval of any CTs requiring contrast to ensure they can be completed especially if they are CT angiograms (e.g CTA thorax r/o PE and CTA Circle of Willis) as the radiologists prefer to be in house when reading these scans as they require reformatting software. The availability of contrast CTs may also depend on the technologist available.

MRI: will **always** require a phone call. An order is entered into Meditech (by the clerk/RN). The ER physician must fill out the MRI screening form, fully, accurately and sign it. The patient or SDM must fill out the patient portion of the MRI screening form and sign it. *If the form is incomplete in any way, MRI booking will reject the request*.

Interventional Radiology: i.e. blocked/broken/displaced g-tubes, nephrostomy tube, etc. Please enter the order in outpatient orders and the patient will generally be assigned a next weekday slot. The patient will be called with an appointment. There is no interventional radiology on the weekend. If you have someone with an issue on the weekend e.g. a broken percutaneous nephrostomy tube, consider consulting the relevant specialty, in this case urology, to facilitate.

Outpatient Imaging: You may opt to order a test as an outpatient especially if it is in the late evening or overnight and Ultrasound/CT with contrast is not available. In order to do this, simply write the test you want and what you are trying to rule out e.g. "US abdo r/o appendicitis' in the box on the ED Facesheet entitled "Out Pt Testing". Please also check off if they are to come back to the ER after the outpatient test or only if the results are positive. Please also check off the urgency (24 hr, 24-48hrs, or 1 week and add the reason for urgency). Please note that even though this test is ordered as an outpatient you are

responsible for the results of the test. If you have high suspicion that there will be positive results it would be pertinent to have the patient return to the ER after the test.

Radiologist Reporting of Images

On weekdays radiologists read all imaging until 23:00. On weekends xrays are read until 20:00; all other imaging is read until 23:00. If you view an image that has not yet been read by the radiologist, you must enter your initial impression on IMPAX. If it is later deemed discrepant or a missed finding, it will get flagged for follow up. You may page the radiologist on call if you need an urgent read of a completed U/S or CT or an after-hours read of imagining.

Discrepant/Missed Results

See Section 6 on Call backs

Point of Care Ultrasound (POCUS)

We currently have 3 ultrasound machines available for Point of Care use. Please keep them plugged in, with clean probes (cleaned with Caviwipes) at their normal location (red, yellow, green) when not in use. Currently we have no hospital approved way to saving images to the patient's chart (a committee is currently working on this issue - stay tuned), thus as a group we are not billing specific Ultrasound codes. If the machine breaks during a shift email the chief and let the clerk know to send the machine to Biomed for repairs.

Appendices

Appendix A - List of Updates

To be entered as they come up.

Appendix B: Departmental Floor Map

Appendix C: GEM Referral Form

Markham Stouffville Hospital Corporation

G.E.M. REFERRAL TOOL (GRT)

☐ Markham Site ☐ Uxbridge Site

PLEASE COMPLETE FORM FOR PATIENTS 75+ YEARS OF AGE AND GIVE TO CLERK FOR ORDER ENTRY

GEM = Geriatric Emergency Management

Referral Source: ☐ RN ☐ Physician ☐ EMS ☐ Other_____

Name/Signature:_____ Date/Time:_____

Instructions: Please make a check mark ✓ in the appropriate box

1 ☐ History of **COGNITIVE** impairment (poor recall or not oriented)

2 ☐ Difficulty walking/transferring or recent **FALLS**

3 ☐ **ED** use in the **previous month** or hospitalization in the previous **3 months**

4 ☐ **FIVE** or more **MEDICATIONS**

5 **ED staff concerns re:**

- ☐ Nutrition/Weight loss
- ☐ Caregiver Strain
- ☐ Lives alone/no caregiver
- ☐ Pain
- ☐ Depression/Low mood
- ☐ Continence/Elimination
- ☐ Unsteady gait/Falls risk
- ☐ OTHER_____

2 or more risk factors identified: ☐ Referral to GEM **ext.6007/6988 or page 416-448-8663**

☐ Telephone follow up by GEM if patient discharged home

Comments:

M-GEMRT (9/18) (4/17)

Appendix D: Yellow Zone Patient Criteria

Inclusion Criteria

- CTAS 2-5 patients who are ambulatory and able to sit in a chair.
- Appropriate. Green Zone patients who require assessment and interventions not within the scope of that area.

Exclusion Criteria:

- Patients deemed as CTAS Level 1.
- Any patients who require airborne precautions (i.e. shingles in >2 dermatomes, TB, measles, chicken pox-if in doubt, triage nurse will ask the current MD to).
- Any patients who require contact (VRE, MRSA, CPE) precautions – *In cases where there is extreme overcrowding in the main ED, patients may be cared for in the Yellow Zone.*
- Any patients who require droplet precautions – *In cases where there is extreme overcrowding in the main ED, patients will have a masked applied and may be cared for in the Yellow Zone.*
- Any patient whose condition does not permit them to sit in a chair for long periods of time.
- Patients with active Mental Health issues or concerns (patients may return to yellow zone for further treatment/intervention if deemed appropriate by MD once initial assessment has been completed).
- Patients who are hemodynamically compromised (i.e. tachycardia with hypotension, Oxygen saturation <90%, tachypnea).
- Patients presenting with chest pain suspected to be of cardiac origin (abnormal ECG – e.g. ST elevation, ST depression, new T wave inversion or New Left Bundle Branch lock) with/without significant past cardiac history and require cardiac monitoring.
- Patients C-Collared.
- Patients with expected prolonged length of stay.
- Patients experiencing allergic reactions.
- Non-ambulatory patients requiring 2+ assistance to transfer (or does not require RN for toileting).
- Consulted patients (or patients with an extended WTBS consult time).
- Challenging/complex patients and/or families (i.e. disruptive or litigious).
- Patients requiring or using home oxygen.
- Patients presenting with seizure-like symptoms.
- Patients presenting or highly suspected of having withdrawal symptoms.
- Fevers in individuals less than 3 months old.
- Direct consults from the community (?).

Gridlock: Clinical Decision Unit (CDU) Stretcher in Yellow Zone:

When the Emergency Department is in a Gridlock Phase 2 or 3 status, the attending physician will have a discussion with the Facilitating Nurse (FN) and Clinical Manager (if available) to determine the appropriateness of using a Yellow Zone stretcher for a CDU patient. The criteria for an appropriate CDU patient for Yellow Zone include:

1. Patient has a high probability of being discharged from CDU.

2. Patient is hemodynamically stable and has minimal to no co-morbidities.

3. Patients in CDU status greater than 4 hours requiring minimal nursing care.

Examples of CDU patient conditions that can be kept in Yellow Zone may include, but not limited to, the following:

- Asthma
- Allergic Reactions
- Cellulitis
- Deep Vein Thrombosis
- Blood Transfusions (Stable)
- Management of Obstetrical Bleeding
- Minor Head Injuries
- Pulmonary Embolism
- Pyelonephritis
- Renal Colic
- Vomiting and/or dehydration

Procedure(s):

1. Triage Registered Nurse (RN) will complete the triage assessment and assign a CTAS level.

2. At the end of the assessment, the Triage RN will determine if the patient is appropriate for Yellow Zone and indicate it on the Reception Screen in EDM (Emergency Department Management) modules.

3. Patient will be directed to the waiting room by triage nurse and wait to be called by the registration clerk to complete the registration process.

4. Based on the patient's presentation, the patient will be appropriately undressed and placed on stretcher or exam table for MD exam (e.g. abdominal pain, back pain/injury, vaginal bleed). The nurse will change the status of the patient on the tracker to "MD2C." If the nurse determines that the patient needs to be seen sooner by the physician based on assessment, the nurse will change the status to "URTBS" and verbally communicate with a physician to inform them of the urgency. The ED Minor Assessment and/or focused assessments are to be completed including the initiation of medical directives. *If the patient is seen by the physician prior to the nurse, the nurse will document that the "**patient was seen by physician prior to nurse**" as a focus note within the ED Reassess-Vital Signs-Focus Note Screen in EDM.*

5. Once an initial assessment is completed by the nurse and/or physician, the patient will be asked to sit back in the Yellow Zone waiting room.

6. If treatments are ordered, patients may be placed onto a Burka chair for the initiation of those treatments or return to YZ waiting room.

7. Once tests results are available and treatments are complete (including updated/recent set of vital signs), the Yellow Zone flow nurse will change the status of the patient to "MDRA" to indicate to the physician that the patient is ready for reassessment.

8. The MD reassesses patient and writes new orders. If discharge occurs, the MD or nurse will provide the patient with discharge instructions. The nurse will document disposition using the ED Discharge screen.

If the patient acuity increases or consult/admission is required, the Yellow Zone flow nurse will move the patient(s) to the most appropriate treatment area in consultation with the Facilitating Nurse (FN).

For patients who are assessed in Green Zone, deemed inappropriate and transferred to Yellow Zone for follow up assessment and treatment(s).

The Yellow Zone flow nurse will:

1. Accept patient via a verbal report from Green Zone nurse or physician.

2. Ensure patient is placed in most appropriate queue based on CTAS level and triage time.

Appendix E: Green Zone Patient Criteria

Green Zone is designed to assess minor medical emergencies that require a limited work up and a relatively short length of stay (less than 3-4 hours). All patients will be assessed by a triage nurse and assigned a CTAS level. All patients will be seen in green zone except those who meet the exclusion criteria below. NOTE: CTAS 2-5 patients will be seen based on triaged time.

Call-backs:

- Some patients presenting after a 'next day' image or having been called back for results can be seen in GZ – please liaise with attending physician if needed.
- Patients should be triaged and assigned as per usual process with consideration of ongoing symptoms, and nature of imaging report.
- Call-backs for positive blood cultures should be excluded from green zone.
- Ophthalmology.
- All ophthalmology cases including visual disturbances can be seen in Green Zone.
- If a patient has painless complete visual loss (consistent with a possible stroke) or diplopia (neurologic cause for visual symptoms) these should be excluded from GZ.
- Chest Pain.
- Patients with minor chest wall injury or high likelihood musculoskeletal CP (costochondritis, pain associated with viral respiratory illness/cough, minor MVC) CAN be seen in GZ with no known cardiac history/cardiac features.
- Excluded: all pleuritic chest pain, chest pain with any index of cardiac involvement/risk.

Swollen limbs:

- Swollen limbs due to injury can be seen in Green Zone.
- Isolated lower limb swelling (r/o DVT) with no other systems involved can be seen in GZ.
- Bilateral leg swelling as primary complaint would be EXCLUDED from green zone.

Back pain:

- Ambulatory musculoskeletal back pain in patients < 65 with no red flags and not likely to required IV opioids can be seen in GZ.
- Elderly patients, non-ambulatory, red flags and those likely to require iv opioid are excluded from GZ.

Exclusion Criteria

CTAS:

- All CTAS 1 patients.

Isolation:

- Airborne isolation.
- Droplet precautions with fever and/or abnormal vital signs. Note: that fever alone does not prevent patient from being seeing in Green Zone. For example, fever with either cough & amp; cold symptoms or ear infections are suitable for green zone.
- Contact precautions – positive history of MRSA/VRE/CPE or diarrhea.
- Fever in a chemotherapy patient.

Infants:

- Less than 1 month of age.
- Infants less than six months of age with a history of fever > 37.9^0.
- Infants less than six months of age with suspected dehydration.

Active Mental Health Patients

Vital Signs:

- Oxygen saturation below 90% in adults and below 95% for paediatric patients.
- Tachycardia with hypo/hypertension.
- Signs of acute distress.

Vaginal Bleeding:

- With or without known pregnancy.

Presyncopal/ Syncopal Patients:

- Risk of violence.
- Most patients with moderate to high risk of violence should be excluded, however if patients otherwise meet criteria and security can assist with safety, a small percentage of these patients could be seen in Green zone.

Mechanism of Injury:

- Any high-risk mechanism of injury such as: MVC – Ejection from a vehicle, rollover, extrication time greater than 20 minutes, significant intrusion into passenger's space, death in the same passenger compartment, impact at greater than 40km/hr (unrestrained) or impact at greater than 60 km/hr (restrained).

Fall:

- Greater than 18 feet (6m) or onto the head from greater than 3 feet (1m).

Pedestrians:

- Run over or struck by a vehicle at greater than 10 km/hr.

Assault:

- Injury with a blunt object other than a fist or feet with significant injuries that may compromise respiratory and/or cardiac function which may include hemodynamic instability.

Non-Ambulatory Patients with No Prospect of Ambulation Post Treatment:

- This may include, but not limited to, patients from long term care facilities who are unable to ambulate due to an acute illness and/or impairment that is limiting their ability to ambulate or function on a daily basis.
- Exception: individuals presenting with and being treated for lower limb injuries.

Cognitively Impaired:

- Individuals with or without an escort (i.e. acute history of delirium, dementia, confusion, lethargy, etc.) with an unknown cause.
- Individual presenting with a minor head injury on anti-coagulants.
- Individuals with GCS less than 15.

Miscellaneous:

- Acute Abdominal Pain.
- Active Seizures or Post Ictal.
- Complete Digit Amputation.
- Hypothermia.
- Urinary Retention – inability to void.
- Constipation in adults.
- Patients requiring intravenous (IV) opioids.
- Other conditions that may not be suitable for the clinic at the discretion of the physician and/or nurse.

Direct Consults:

- Any patient (presenting to the emergency department) awaiting direct consultation.

NOTE: At any point in time, based on a collaborative and discretionary clinical decision between the green zone nurse and attending physician/nurse practitioner/physician assistant, any patient may be deemed suitable and seen in FT green zone where it is felt that the appropriate clinical care can be delivered in that environment.

Appendix F: Guideline to Phone Dictation

Markham Stouffville Hospital
Uxbridge Cottage Hospital
TELEPHONE DICTATION INSTRUCTIONS

NAME _____

ID# _____

1. From inside the facility dial extension 7600
2. From outside the facility enter: 1.844.666.3258
3. Enter user ID followed by the pound (#) sign
4. Enter the work type number followed by the pound (#) sign.
   See reverse for work type numbers.
5. Enter patient ID# followed by the pound (#) sign
6. Press 2 to begin dictation
7. Press 5 to complete report and continue dictating
8. Press 9 to complete report and disconnect.

Dictation Controls

1 Listen	7 Fast Forward
2 Record	8 Go to Start
3 Short Rewind	9 Disconnect (to end dictation)
4 Pause	
5 Begin next report	
6 Go to End of Report	
#9 Prioritize current report	

Any questions, please call
Rita Walsh at 905-472-7373 x 6221

Work Type Number
Portal Notes

Markham

1	MSH Operative Note
2	MSH Consultation
3	MSH Final Note/Discharge Note
4	MSH Outpatient note
5	MSH Admission Note
6	MSH Transfer Note
7	MSH and UX Diagnostic Imaging (downtime)
8	MSH Infectious Disease Clinic
15	MSH Expiry Note
16	MSH COPD Clinic
17	MSH Sleep Disorders Clinic
18	MSH Correspondence/Letter
19	MSH Chest Pain Clinic (downtime)
21	MSH Stroke Prevention Clinic (downtime)
22	MSH Community Medicine/H2H Clinic
77	MSH Breast Clinic Consultation
78	MSH Breast Clinic Follow-up

Uxbridge

30	UXB Admission Note
32	UXB Consultation Note
33	UXB Correspondence/Letter
35	UXB Expiry Note
36	UXB Final note/Discharge Note
37	UXB Operative Note
38	UXB Outpatient Department Note

Work Type Number
Non-Portal Notes

Markham

50	MSH Non-Portal Consultation Note
51	MSH Non-Portal Progress Note
52	MSH Non-Portal Mental Health Admission Note
53	MSH Non-Portal Mental Health Final/Discharge Note
54	MSH Non-Portal Mental Health Expiry Note
55	MSH Non-Portal Mental Health Consultation Note
56	MSH Non-Portal Mental Health Outpatient Note

Uxbridge

39	Non-Portal Consultation Note
40	Non-Portal Progress Note
41	UXB Non-Portal Mental Health Admission Note
42	UXB Non-Portal Mental Health Consultation Note
43	UXB Non-Portal Mental Health Final/Discharge Note
44	UXB Non-Portal Mental Health Expiry Note
45	UXB Non-Portal Mental Health Outpatient Note

Appendix G: Welcome from Carrie, Kelly & Cathy in ER Business Office

We want to take this opportunity to say hello and provide you with information explaining what we do and hopefully answer some questions you may have. Please feel free to call or email the office with any questions or concerns. My email address is carrie.msh.edgroup@gmail.com (Carrie Walsh) and office phone is 905-554-6491, fax number is 905-554-6492. The office is located at Suite 205-377 Church St. Markham, ON – Medical Office Building next to hospital (with Dales Pharmacy on main floor).

Introductions: My name is Carrie Walsh, Office Administrator. Kelly Brooks and Cathy Tercer are our part time Admin Assistants.

How the office works: Basically, we have accounts receivable (funds coming in- OHIP, WSIB, 3rd party, AFA, Blue Cross, insurance, etc.) and payables (funds going out- payments flowed through to ER physicians and office expenses). Please see "Nuts and Bolts" below for details...

How does this happen: All billing for patient services in the ER, acute floor calls and Stress Lab critical care are billed/submitted by us. There are two parts to calculating your monthly payment.

OHIP accepts claims by their formula with a cut off of approximately the 24th of each month. Payment of approved claims (Remittance Advice) is uploaded generally the 5th of the following month and we prepare to flow through your portion from OHIP and all other monies received within the last payment cycle to you the provider.

The RA figures are sent to Dr. Popa and she calculates the AFA amount representing the previous month of shifts and premiums based on Medevision. It is important to note that Dr. Popa works within a calendar month to prepare her figures and I work within the confines of an OHIP cycle.

Dr. Popa provides me with the AFA calculations, and I then add them to the flow through amounts. A file "transfer of payment" is prepared and data is sent to Telpay, a bank transfer of funds occurs around the 13-14th of the month for which you will receive payment directly to your account the following evening. A summary of your payment details will be emailed to you within a day.

Nuts and Bolts: We are processing and submitting your claims with a very quick turnaround, in most cases 1 to 3 days (for weekend billings). Considering the amount of billing and transient patient use of the ER, there will always be Health Card issues, identity problems or patients from out of country. There will usually be coding from your ER sheets that require clarification and will be returned to you if needed. Following input of your claims from your shift, a summary is produced, sometimes there may be a few patients that may not appear right away. We are simply working on those issues as "loose problems" and will bill for those patients as issues are resolved.

FAQ's

- All ER billing including WSIB forms must be submitted with your ER billing sheets for processing in this office. We have group claim numbers for WSIB and Blue Cross (IFHP).
- WSIB forms need to be completed when the patient is in the ER and a copy of the second page is given to the patient for their employer. The originals come to us for processing and faxing to WSIB. We are here to assist pts should they need a copy of page 2 or to provide to their employer.
- All insurance forms do not need to be filled out when you are on your shift. Please inform the patient that the Emergency Physicians office will contact them regarding the form. Please send the blank form to us, unless you have time to complete. We take a copy, inform the patient of the fee (many patients and employers will no longer need the form) and I will return it to you for completion when necessary. We advise the patient this could take up to 2 weeks.
- Patients can contact Medical Records or their family physician for a copy of the ER report if they require in the interim.
- Claims for off service "codes" and call in fees/ assessments are billed under our Fee for Service Group (1389). Any information you can give me will be helpful (1st patient seen, etc.) and I can code these appropriately.
- When billing Trauma Fees please indicate this on the ER record the ISS number. Presently we must flag trauma premiums when submitting the claim and OHIP requires that the ISS be part of the ER record for auditing purposes.
- Out of Province patients, with the exception of Quebec, are billed through OHIP per "The Canada Health Act". This shows up on your monthly pay summary as "Reciprocal payment".
- Patients from Quebec are invoiced at OMA rates and can seek reimbursement from Quebec Health or their Private Insurance. Quebec patients should be given an information sheet at registration indicating the process for Physician payment as the hospital itself will accept Quebec Health payment directly. As there is no reciprocal agreement with Quebec for Physicians, we bill them directly at OMA rates. If you are aware the patient is coming from Quebec, and you feel comfortable asking if they received the information sheet from Registration, this is helpful as Registration has been asked to provide this information, but may, from time to time miss this.
- Out of Country Patients including International Students are billed a flat rate of $175.00 or $300.00/day based on CTAS coding. In some cases, this fee is collected along with the Hospital fee and reimbursed to the Group Account for flow through to you. This is part of your "Direct" flow through payment.
- Canadian patients who cannot produce a valid Health Card are invoiced $175.00 or $300.00 based on triage code.
- When a patient is registered twice or more in the same day, OHIP will not pay for multiple full assessments. Following the first visit, physicians can choose to code as reassessment and if full assessment is billed, we need to flag the claim and send the ER records to OHIP for consideration. The same applies when billing critical care and another physician billing

an assessment. Special consideration will be required, or computer will automatically deny the billing.

- Please do not hold back your billing. We tick back your ER billing sheets from the ER day sheet and follow up on what is missing. Should billing be returned to you for clarification please return that to our mailbox in the ER Physician's Office ASAP. OHIP only allows 6 months from date of service to accept claims.
- When billing anaesthesia codes "C" suffix to procedures please provide us with time units over base. Base is typically 6 units. Each 2 units thereafter is equal to 15 minutes or the greater of.
- Do not bill for age premiums. OHIP will pay this premium automatically through the FFS group.
- Please keep me informed of any changes in email or banking.
- PLEASE CONTACT ME IF YOU HAVE ANY QUESTIONS OR CONCERNS. WE LIKE TO HEAR FROM YOU....

SUMMARY OF MONTHLY CYCLE:

- Each morning we pick up your billing from the ER and check the "Carrie/Kelly" box in the Emergency Physician room (bottom box lower left side of mailboxes)
- We sort the billing. Most can be billed that day, but some are returned to you for clarification or may have missing patient information or 3rd party claims.
- We process your "loose billing" placed in our mailbox and any other forms, requests, etc.
- We follow up on lost billing every 2nd week and send that to you for coding
- We receive payments from Blue Cross (Refugees and Military), WSIB for Form 8's, Direct payments from Finance, Insurers and Patients. Payments are reconciled and complied for flow through on your monthly cheque.
- We submit to OHIP daily. Investigate all claim errors (expired OHIP, version code issues, etc) and re-bill the claims.
- We do not invoice Insurance Companies directly. Patients are invoiced and it is up to them to seek reimbursement. We follow up unpaid invoices with a 2nd notice and then if necessary, refer outstanding receivables to a collection agency.
- Following every shift, you will receive a summary of claims billed.
- OHIP typically accepts "approved billing" up to the 24th or 25th of the month. Shifts worked after will appear on the next RA.
- During the week of the 5th to the 15th we reconcile the OHIP RA, compiling your flow through receivables and work with Dr. Popa to complete the AFA portion of payments. Following through with QuickBooks we prepare your payments and send the file to "Tel-pay" which is a service that facilitates direct payments to physician's bank accounts. Payments are deposited one day following the file transfer and usually arrive to your account in the evening.
- RA exceptions (unpaid claims) are investigated within the month. We follow up on flags, billing inquires with OHIP and any other issues required.
- Summaries showing a breakdown of your payment are emailed to you within a day of payment.

Appendix H: ER Order Sets

ED Routine / Low Abdo Pain	CBC Electrolytes Creatinine Urea Glucose - Random
ED Routine / Low Abdo Pain Female 13-50	CBC Electrolytes Creatinine Urea Glucose – Random Serum BhCG
High Abdo Pain	CBC Electrolytes Creatinine Urea Glucose – Random Bilirubin – Total ALT ALP Lipase
High Abdo Pain Female 13-50	CBC Electrolytes Creatinine Urea Glucose – Random Bilirubin – Total ALT ALP Lipase Serum BhCG
ED Chest Pain (CPP)	CBC Electrolytes Creatinine Urea Glucose – Random Troponin
ED Vaginal Bleeding	CBC Serum BhCG Group & Screen
ED Sepsis	CBC Electrolytes Creatinine Urea Glucose – Random Bilirubin – Total ALT

	ALP Lipase INR Blood Culture Blood Gases - Venous
ED Drug Toxicology	CBC Electrolytes Creatinine Urea Glucose – Random Bilirubin – Total ALT ALP Lipase LD – (LDH) Salicylate Level Alcohol- Ethanol Acetaminophen Level
ED Trauma Patient	CBC Electrolytes Creatinine Urea Glucose – Random INR PTT Group & Screen Lipase Salicylate Level Alcohol- Ethanol Acetaminophen Level Serum BhCG
ED DVT/ Pulmonary Embolism	CBC Electrolytes Creatinine Urea Glucose – Random INR PTT D-Dimer LD – (LDH) Bilirubin ALP
ED Shock	CBC Electrolytes Creatinine Urea Glucose – Random INR

	PTT
ED Urine Pediatric	Urine Culture Urinalysis – Routine & Micro
ED Stroke	CBC Electrolytes Creatinine Urea Glucose – Random INR PTT ECG
ED Unconscious Patient	CBC Electrolytes Creatinine Urea Glucose – Random INR PTT Bilirubin – Total ALT ALP Lipase LD – (LDH) Salicylate Level Alcohol- Ethanol Acetaminophen Level

Appendix I: High Sensitivity Troponin

Markham Stouffville Hospital (Markham and Uxbridge sites)– High Sensitivity Troponin

Frequently Asked Questions (FAQ) - June 2019

1. What is the difference between the Troponin I assay and the new high sensitivity troponin I assay?

The high sensitivity troponin I assay has been formulated to provide significantly better precision around the 99th percentile, and can now detect the majority of the low concentrations found in healthy individuals. The improved precision will allow for better clinical decision making around the 99th percentile and when comparing serial troponin measurements. Furthermore, the antibodies in the high sensitivity assay have been re-designed to be significantly less affected by analytical interferences (heterophile antibodies, HAMA, biotin, hemolysis etc.) that can cause false positive or false negative results. Overall, the new assay will provide more consistent and accurate results and improve patient care.

2. How are the assay units changing for high sensitivity troponin?

International guidelines recommend high sensitivity troponin to be reported as a whole number in **ng/L** units. The old troponin assay (prior to July 2019) reports results in **ug/L**, which are 1000x different. A value of 0.030 ug/L on the old troponin assay, is equal to 30 ng/L on the high sensitivity troponin assay.

3. How will the 99th percentile cut-off change?

The 99th percentile cut-off is 0.030 ug/L (30 ng/L) on the old troponin assay, but will change to 18 ng/L on the high sensitivity troponin assay. The updated clinical algorithm will include this change.

4. If the baseline level is < 18 ng/L or > 90 ng/L, do we still need to repeat the test after 2-3 hrs and check the delta change value for all patients?

Please follow the AMI algorithm developed for MSH. There are 3 situations where you don't need to repeat the troponin 2-3 hrs from a previous collection:

a) If troponin < 2 ng/L and there is a reliable story of chest pain onset >3 hrs, then only the baseline troponin is needed (NPV = 99.9%).
b) If troponin <= 18 ng/L and there is a reliable story of chest pain onset >3 hrs, then only the baseline troponin is needed (NPV = 99%).
c) If troponin > 90 ng/L and there is an appropriate clinical presentation for AMI, then only the baseline troponin is required (PPV = 70%). If need be, a repeat troponin in this situation will provide additional diagnostic value if the value is >90 ng/L and the delta change is >20% (PPV = 67-94%).

5. If troponin is 18-90 ng/L, do we still need to repeat and check the delta change value or can we talk to medicine and start treatment or admission?

You still need to repeat the troponin 2-3 hrs later. Values between 18-90 ng/L can be related to chronic disease and not an AMI. You may be admitting patients or starting treatment inappropriately. Repeat the troponin 2-3 hrs later and see if there is a rise or fall in the troponin (greater than the delta change of 11 ng/L), which is specific for AMI and indicated in the 4th universal definition of myocardial infarction.

6. Why do we use an absolute delta change value (11 ng/L) instead of a percent change (20%) for hsTnI values <90 ng/L?

It is well documented in the literature that absolute delta changes provide better diagnostic accuracy over percent changes.

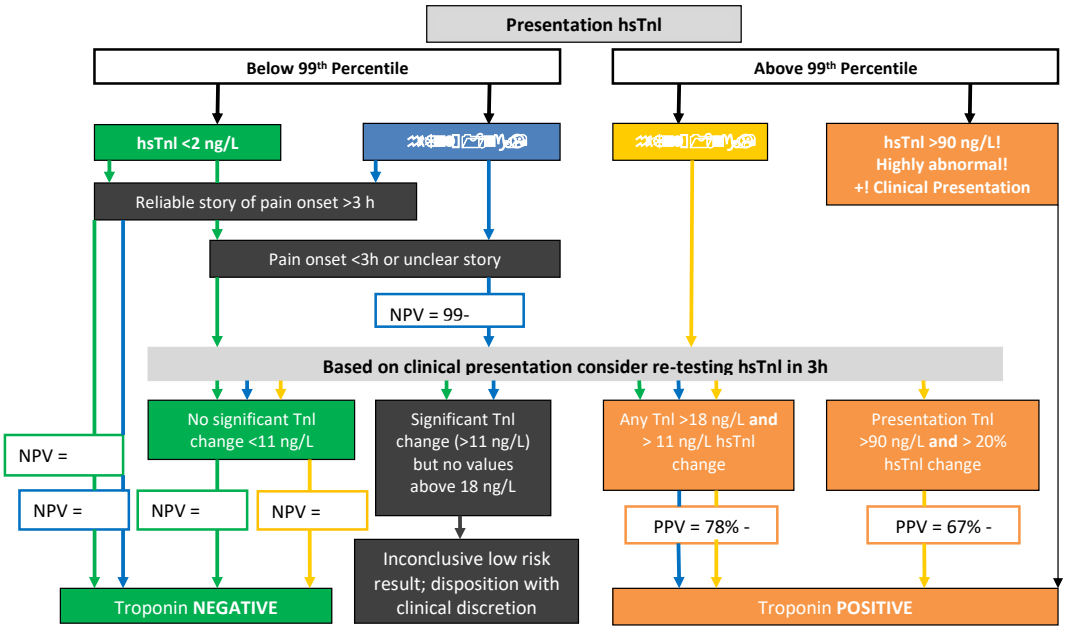
7. Why don't we use sex-specific reference ranges?

Using sex-specific ranges is very intuitive, however there is only 1 clinical trial (High-STEACS trial, published in Lancet 2018) that has investigated this. This well controlled trial showed no benefit in outcomes when using sex-specific cut-offs. The final word on this is still controversial and it is recommended to use a single cut-off for males and females until more studies are published to allow Hospitals can make an evidence-based decision.

MARKHAM STOUFFVILLE HOSPITAL CORPORATION

Beckman Coulter hs Troponin I Assay

High Sensitivity Troponin Interpretation Guide



References:

1. Boeddinghaus J *et al.* High-Sensitivity Cardiac Troponin I Assay for Early Diagnosis of Acute Myocardial Infarction. Clinical Chemistry 2019; 65:7.
2. Greenslade *et al.* Evaluating Rapid Rule-out of Acute Myocardial Infarction by Use of a High-Sensitivity Cardiac Troponin I Assay at Presentation. Clinical Chemistry 2018;64:5.
3. Twerenbold R *et al.* Update on high-sensitive cardiac troponin in patients with suspected myocardial infarction. European Heart Journal Supplements 2018;20:G2-G10.
4. Greenslade J *et al.* Diagnostic Accuracy of a New High-Sensitivity Troponin I Assay and Five Accelerated Diagnostic Pathways for Ruling Out Acute Myocardial Infarction and Acute Cotonary Syndrome. Annals of Emergency Medicine 2017;10:30.
5. vVasile V C and Jaffe A S. High-Sensitivity Cardiac Troponin for the Diagnostics of Patients with Acute Coronary Syndromes. Curr Cardiol Resp 2017; 19:92.
6. Masotti S *et al.* Evaluation of analytical performance of a new high-sensitivity immunoassay for cardiac troponin I. Clin Chem Lab Med 2017;aop.
7. Beckman Coulter Clinical Bulletin. Diagnosing myocardial infarction with the new Access hs TnI Assay 2017-3131.
8. Adapted from Integrated Laboratory Medicine, Queensway Carleton Hospital, University of Ottawa Heart Institute.

May 24, 2019

Appendix J: MSH Ambulatory Clinic Referral Sheet

MARKHAM STOUFFVILLE HOSPITAL CORPORATION

381 Church St.
Markham, ON
L3P 7P3
(905) 472-7000

4 Campbell Dr.
Uxbridge, ON
L9P 1S4
(905) 852-9771

Emergency Department

FOLLOW-UP & CONSULTATIONS - MSH AMBULATORY CLINICS

PATIENT WILL BE CONTACTED WITH AN APPOINTMENT UNLESS OTHERWISE INDICATED
IF NOT CONTACTED WITHIN 1 BUSINESS DAY, PLEASE CALL THE CLINIC AT THE NUMBER BELOW

Ambulatory Clinic 1 FAX (905) 472-7358 PHONE *(905) 472-7353*
- ☐ **Plastics Clinic**
  - ☐ Urgent (Next avail. clinic) ☐ Routine (7 - 10 days)
  - Provide rationale below

Ambulatory Clinic 2 (905) 472-7560 *(905) 472-7068*
- ☐ **Symptom Management Clinic** (MSH Oncology Patients)

Ambulatory Clinic 4 (905) 472-7535 *(905) 472-7534*

Paediatric Clinics
- ☐ Ambulatory Clinic
- ☐ Newborn Clinic (0-14 days of age)
- ☐ Endocrine Clinic
- ☐ Diabetes Clinic
- ☐ Elimination Clinic (Wednesday)
- ☐ Paediatric Lifestyle and Nutrition Clinic

Obstetrical Clinic (905) 472-7625 *(905) 472-7351*
- ☐ Early Pregnancy Assessment (M - F)
  - Preferred date: _____
  - ☐ Pelvic ultrasound required day of clinic
  - ☐ Serum Beta HCG required day of clinic
- ☐ Postpartum (any issue)
- ☐ Breastfeeding Assessment

Mental Health
- ☐ **Child / Adolescent Crisis** *(905) 472-7530*
- ☐ **Crisis Team Adult** *(905) 472-7556*
- ☐ **Out PT Mental Health** *(905) 472-7371*
  - ☐ Addiction Support Services (Walk-in M & F 1 - 4pm)

Health Services Building (379 Church St. 3rd. Floor)
- ☐ **Adult Diabetes Clinic** (905) 472-7358 *(905) 472-7527*
  - ☐ RN/RD Consultation
  - ☐ Endocrinologist Consultation

Ambulatory Clinic 3 FAX (905) 472-7358 PHONE *(905) 472-7601*
- ☐ **Stroke Prevention Clinic**
  - ☐ Adult Pt w/ stroke or TIA symptoms
- ☐ **Chest Pain Clinic**
  - Prev./current cardiologist name: _____
  - ☐ Echo Stress ☐ No ☐ Yes (see below)
  - ☐ Able to run on treadmill ☐ LBBB or not able to run on treadmill
  - Book CPCNEW(REG) Book CPCCARD(NUC)
  - Please ask patient to hold any beta blockers 48 hrs prior to testing
- ☐ **Infectious Disease Clinic** Precautions? ☐ Yes ☐ No
  - Details: _____
  - ☐ On antibiotics ☐ IV ☐ Oral Prescribed for ___ days.
- ☐ **Wound Clinic (Chronic wounds only)**
- ☐ **Cellulitis Clinic** ☐ Monday ☐ Thursday
- ☐ **General Internal Medicine**
- ☐ **Seniors' Health Clinic** ☐ Falls Prevention Class
- ☐ **DVT/PE Clinic**

Surgical Assessment Clinic (905) 472-7376 *(905) 472-7627*
- ☐ **Post Surgical Wellnes Clinic**
  - (General surgery, MSH surgeries only within 30 days)

☐ **Hospital to Home Clinic** (905) 472-7535 *(905) 472-7373 ext.6928*

Breast Cancer Diagnosis *Complete referral form BHCR*
(905) 472-7607 *(905) 472-7606*

Medical Office Building (377 Church St. Ground Floor)
Centre for Respiratory Health (905) 472-7358 *(905) 472-7614*
- ☐ **Sleep Disorder Clinic**
- ☐ **Asthma Education Clinic** *(905) 472-7020*
- ☐ **COPD Clinic**
  - ☐ MSH ☐ Uxbridge OTN
- ☐ **Allergy Clinic (Uxbridge only)** (905) 862-2005 *(905) 852-9771*

Reason for Consult: ☐ **Urgent** ☐ **Routine**

☐ **Relevant Investigations with Patient** ☐ **Relevant Investigations on Meditech** ☐ **Please Fax Relevant Investigations**

Referring Physician (Please Print Name)	Billing Number	Date	Faxed by

Referring Physician Signature

M-EDFUCMAC (6/19) (3/19)

WHITE - FAX to MD then to CHART YELLOW - Patient COPY

Appendix K: MSH Ambulatory Clinic Referral Criteria

Criteria for Plastics Clinic

Plastics clinic will see and assess patients with an ACUTE condition only

The Plastics Clinic Assesses and Treats Patients with:

1. Conditions related to hands - up to the wrist (see below for exclusions)
2. Nasal fractures – seen at plastics or ENT office at ED physician discretion
3. Facial fractures including mandibles (Dr. Teshima is willing to be contacted about these fractures to determine care decisions (x7595), if she is away she will see them in her clinic as follow ups)
4. Complicated wounds or wounds with active infection
5. Burns requiring plastics follow up (many burns may need ED follow up and/or primary care provider)
6. Complicated lacerations of the hand and/or forearm
7. Recurring problem related to the original diagnosis **within three months** of discharge from clinic (i.e. an infection)
8. Ulcers (with approval of the plastic surgeon) and requiring surgical intervention
9. Suspected flexor tenosynovitis (i.v. antibiotics started in ED)
10. Any patient/clinical issue agreed upon by the Plastic Surgeon on call

The Following Patient Diagnoses are EXCLUDED from Admission to the Plastics Clinic:

- Cellulitis or infections without wounds in any part of the body - refer to internal medicine or infectious disease
- Wrist fractures including scaphoid and other carpal bone fractures and wrist ligament injuries – refer to orthopedics
- Minor lacerations to the face and removal of sutures from minor lacerations of the face
- Minor nail-bed/finger tip injuries, warts or insect bites/stings
- Recurring, chronic condition – suggest follow up with primary care provider

All referrals are to be faxed to: 905-472-7603

Patients will be notified of their appointment.
Please **DO NOT** instruct patients to call the clinic.

** **PLEASE NOTE** that the accepted time frame for an appointment for a patient with a fracture is 7 – 10 days. **

If the referral is **URGENT**, the referring physician is to contact the clinic (x7595) indicating the urgency. On the next clinic day, the plastic surgeon will review and triage the referral. If the referral requires an immediate consultation, the on-call plastic surgeon can be reached through switchboard.

MARKHAM STOUFFVILLE HOSPITAL CORPORATION

Stroke Prevention Clinic Criteria

Criteria for referral to the Stroke Prevention Clinic (SPC):

Based on the Canadian Stroke Best Practice Recommendations 2014

1. An patient seen in Markham Stouffville Hospital or the Uxbridge Cottage Hospital's Emergency Department whom the Emergency Medicine Physician suspects had a TIA or stroke OR an asymptomatic patient who is at high risk of stroke (e.g. a patient with asymptomatic carotid stenosis or an incidental stroke seen on neuroimaging).

2. A discharged inpatient from Markham Stouffville Hospital or the Uxbridge Cottage Hospital whom the discharging physician suspects had a TIA or stroke OR an asymptomatic patient who is at high of stroke (e.g. a patient with asymptomatic carotid stenosis or an incidental stroke seen on neuroimaging).

3. Outpatient Referrals:
    a. An asymptomatic patient who is at high of stroke (e.g. a patient with asymptomatic carotid stenosis or an incidental stroke seen on neuroimaging).

    b. A symptomatic patient presenting more than two weeks with a suspected TIA or stroke. If not:
        i. A patient presenting with atypical sensory symptoms (e.g. patchy numbness and/or tingling) which could be from a TIA or stroke.
        ii. A patient **presenting between 48 hours and two-weeks** of a suspected TIA or ischemic stroke with transient, fluctuating or persistent symptoms *without motor weakness or speech disturbance (e.g. with symptoms such as* hemibody sensory loss, or acute monocular visual loss, or binocular diplopia or hemivisual loss or dysmetria).
        iii. If a symptomatic patient does not fulfill the above criteria, then the patient should be sent to the closest Hospital Emergency Department.

Chest Pain Clinic Criteria

Criteria:

1) **Patients presenting with chest pain felt to be moderate risk for coronary disease, without risk factors,** (ECG changes, or positive troponin), **should be referred to the Chest Pain Clinic (CPC).**

2) Referred patients will **ideally be seen within 48-72 hours of their ED visit, but not always possible.** Patients may be seen same day if they are discharged from the ED before 12:00 pm. (Call extension 6155 to determine if the patient can be accommodated.)

3) Patients will be evaluated by a cardiac NP, non-invasive investigations will be performed, (e.g., stress testing, and echocardiography) and then reviewed by a Cardiologist. If follow up is needed due to inconclusive results, the patient will then be brought back to the CPC. More invasive investigations may be necessary including coronary CT, or cardiac catheterization, as clinically indicated. The patient will be referred from the Clinic.

4) **Individual specific tests** (such a stress test, etc.) **should no longer be requested, rather, the patient should be referred to CPC** and the remaining workup will be looked after by the Clinic staff. The Physician referring the patient should also comment as to whether or not the resting ECG is abnormal such as left ventricular hypertrophy, bundle branch block or anything of that nature, **similarly if the patient is unable to walk on a treadmill. This will allow for the proper use of noninvasive investigations.**

5) The ED physician is requested to use discretion when referring to the CPC, to restrict it to those patients where rapid access and assessment is appropriate. Thus, a patient with a new onset arrhythmia that has been seen in the ED (SVT or atrial flutter/fibrillation that converted) may be referred. **Patients with vague histories of syncope, palpitations, etc. should not be referred**. Similarly, complex cardiac patients who are closely followed by a Cardiologist preferentially should be referred to the treating Physician.

6) **Please advise the patient to stay off caffeine or their beta blocker for 24 hours prior to the CPC visit**.

Joseph Minkowitz MD	Sue Feltham	Gaby Kett
Lead Cardiologist	Cardiac Nurse Practitioner	Team leader CPC

COPD Clinic Criteria

Referral Criteria for COPD Clinic:

1. A person over the age of 18 with risk factors for COPD who present with exertional breathlessness, chronic cough, regular sputum production, frequent winter bronchitis or wheeze for diagnosis and treatment.

2. Presence of airflow obstruction confirmed by performing pre and post spirometry.

3. Patients who require home oxygen for their breathlessness.

4. Patients with confirmed COPD diagnosis experiencing a worsening of symptoms such as reduced exercise tolerance, fatigue, malaise, decreased oxygen saturation for optimalization of therapy.

5. Follow up to ED visit for COPD exacerbation.

6. As a follow up to hospital admission for COPD exacerbation.

7. For education of disease/inhaler technique.

General Internal Medicine Clinic Referral Criteria

1. From the Emergency Department (ED) for instances that will avoid unnecessary inpatient admissions to prevent ED readmissions by enabling guaranteed follow up for sicker patients and to allow earlier discharges from ED because of the ability to follow closely. Examples are:

    - Malaise/fatigue.
    - CHF.
    - Syncope/collapse.
    - Hypertension.
    - Pneumonia.
    - UTI.
    - Colitis – infectious only.
    - Abdominal pain.
    - Hypoglycemia.
    - Fever, weight loss.

2. Pre-assessment for Surgery (should be at least > 2 weeks prior to OR, more if patient is expected to require further testing).

3. Post discharge from the Inpatient Unit as per Internal Medicine.

EXCLUSION CRITERIA Would Include:

- < 18 years.
- Problem already being followed by Specialist.
- Process that requires procedural based investigation e.g. iron deficiency anemia requiring endoscopy, lung mass/infiltrate requiring bronchoscopy, hematological disorder requiring bone marrow biopsy.
- Primary dermatological problem.
- Any trauma including neurological.
- Neurosurgical problems (brain mass on CT / MRI).

Infectious Diseases Clinic Referral from ED Criteria

Criteria for Infectious Diseases Clinic Referral from ED:

Refer the following Conditions:

- Condition previously followed by the Infectious Diseases service
- Osteomyelitis
- Septic Arthritis
- Orbital/Pre-orbital Cellulitis
- Complicated Skin and Soft tissue Infection:
  - Unresponsive to appropriate antimicrobial therapy
  - Involves a highly resistant organism e.g. MRSA, VRE, ESBL, CRE
- Prosthetic Device-Associated Infections
- Bacteremia
- Infectious Endocarditis
- Intra-abdominal / Pelvic abscess
- Chronic Infectious Diarrhea (including *Clostridium difficile*-Associated Diarrhea)
- Non-Tuberculous Mycobacterial Infection
- HIV Occupational Post-Exposure Prophylaxis
- Fever of Unknown Origin
- Parasitic Illness
- Fever in the returning traveler
- Fungal infections

Refer to GIM (for Further Triage and Assessment):

- Skin and Soft Tissue Infection
- Respiratory Tract Infection
- Urinary Tract Infection

Osteoporosis Clinic Referral Criteria

1. Referrals from Fracture Clinic (includes Outpatients & Inpatient) identified by Fracture Prevention Coordinator/RN/RPN &/or Orthopaedic Surgeons. (For the *FCSP, patients must have sustained the fracture within the past 6 months/180 days.

2. Individuals 50 years and older who have experienced a fragility fracture.

3. Fracture sites to be referred are as follows; wrist, elbow, shoulder (proximal humerus), mid-shaft humerus, clavicle, spine (vertebrae), shoulder (proximal humerus), pelvis, Hip (proximal femur), Atypical femur fractures & peri-prosthetic fractures.

4. (As per 2010 Guidelines-these are indications for BMD Testing) Patients assessed by osteoporosis RN/RPN with clinical risk factors such as:
   - Prolonged glucocorticoid use.
   - Other high-risk medication use.
   - Parental hip fracture.
   - Current smoking.
   - High alcohol intake.
   - Low body weight (<60Kg) or major weight loss(>10% of weight at age 25 years).
   - Rheumatoid arthritis.
   - Other disorders – primary hyperparathyroidism, type 1 diabetes, osteogenesis imperfecta, uncontrolled hyperthyroidism, hypogonadism or premature menopause, Cushing's disease, chronic malnutrition or malabsorption, chronic liver disease, COPD and chronic inflammatory conditions(i.e. inflammatory bowel disease).
   - (As per 2010 Guidelines,these items are listed under History/Clinical assessment) Prior Fragility Fracture & Fall Risk Assessment is included in our Patient Survey (i.e. falls in previous 12 months & any trouble getting out of a chair or feel unsteady when you walk?)

5. **MSH Osteo Clinic Tests** to be ordered/authorized by Orthopaedic Surgeons & arranged by RN/RPN in conjunction with the Fracture Clinic's Scheduling Receptionist are listed below. These tests are to be completed prior to the patient's scheduled MSH Osteoporosis Clinic appointments.
   Tests include:
   - Diagnostics/Bone Mineral Density Test for ***all*** Fragility Fracture patients are to be done if none done in previous year.
   - Blood work – requisition + instructions given to patient (blood work to be completed at least 1 week prior to scheduled appointment).

Sleep Disorder Clinic Criteria

Criteria for Referral to the Sleep Disorder Clinic:

1. To assess/diagnose a sleep disorder with patients who have the following symptoms:
   - Irritable or sleepy during the day.
   - Have difficulty staying awake when sitting still, watching TV or reading.
   - Fall asleep or feel very tired while driving.
   - Have difficulty concentrating.
   - React slowly.
   - Feel like they need a nap every day.
   - Loud chronic snoring.
   - Frequent pauses in breathing during sleep.
   - Gasping, snorting or choking during sleep.
   - Waking up short of breath, chest pains, headaches nasal congestion or dry throat.

2. Patient with diagnosed sleep apnea who requires a second opinion.

3. To re-evaluate a previous negative or inconclusive sleep study due to persistent or progressive symptoms.

4. To re-evaluate a diagnosis of primary sleep disorder where there are symptoms of another co-morbid sleep disorder.

5. To re-evaluate patients with established sleep disorder who have significant symptom progression or non response to therapy.

6. Have signs and symptoms of insomnia.

7. To diagnose and treat patients with restless leg syndrome.

8. To diagnose and treat patients with signs/symptoms of narcolepsy.

9. For evaluation and treatment of Parasomnias – abnormal sleep behaviour.

10. Patients with cardiac disease – uncontrolled BP, atrial fib, CHF and patients with neurological disease such as CVA, memory impairment.

11. Pre-operative evaluation of suspected OSA and before bariatric surgery.

Appendix L: MSH Fracture Clinic Referral Sheet and Criteria

NOTE: Incomplete and / or unsigned requistions will be returned

PLEASE PRINT CLEARLY
OR AFFIX LABEL WITH COMPLETE INFORMATION

Markham Stouffville Hospital
Oak Valley Health

Emergency Department
Fracture Clinic Referral

Telephone: 905-472-7070
Fax: 905-472-7544

Hospital MRN #: _____
Patient Name: _____ (Last) _____ (First)
Date of Birth: _____ (Day) _____ (Month) _____ (Year) Sex: F M
Health Card # _____ Version Code: _____
☐ WSIB # _____ ☐ Non OHIP (Self-pay) or Refugee
Telephone # (Best Daytime): _____
Alternate #: _____

Date:	Referring MD	Signature
Additional Reports to:		
Prefered Language	Name & number of interpreter to help schedule appointment, if available	

Clinical Information and Reason for Referral:

Diagnosis:

_____

_____

_____

_____

Date of Injury: _____

☐ Fracture Care ☐ Acute Musculoskeletal injury ☐ Recent Sports Injury

☐ Paediatric Patient ☐ Other (Specify): _____

Case Information ***Faxed ED record (Must be included with referral form)***

☐ Case discussed with On-Call Orthopaedic surgeon: _____

☐ Message left on ortho extension for special consideration (6153). (Consider ASAP)

☐ CD of images from outside facility to be brought with patient ☐ Sent to be uploaded in PACS

Referring Physician

Billing Number: _____

If any concern about requiring operative repair or need for more immediate assessment, **call on-call orthopaedic surgeon.**

☐ **Cast Check**	☐ **ASAP**	☐ **Routine**	☐ **Non Urgent**
Orthopaedic Technologist only No surgical consultation required	Next Available Fracture Clinic Appointment	Within 7 days	Within 14 days

For Scheduling Use

On-Call Orthopaedic surgeon (relevant for scheduling from weekend ED presentation only):

_____

Appointment Date: _____ **Scheduled Time:** _____

M-EDFCR (d3x10/22) (9/18)

Criteria For Fracture Clinic

Please note the Fracture Clinic is accessed for patients with ACUTE conditions only.

- Acute Fractures
  - Lower extremity fractures
  - Upper extremity fractures
  - Pelvic & Spinal fractures
    (*Refer to Spine Algorithm for management of Spine fractures)
- Acute soft tissue Injuries of the MSK system less than 8 weeks old WITH history of trauma:
  - Ligaments injures requiring splinting
  - Tendon injuries (excluding hand/forearm tendons)
  - Traumatic joint effusions
  - Muscle tears & intramuscular hematomas
- Post operative complications as an outcome of surgery at Markham Stouffville Hospital (Alternatively, refer to Surgical Wellness Clinic 905-472-7627 ext.3)
- Recurring problems related to the original diagnosis, within 6 months of discharge from the Fracture Clinic.
- Gangrene of the foot/toe requiring amputation

The Following Patient Diagnoses are EXCLUDED from Admission to the Fracture Clinic:

- Rib/Sternal fractures
- Minor joint sprains
- Soft tissue injuries of the MSK system greater than 8 weeks old
- Chronic musculoskeletal conditions or exacerbation thereof
- Back pain, including disc herniation (*Refer to spine algorithm)
- Tendonitis
- Musculoskeletal pain management or cortisone therapy (*Refer to ortho office of choice)
- Soft tissue/ bursal infections (*Refer to internal medicine/ Infectious Disease)
- Possible septic joint (*If potential septic joint needing OR, this must be determined in ER!)
- Hand fractures distal to carpus (*Refer to plastics clinic)

All referrals are to be faxed directly to: 905-472-7544 along with any other support documentation.

Appendix M: Spine Referral Pathway from ER

Spine Referrals Pathway from ER

Symptoms	Referral Pathway
Lumbar Spine Fractures with no neurological concerns	Fracture clinic referral to Dr. Koo or Dr. McMahon ***note:** if there is a concern of fracture stability, please call Dr. Koo or Dr. McMahon acutely
Lumbar Spine Fractures with neurological concerns	Call Dr. Koo or Dr. McMahon
Cervical or **Thoracic** Fractures	Call Dr. Koo
Neck or Back pain with no neurological concerns	Follow up with GP, Referral to Physiotherapy, (medicine consult if failure to cope)
Lumbar spine related radiculopathy with MRI confirmed pathology (ex. disc herniation, spinal stenosis, synovial cysts, etc)	1) Referral to the office of Dr. Koo or Dr. McMahon 2) Consider referral to the ISAEC program if accessible ***note:** NOT fracture clinic
Lumbar spine related symptoms with concerning acute neurological deficits (ex. Cauda equina, significant motor loss, epidural abscess etc)	1) Immediate MRI lumbar spine (not outpatient) 2) Call Dr. Koo or Dr. McMahon after MRI completed 3) If MRI negative, consider MRI C-T spine and neurology/medicine consult
Lumbar spine related leg symptoms without neurological concerns/loss (ex. "sciatic" pain, numbness, etc) and without MRI	1) Follow up with GP for completing workup 2) Consider outpatient neurology for management (ex. EMG study) 3) If in doubt, call Dr. Koo or Dr. McMahon ***note:** without MRI report, their referrals to office or fracture clinic will NOT be accepted
Cervical spine related radiculopathy with MRI confirmed pathology (ex. Disc herniation)	Referral to Dr. Koo's office ***note:** NOT fracture clinic
Cervical spine related radiculopathy with no MRI	Follow up with GP for further workup ***note:** MRI pending will still not be accepted for referral
Cervical or **Thoracic** spinal cord compression with concerning neurological symptoms and/or deficits	1) Immediate MRI cervical and/or thoracic spine (not outpatient) 2) Call Dr. Koo
Oncology related spine issues	1) Oncology consultation 2) If it is an undiagnosed spine mass, please consult medicine and notify Dr. Koo or Dr. McMahon of patient
Post surgical spine patient (not from Markham Stouffville Hospital)	1) Follow up with their primary surgeon
WSIB Neck/Back patient without acute neurological concerns	1) Complete WSIB Form 8 and check off either REC or Specialty Clinic for referral (please indicate Markham Stouffville Hospital as primary choice of referral)

If there are any concerns relating to spine cases, please do not hesitate to contact Dr. Koo or Dr. McMahon. If unable to reach either surgeon, please text Dr. Koo at 647-262-1335 or call the orthopedic on-call for assistance to locate Dr. Koo or Dr. McMahon.

Appendix N: MSH Breast Health Clinic Referral Sheet

NOTE: Incompleted and / or unsigned requisitions will be returned

PLEASE PRINT CLEARLY
OR AFFIX LABEL WITH COMPLETE INFORMATION

MARKHAM STOUFFVILLE HOSPITAL CORPORATION

BREAST HEALTH CENTRE
REFERRAL

Please Fax to: (905) - 472 - 7607
Phone: (905) - 472 - 7606

Hospital MRN#: _____

Patient Name: _____
Last First

Date of Birth (DD/MM/YY): _____ Sex: F M

Health Card #: _____ Version Code: _____

Address: _____ Postal Code: _____

Telephone # (Best Daytime): _____

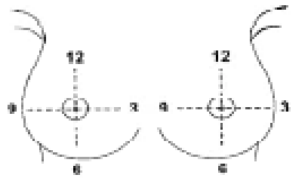
Alternate #: _____

Date	Referring MD	Signature
Telephone		Fax

Spoken Language if other than English **Please bring translator to the appointment if required.**

Reason for Referral *(check all that apply)*

- ☐ Abnormal Mammogram
- ☐ Abnormal Ultrasound
- ☐ Palpable Lump
- ☐ Bloody Nipple Discharge
- ☐ Patient has had breast cancer in the past
- ☐ Other: _____



Comments: _____

Past Medical History/Medication

Is patient taking blood thinners? ☐ No ☐ Yes, specify: _____

- **Please inform patient they must bring all external films to their clinic appointment**
- MSH staff will contact your patient directly to schedule an appointment time.

***** All external reports MUST be faxed with this referral for appointment to be made*****

Attach to this referral:
- ✓ **Recent diagnostics (mammogram, US, MRI, pathology etc.) if not done at MSH or UCH**
- ✓ **Past Medical History and Medication (if not indicated above)**

Breast Health Centre Use Only

BHC appointment Date: _____ Time: _____ Physician: _____

Diagnostics required:

- ☐ Mammogram ☐ Left ☐ Right Time: _____
- ☐ Breast Ultrasound ☐ Left ☐ Right Time: _____
- ☐ Biopsy ☐ Ultrasound ☐ Stereotactic ☐ MRI ☐ Left ☐ Right Time: _____
- ☐ Ductogram ☐ Left ☐ Right Time: _____
- ☐ Consult External Films and Re-triage with Nurse Navigator

Last Mammogram: _____ Last Ultrasound: _____

Previous BHC Physician: _____ Date: _____

Scheduling Notes: _____

Priority ☐ 1 ☐ 2 ☐ 3 RN Signature: _____

M-BHCR (9/18) (8/16)

Appendix O: MSH Medicine Subspecialty Office Referral Sheet

MARKHAM STOUFFVILLE HOSPITAL CORPORATION

Markham Site
381 Church St.
Markham, ON
L3P 7P3
(905) 472-7000

Uxbridge Site
4 Campbell Dr.
Uxbridge, ON
L9P 1S4
(905) 852-9771

Emergency Department

FOLLOW-UP & CONSULTATIONS - PRIVATE PHYSICIAN OFFICES

MEDICINE - PAEDIATRICS - PSYCHIATRY

PATIENT IS TO CALL FOR AN APPOINTMENT UNLESS OTHERWISE INDICATED

	FAX	PHONE
Anaphylaxis follow-up		
☐ Dr. Hummel	(905) 415-1371	*(905) 479-9693*
Cardiology		
☐ Dr. Hacker	(905) 472-8548	*(905) 472-8228*
☐ Dr. Minkowitz	(905) 472-8548	*(905) 472-7357*
☐ Dr. Pasricha	(905) 943-9105	*(905) 943-7382*
☐ Dr. Motlagh	(905) 604-6442	*(905) 604-6227*
☐ Dr. Lu	(905) 472-9206	*(905) 472-9200*
☐ Dr. Tandon	(905) 472-9206	*(905) 472-9200*
Dermatology		
☐ Dr. Lynde	(905) 472-1198	*(905) 471-5022*
Endocrinology		
☐ Dr. Bishara	1-(866) 740-3538	*(905) 201-1429*
☐ Dr. Kogan	(905) 471-1777	*(905) 471-1444*
☐ Dr. Tsao	(905) 305-8685	*(905) 305-8687*
Gastroenterology		
☐ Dr. Lau	(905) 294-3788	*(905) 294-8008*
☐ Dr. Fu	(905) 471-6103	*(905) 471-6200*
☐ Dr. Selucky	(905) 472-3007	*(905) 472-7125*
☐ Dr. Yogeswaran	(905) 554-0076	*(905) 554-0094*
☐ Dr. Khorasani	(905) 554-0165	*(905) 554-0163*
Nephrology		
☐ Dr. Goldstein	(905) 471-1777	*(905) 471-1444*
Neurology		
☐ for EMG please complete CRSEMGNCR		
☐ Dr. Geenen	(905) 472-5490	*(905) 472-6551*
☐ Dr. Hui	(647) 689-2266	*(905) 554-8650*
☐ Dr. Jalal	(365) 509-2153	*(905) 554-0140*
☐ Dr. Kim	EMG Lab & Stroke Prevention Clinic ONLY	

	FAX	PHONE
Haematology / Oncology		
☐ Dr. Solow	(905) 472-0529	*(905) 472-7072*
☐ Dr. Hajra	(905) 472-0529	*(905) 472-7072*
☐ Dr. Trinkaus	(905) 472-0529	*(905) 472-7072*
☐ Dr. Kumar	(905) 472-0529	*(905) 472-7072*
☐ Dr. Babak	(905) 472-0529	*(905) 472-7072*
Pediatrics		
☐ Dr. A. Garg	(905) 472-5148	*(905) 471-7787*
☐ Dr. S. Mohile	(905) 852-3531	*(905) 852-1009*
☐ Dr. P. Turlapati	(905) 471-8043	*(905) 471-8074*
☐ Dr. L. Pancer	(905) 471-5148	*(905) 471-7787*
Paediatric Cardiologists		
☐ Dr. N Musewe	(905) 471-3702	*(905) 471-3700*
☐ Dr. R Beaulieu	(416) 282-9897	*(416) 282-9198*
☐ Dr. Senthilnathan	(416) 282-9897	*(416) 282-9198*
Psychiatry		
☐ Dr. Berber	(905) 472-5215	*(905) 472-5733*
☐ Dr. Sethna	(905) 472-5215	*(905) 472-5733*
☐ Dr. Wallani	(905) 472-5215	*(905) 472-5733*
☐ Dr. Ticoll	(905) 472-5215	*(905) 472-5733*
☐ Dr. Sai	(905) 472-7371	*(905) 472-7011*
☐ Dr. Lee	(905) 472-7371	*(905) 472-7011*
☐ Dr. Pinto	(905) 472-7371	*(905) 472-7011*
Rheumatology		
☐ Dr. Goodman	(905) 472-6943	*(905) 472-7147*
☐ Dr. Lewtas	(905) 201-0018	*(905) 201-0800*
☐ Dr. Ruban	(905) 554-3752	*(905) 554-3755*
Respirology		
☐ Dr. Dancey	(905) 471-1903	*(905) 471-4402*
☐ Dr. Fanaras	(905) 554-7150	*(905) 554-5004*
☐ Dr. Forse	(905) 472-2004	*(905) 472-5900*
☐ Dr. A. Burrell	(905) 554-4002	*(905) 554-4001*
☐ Dr. Radina	(905) 554-4002	*(905) 554-4001*
☐ Dr. A. Greenwald	(905) 205-0100	*(289) 554-1350*

Reason for Consult: ☐ **Urgent** ☐ **Routine**

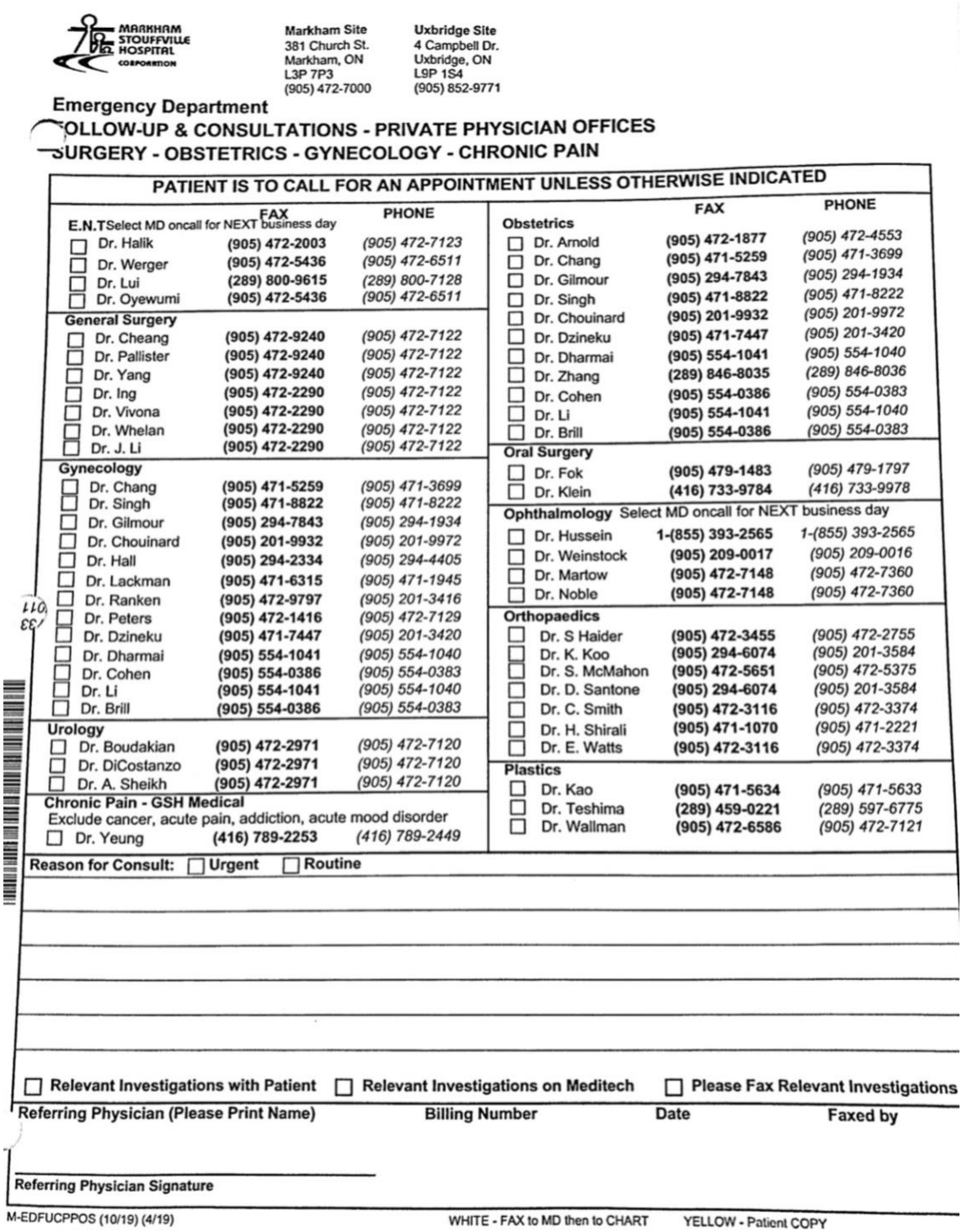
☐ **Relevant Investigations with Patient** ☐ **Relevant Investigations on Meditech** ☐ **Please Fax Relevant Investigations**

Referring Physician (Please Print Name) | **Billing Number** | **Date** | **Faxed by**

Referring Physician Signature

M-EDFUCPPOM (11/19)(10/19) WHITE - FAX to MD then to CHART YELLOW - Patient COPY

Appendix P: MSH Surgery Subspecialty Office Referral Sheet



MARKHAM STOUFFVILLE HOSPITAL CORPORATION

Markham Site
381 Church St.
Markham, ON
L3P 7P3
(905) 472-7000

Uxbridge Site
4 Campbell Dr.
Uxbridge, ON
L9P 1S4
(905) 852-9771

Emergency Department

FOLLOW-UP & CONSULTATIONS - PRIVATE PHYSICIAN OFFICES

SURGERY - OBSTETRICS - GYNECOLOGY - CHRONIC PAIN

PATIENT IS TO CALL FOR AN APPOINTMENT UNLESS OTHERWISE INDICATED

	FAX	PHONE
E.N.T Select MD oncall for NEXT business day		
☐ Dr. Halik	(905) 472-2003	(905) 472-7123
☐ Dr. Werger	(905) 472-5436	(905) 472-6511
☐ Dr. Lui	(289) 800-9615	(289) 800-7128
☐ Dr. Oyewumi	(905) 472-5436	(905) 472-6511
General Surgery		
☐ Dr. Cheang	(905) 472-9240	(905) 472-7122
☐ Dr. Pallister	(905) 472-9240	(905) 472-7122
☐ Dr. Yang	(905) 472-9240	(905) 472-7122
☐ Dr. Ing	(905) 472-2290	(905) 472-7122
☐ Dr. Vivona	(905) 472-2290	(905) 472-7122
☐ Dr. Whelan	(905) 472-2290	(905) 472-7122
☐ Dr. J. Li	(905) 472-2290	(905) 472-7122
Gynecology		
☐ Dr. Chang	(905) 471-5259	(905) 471-3699
☐ Dr. Singh	(905) 471-8822	(905) 471-8222
☐ Dr. Gilmour	(905) 294-7843	(905) 294-1934
☐ Dr. Chouinard	(905) 201-9932	(905) 201-9972
☐ Dr. Hall	(905) 294-2334	(905) 294-4405
☐ Dr. Lackman	(905) 471-6315	(905) 471-1945
☐ Dr. Ranken	(905) 472-9797	(905) 201-3416
☐ Dr. Peters	(905) 472-1416	(905) 472-7129
☐ Dr. Dzineku	(905) 471-7447	(905) 201-3420
☐ Dr. Dharmai	(905) 554-1041	(905) 554-1040
☐ Dr. Cohen	(905) 554-0386	(905) 554-0383
☐ Dr. Li	(905) 554-1041	(905) 554-1040
☐ Dr. Brill	(905) 554-0386	(905) 554-0383
Urology		
☐ Dr. Boudakian	(905) 472-2971	(905) 472-7120
☐ Dr. DiCostanzo	(905) 472-2971	(905) 472-7120
☐ Dr. A. Sheikh	(905) 472-2971	(905) 472-7120
Chronic Pain - GSH Medical		
Exclude cancer, acute pain, addiction, acute mood disorder		
☐ Dr. Yeung	(416) 789-2253	(416) 789-2449

	FAX	PHONE
Obstetrics		
☐ Dr. Arnold	(905) 472-1877	(905) 472-4553
☐ Dr. Chang	(905) 471-5259	(905) 471-3699
☐ Dr. Gilmour	(905) 294-7843	(905) 294-1934
☐ Dr. Singh	(905) 471-8822	(905) 471-8222
☐ Dr. Chouinard	(905) 201-9932	(905) 201-9972
☐ Dr. Dzineku	(905) 471-7447	(905) 201-3420
☐ Dr. Dharmai	(905) 554-1041	(905) 554-1040
☐ Dr. Zhang	(289) 846-8035	(289) 846-8036
☐ Dr. Cohen	(905) 554-0386	(905) 554-0383
☐ Dr. Li	(905) 554-1041	(905) 554-1040
☐ Dr. Brill	(905) 554-0386	(905) 554-0383
Oral Surgery		
☐ Dr. Fok	(905) 479-1483	(905) 479-1797
☐ Dr. Klein	(416) 733-9784	(416) 733-9978
Ophthalmology Select MD oncall for NEXT business day		
☐ Dr. Hussein	1-(855) 393-2565	1-(855) 393-2565
☐ Dr. Weinstock	(905) 209-0017	(905) 209-0016
☐ Dr. Martow	(905) 472-7148	(905) 472-7360
☐ Dr. Noble	(905) 472-7148	(905) 472-7360
Orthopaedics		
☐ Dr. S Haider	(905) 472-3455	(905) 472-2755
☐ Dr. K. Koo	(905) 294-6074	(905) 201-3584
☐ Dr. S. McMahon	(905) 472-5651	(905) 472-5375
☐ Dr. D. Santone	(905) 294-6074	(905) 201-3584
☐ Dr. C. Smith	(905) 472-3116	(905) 472-3374
☐ Dr. H. Shirali	(905) 471-1070	(905) 471-2221
☐ Dr. E. Watts	(905) 472-3116	(905) 472-3374
Plastics		
☐ Dr. Kao	(905) 471-5634	(905) 471-5633
☐ Dr. Teshima	(289) 459-0221	(289) 597-6775
☐ Dr. Wallman	(905) 472-6586	(905) 472-7121

Reason for Consult: ☐ **Urgent** ☐ **Routine**

☐ **Relevant Investigations with Patient** ☐ **Relevant Investigations on Meditech** ☐ **Please Fax Relevant Investigations**

Referring Physician (Please Print Name) **Billing Number** **Date** **Faxed by**

Referring Physician Signature

M-EDFUCPPOS (10/19) (4/19) WHITE - FAX to MD then to CHART YELLOW - Patient COPY

Appendix Q: Consultation to the Emergency Department and Referral by Diagnosis

Consultants when on call are expected to provide timely and prompt service to the Emergency Department, and should respond to pages as per the *Physician Locating, Escalation and Communication* policy.

PROCEDURE/GUIDELINES:

1) Consultants when on call will attend to the Emergency Department as soon as possible and:

   For Resuscitation Cases/life threatening emergencies unless unavoidably delayed within 15 minutes. Physicians who are delayed in this situation will, when possible send a physician delegate.

   For other Emergent Cases unless unavoidably delayed, within 30 minutes

   Within 2 hours for all other cases

   If consultant knowingly cannot make these times they will communicate this to the Emergency Physician and create a contingency plan that is mutually agreeable. This may include telephone admission orders, or orders written by the Emergency Department Physician, however it is acknowledged that the interest of the patient is best served by having the attending physician who is responsible for ongoing care assess the patient and write admission orders.

2) The 'Referral by Diagnosis Guideline' should be followed in deciding which consulting/admitting service would be most appropriate.

3) In the instance that there is a dispute and the 'guideline' is not effective in its resolution, the situation would be resolved involving the respective Department Chiefs and/or Chief of Staff but should not compromise the ongoing care of the affected patient.

4) Data regarding time of consultation will be monitored and reported as required.

5) Response times may be audited on a monthly basis. Repeated failure to meet expected response times will be addressed by the appropriate Departmental Chief or Chief of Staff.

EXPECTED OUTCOME:

Inherent in these guidelines is the understanding that some physicians live a distance from the hospital that may preclude them from meeting the expected response times for resuscitation or emergent cases particularly "after hours". The intent of these guidelines is that consultants act responsibly in providing timely consultations when on call, for patients requiring their services in the Emergency Department.

Consultants will provide admission orders for patients that are being admitted from the Emergency

Department.

Referral By Diagnosis – Markham Stouffville Hospital

Diagnosis/ Reason for Referral	Service
ABDO/PELVIC/GI	
Ascending Cholangitis	Medicine
(suspected/proven) Choledocholithiasis	Medicine
(suspected/proven) Pancreatitis	Medicine
Colitis – known IBD/ other	Medicine
FB Esophagus	GI/ Medicine – On-call endoscopist
GI Bleed – need urgent scope	GI/ Medicine – On-call endoscopist
GI Bleed – source unknown	Medicine
GI bleed lower- hemorrhoidal	General Surgery
Diverticulitis (suspected/proven)	General Surgery
(suspected/ proven) Bowel Obstruction	General Surgery
Cholecystitis (suspected/ proven)	General Surgery
Hernia	General Surgery
Colitis – ischemic (suspected/ proven)	General Surgery
Hematuria/ Renal Colic	Urology
Post Renal Obstruction	Urology
Abdo Pain NYD (no -ve hcg)	General Surgery/ Gynecology if adnexal path
Abdo Pain NYD (no +ve hcg)	Gynecology
Abdo Pain NYD (no +ve hcg) r/o Ectopic	Gynecology
Menorrhagia	Gynecology
AAA – Operative	Vascular/ Criticall
AAA – Non-operative	Medicine/ Palliative

MISCELLANEOUS	
Overdose Acute	Medicine/ ICU
Delirium Mechanical	Medicine
Back Pain	Medicine
Failure to Cope	Medicine
Ischemic Limb – not confirmed (awaiting confirm)	Medicine
Dementia – Acute or Chronic	Medicine
DKA	Medicine/ ICU
Metastatic CA/ Palliative	Medicine/ Palliative
Metastatic CA/ Active	Medicine/ Oncology
TX Oncology	Medicine/ Oncology
Ischemic Limb – confirmed	Vascular/ Criticall
Psychosis with no organic cause (suspected/ confirmed)	Psychiatry

NEURO/HEAD and NECK	
Vertigo/ Labyrinthitis/r/o Cerebellar Stroke	Medicine
Spinal Headache	Medicine/Anesthesia
Stroke	Medicine
Intracranial Hemorrhage non-neuro sx (ENITS/critcall)	Medicine/ICU
Intracranial Hemorrhage – same day transfer not pos.	Medicine/ICU
Trach	ENT
FB Throat	ENT

CARDIAC	
Chest Pain	Medicine
ACS	Medicine/ Telemetry/ ICU
Arrythmia	Medicine/ Telemetry/ ICU
Chest Pain with STEMI	Southlake

FRACTURES	
Dental	Oral Surgery/ Dentist or Urgent Dental Clinic
Extremity (if sole reason for injury)	Orthopedics
Facial	Plastics
Mandibular	Oral Surgery – if available – if not, transfer out
Pelvic	Orthopedics
Vertebral	Orthopedics
# C-Spine +/- neuro sx transfer	Orthopedics
Hip	Orthopedics
Any with inability to discharge	Orthopedics
Any with acute medical issues	Medicine with urgent Orthopaedics consult

INFECTION	
Sepsis/ Severe Sepsis irrespective of source	ICU
Cellulitis	Medicine
Pyelonephritis with stone obstruct	Urology with Medicine/ ICU consult
Pyelonephritis	Medicine
Meningitis	Medicine
Septic Arthritis with no prosthesis	Medicine with Orthopedics consult
Septic Arthritis with prosthesis	Orthopedics
Dental	Dental/ Oral Surgery/ local or transfer
Diverticulitis (suspected/ proven)	General Surgery
Osteomyelitis	Orthopedics
Parotitis	ENT
Periorbital/ Orbital	Ophthalmology
Breast	General Surgery
Intraabdominal	General Surgery
Hand	Plastics
Necrotizing Fasciitis	Surgery by Anatomy, Medicine/ ICU

LACERATIONS (beyond scope of ED MD)	
Face	Plastics
Neck	ENT or Plastics
Ear	Plastics
Extremities/ Trunk	Plastics
Hand/ Forearm	Plastics
Feet	Orthopedics
Bone/ Joint involved	Orthopedics

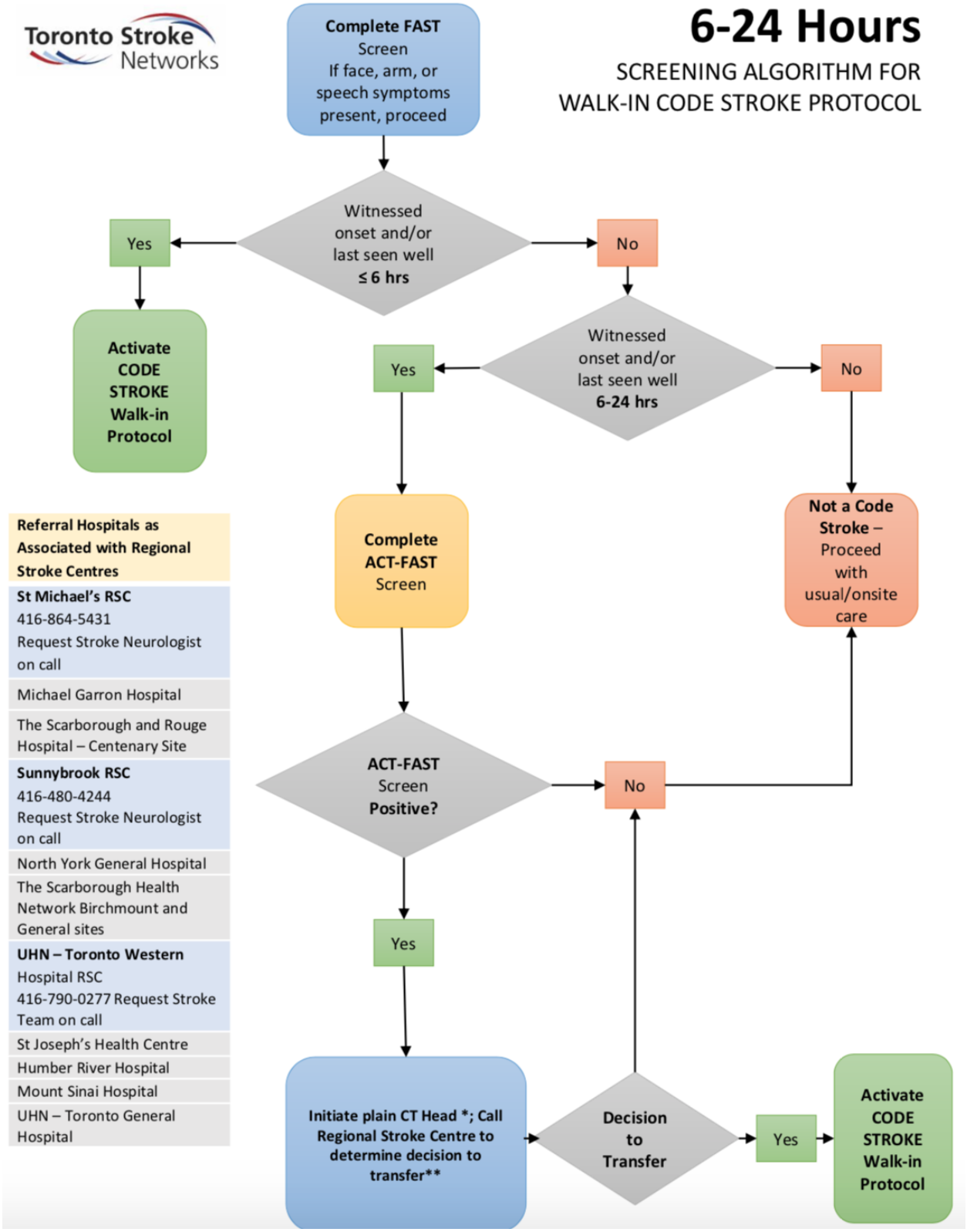
Major Tendon (non-hand)	Orthopedics

TRAUMA	
Abdo in Pregnancy	Gynecology
(isolated) Abdo	General Surgery
Abdo in pregnancy – other injuries	General Surgery
Foot	Orthopedics
Hand	Plastics
Head – no Neurosurgery	Medicine
MSK Injury and pain but no #	Medicine
Thoracic- Hemothorax/pneumothorax/ rib #	General Surgery
Neck	ENT
Trauma reg admit <18 y.o	Pediatrics – with appropriate consult

PEDIATRIC PATIENTS	
Medical Diagnosis <18 y.o	Pediatrics
Medical Diagnosis 16 -18	Pediatrics
Medical/ ICU <16	Pediatrics w/ ICU/ other consult/ transfer ICU
Medical/ ICU 16-18	
Toxicologic issue	As above with Psychiatry consult
Surgical diagnosis <18	Surgical consult with Pediatrics consult prn
Surgical diagnosis/ ICU <16	Surgical with Pediatrics consult – transfer out
Surgical diagnosis/ ICU 16-18	ICU with Surgery and Pediatric consults
Surgical diagnosis <18 with care beyond scope of MSH	Surgical consult and transfer out

Appendix R: Code Stroke

Please note this is the Toronto Stroke Network Pathway for guidance. This is not the approved pathway for MSH.



Please note this is the Toronto Stroke Network Pathway for guidance. This is not the approved pathway for MSH.

"ACT FAST"

Toronto Stroke Networks

ACT-FAST – Clinical Triage Tool for Acute Stroke caused by Large-Vessel Occlusions

To be used with the "Walk-in Stroke Protocol 6-24H Screening Algorithm"

Adapted from "Ambulance Clinical Triage for Acute Stroke Treatment" Zhao et al. Stroke 2018;49:945-951

STEP 1

Proceed if Positive

"ARM" (one-sided arm weakness)

Position both arms at 45 degrees from the horizontal with elbows straightened and ask patient to hold arms steady. Vocally encourage the patient to hold up if arm(s) begins to fall. The test may be repeated if unsure the first time.

POSITIVE TEST – IF one arm falls completely to the stretcher within 10 seconds of being held up.

For patients that are uncooperative or cannot follow commands:

POSITIVE TEST: you clearly witness minimal or no movements in one arm and normal or spontaneous movements in the other arm.

POSITIVE TEST: both arms are similarly weak, or testing is clearly affected by shoulder problems or pain.

STEP 2

Proceed if Positive

If RIGHT ARM is weak

"CHAT" (severe language deficit)

Assess patient from overall interaction and routine assessment of the patient. You may ask the patient to repeat "You can't teach an old dog new tricks" OR perform simple tasks ("make a fist", "open and close your eyes", "open and close your mouth").

POSITIVE TEST – IF there is severe language difficulty (NOT just slurring): Mute, Speaking gibberish/incomprehensible, unable to follow simple commands.

Use family and friends to translate, do not assume mute. If not possible, use "TAP" test

If LEFT ARM is weak

"TAP" (gaze and shoulder tap test)

Stand on the side that the patient is weak

POSITIVE TEST – (Open eyelids if required) IF you observe that the patient has consistent and obvious gaze preference (both eyes) turned away from the side of the body that has weakness, Otherwise,

POSITIVE TEST – Tap the patient twice on the shoulder and call their first name – if the patient does not quickly turn their head and eyes to fully focus on and notice you.

Obvious gaze preference can be observed from end of the stretcher

STEP 3

If POSITIVE, this patient may be a candidate for Endovascular Treatment

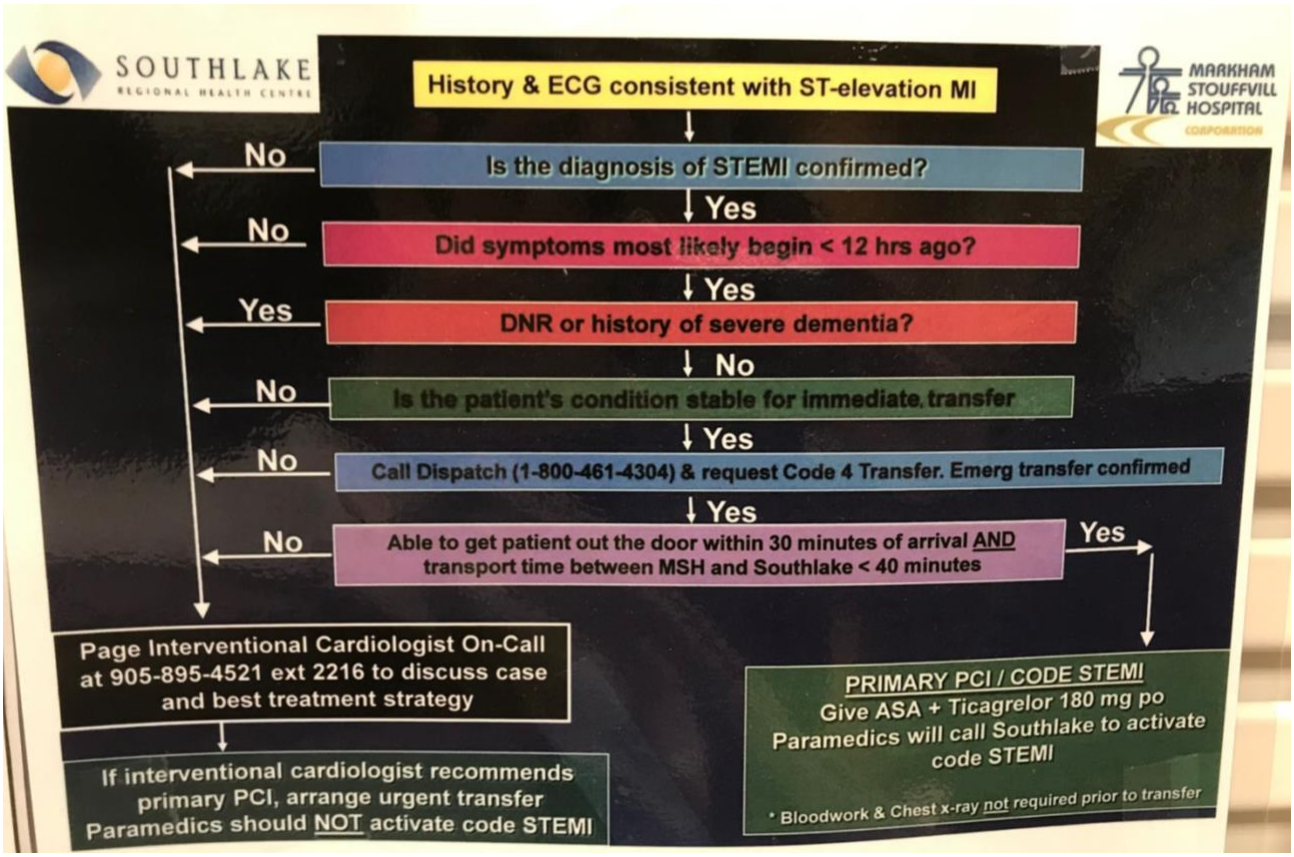
Eligibility for Endovascular Clot Retrieval

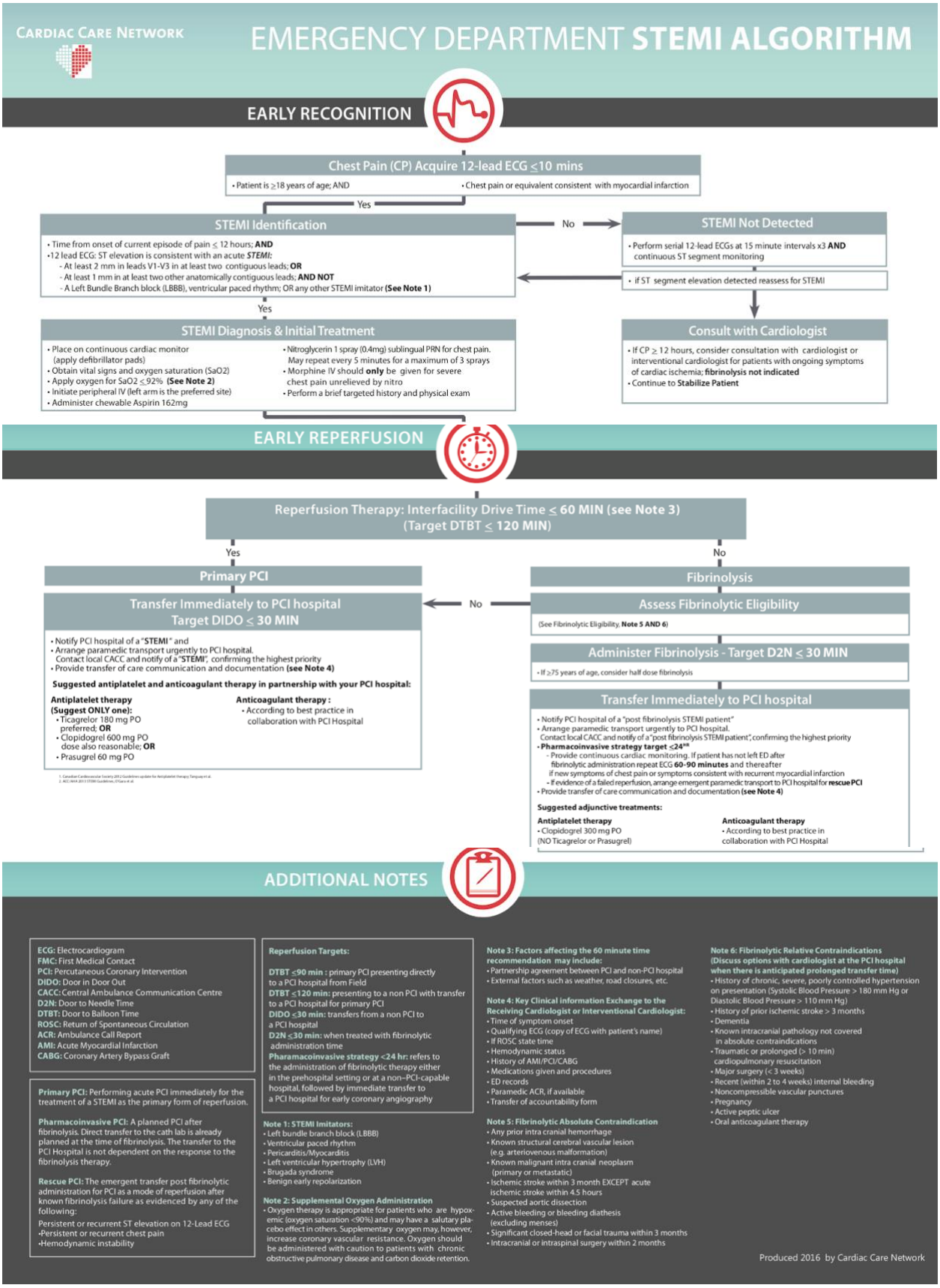
POSITIVE TEST IF ALL CRITERIA ARE MET

1. Deficits are NOT pre-existing (mild deficits that are now worse are acceptable to be counted as true deficits)
2. Onset of symptoms less than 24 hours, Last seen normal less than 24 hours
3. Patient was living independently with only minor assistance with personal care tasks
4. Patient does NOT have the following stroke mimics or conditions: seizure preceding symptoms, Hypoglycemia = glucose less than 2.8 mmol/L, Active malignancy with brain lesions

-Try and use clues to guess time last seen well – did someone talk to or call the patient?
-For patient with suspected Wake-Up symptoms, did they get up overnight? Were they normal when first getting up?
-NEGATIVE eligibility if time of onset is unknown AND/OR > 24Hrs.

Appendix S: Code STEMI Guidelines




CARDIAC CARE NETWORK
EMERGENCY DEPARTMENT STEMI ALGORITHM
EARLY RECOGNITION
Chest Pain (CP) Acquire 12-lead ECG ≤10 mins
• Patient is ≥18 years of age; AND
• Chest pain or equivalent consistent with myocardial infarction
Yes
STEMI Identification
• Time from onset of current episode of pain ≤ 12 hours; AND
• 12 lead ECG: ST elevation is consistent with an acute STEMI:
- At least 2 mm in leads V1-V3 in at least two contiguous leads; OR
- At least 1 mm in at least two other anatomically contiguous leads; AND NOT
- A Left Bundle Branch block (LBBB), ventricular paced rhythm; OR any other STEMI imitator (See Note 1)
No
STEMI Not Detected
• Perform serial 12-lead ECGs at 15 minute intervals x3 AND continuous ST segment monitoring
• if ST segment elevation detected reassess for STEMI
Yes
STEMI Diagnosis & Initial Treatment
• Place on continuous cardiac monitor (apply defibrillator pads)
• Obtain vital signs and oxygen saturation (SaO2)
• Apply oxygen for SaO2 ≤ 92% (See Note 2)
• Initiate peripheral IV (left arm is the preferred site)
• Administer chewable Aspirin 162mg
• Nitroglycerin 1 spray (0.4mg) sublingual PRN for chest pain. May repeat every 5 minutes for a maximum of 3 sprays
• Morphine IV should only be given for severe chest pain unrelieved by nitro
• Perform a brief targeted history and physical exam
Consult with Cardiologist
• If CP ≥ 12 hours, consider consultation with cardiologist or interventional cardiologist for patients with ongoing symptoms of cardiac ischemia; fibrinolysis not indicated
• Continue to Stabilize Patient
EARLY REPERFUSION
Reperfusion Therapy: Interfacility Drive Time ≤ 60 MIN (see Note 3)
(Target DTBT ≤ 120 MIN)
Yes
No
Primary PCI
Transfer Immediately to PCI hospital
Target DIDO ≤ 30 MIN
• Notify PCI hospital of a "STEMI" and
• Arrange paramedic transport urgently to PCI hospital.
Contact local CACC and notify of a "STEMI", confirming the highest priority
• Provide transfer of care communication and documentation (see Note 4)
Suggested antiplatelet and anticoagulant therapy in partnership with your PCI hospital:
Antiplatelet therapy
(Suggest ONLY one):
• Ticagrelor 180 mg PO preferred; OR
• Clopidogrel 600 mg PO dose also reasonable; OR
• Prasugrel 60 mg PO
Anticoagulant therapy :
• According to best practice in collaboration with PCI Hospital
No
Fibrinolysis
Assess Fibrinolytic Eligibility
(See Fibrinolytic Eligibility, Note 5 AND 6)
Administer Fibrinolysis - Target D2N ≤ 30 MIN
• If ≥75 years of age, consider half dose fibrinolysis
Transfer Immediately to PCI hospital
• Notify PCI hospital of a "post fibrinolysis STEMI patient"
• Arrange paramedic transport urgently to PCI hospital.
Contact local CACC and notify of a "post fibrinolysis STEMI patient", confirming the highest priority
• Pharmacoinvasive strategy target <24hr
- Provide continuous cardiac monitoring. If patient has not left ED after fibrinolytic administration repeat ECG 60-90 minutes and thereafter if new symptoms of chest pain or symptoms consistent with recurrent myocardial infarction
- If evidence of a failed reperfusion, arrange emergent paramedic transport to PCI hospital for rescue PCI
• Provide transfer of care communication and documentation (see Note 4)
Suggested adjunctive treatments:
Antiplatelet therapy
• Clopidogrel 300 mg PO
(NO Ticagrelor or Prasugrel)
Anticoagulant therapy
• According to best practice in collaboration with PCI Hospital
ADDITIONAL NOTES
ECG: Electrocardiogram
FMC: First Medical Contact
PCI: Percutaneous Coronary Intervention
DIDO: Door in Door Out
CACC: Central Ambulance Communication Centre
D2N: Door to Needle Time
DTBT: Door to Balloon Time
ROSC: Return of Spontaneous Circulation
ACR: Ambulance Call Report
AMI: Acute Myocardial Infarction
CABG: Coronary Artery Bypass Graft
Primary PCI: Performing acute PCI immediately for the treatment of a STEMI as the primary form of reperfusion.
Pharmacoinvasive PCI: A planned PCI after fibrinolysis. Direct transfer to the cath lab is already planned at the time of fibrinolysis. The transfer to the PCI Hospital is not dependent on the response to the fibrinolysis therapy.
Rescue PCI: The emergent transfer post fibrinolytic administration for PCI as a mode of reperfusion after known fibrinolysis failure as evidenced by any of the following:
Persistent or recurrent ST elevation on 12-Lead ECG
•Persistent or recurrent chest pain
•Hemodynamic instability
Reperfusion Targets:
DTBT ≤90 min : primary PCI presenting directly to a PCI hospital from Field
DTBT ≤120 min: presenting to a non PCI with transfer to a PCI hospital for primary PCI
DIDO ≤30 min: transfers from a non PCI to a PCI hospital
D2N ≤30 min: when treated with fibrinolytic administration time
Pharmacoinvasive strategy <24 hr: refers to the administration of fibrinolytic therapy either in the prehospital setting or at a non–PCI-capable hospital, followed by immediate transfer to a PCI hospital for early coronary angiography
Note 1: STEMI Imitators:
• Left bundle branch block (LBBB)
• Ventricular paced rhythm
• Pericarditis/Myocarditis
• Left ventricular hypertrophy (LVH)
• Brugada syndrome
• Benign early repolarization
Note 2: Supplemental Oxygen Administration
• Oxygen therapy is appropriate for patients who are hypoxemic (oxygen saturation <90%) and may have a salutary placebo effect in others. Supplementary oxygen may, however, increase coronary vascular resistance. Oxygen should be administered with caution to patients with chronic obstructive pulmonary disease and carbon dioxide retention.
Note 3: Factors affecting the 60 minute time recommendation may include:
• Partnership agreement between PCI and non-PCI hospital
• External factors such as weather, road closures, etc.
Note 4: Key Clinical information Exchange to the Receiving Cardiologist or Interventional Cardiologist:
• Time of symptom onset
• Qualifying ECG (copy of ECG with patient's name)
• If ROSC state time
• Hemodynamic status
• History of AMI/PCI/CABG
• Medications given and procedures
• ED records
• Paramedic ACR, if available
• Transfer of accountability form
Note 5: Fibrinolytic Absolute Contraindication
• Any prior intra cranial hemorrhage
• Known structural cerebral vascular lesion (e.g. arteriovenous malformation)
• Known malignant intra cranial neoplasm (primary or metastatic)
• Ischemic stroke within 3 month EXCEPT acute ischemic stroke within 4.5 hours
• Suspected aortic dissection
• Active bleeding or bleeding diathesis (excluding menses)
• Significant closed-head or facial trauma within 3 months
• Intracranial or intraspinal surgery within 2 months
Note 6: Fibrinolytic Relative Contraindications (Discuss options with cardiologist at the PCI hospital when there is anticipated prolonged transfer time)
• History of chronic, severe, poorly controlled hypertension on presentation (Systolic Blood Pressure > 180 mm Hg or Diastolic Blood Pressure > 110 mm Hg)
• History of prior ischemic stroke > 3 months
• Dementia
• Known intracranial pathology not covered in absolute contraindications
• Traumatic or prolonged (> 10 min) cardiopulmonary resuscitation
• Major surgery (< 3 weeks)
• Recent (within 2 to 4 weeks) internal bleeding
• Noncompressible vascular punctures
• Pregnancy
• Active peptic ulcer
• Oral anticoagulant therapy
Produced 2016 by Cardiac Care Network

Appendix T: Criticall Trauma Guidelines

TRAUMA CENTRE CONSULTATION GUIDELINES

These guidelines are meant to facilitate consultations with, and/or transfer to, a trauma centre and should be applied using clinical judgement. Final decision to transfer remains at the discretion of the referring and receiving physicians.

The decision to transfer should be made within 1 hour.

All consultations with a TTL should be coordinated through CritiCall Ontario: 1-800-668-4357

ALL TRAUMA PATIENTS

For ALL paediatric and adult injuries, contact CritiCall Ontario for the appropriate Trauma Centre.

Systems Criteria

Any patient (with a major traumatic injury [severe multisystem; life-or-limb threatening single system]) requiring trauma consultation or who requires more care than can be provided at the referring centre based on the assessment of the ED physician. Not all patients with single system injuries will need to be transferred to a Lead Trauma Hospital and may be able to receive care where local expertise exists.

Physiological Criteria

- GCS <10 due to traumatic injury
- Significant alteration of consciousness due to trauma
- Hypotension (due to trauma) that is unresponsive or only transiently responsive to fluids
- Hypothermia (Body Temp) <32°C (with traumatic injuries)

Anatomical Criteria (one or more of the following)

- Suspected spinal cord injury with paraplegia or quadriplegia
- Moderate-to-severe head trauma
- Severe (or suspected severe) penetrating injury to the head, neck, torso or groin (stab wound or GSW)
- A requirement for blood products to maintain vital signs
- Amputation above the wrist or ankle
- Pelvic fractures with hemodynamic instability or significant hematoma
- Major crush or vascular injury
- Trauma with burn or inhalation injury

SPECIAL CONSIDERATIONS

High risk considerations which may warrant transfer to Lead Trauma Centre at a lower threshold. These considerations include:

- Age > 55;
- Age < 15;
- Anticoagulation;
- Immunosuppression;
- Pregnancy; or
- Other significant medical problems
- A CT Scan may not always be required for the decision to transfer if it will delay definitive management.

For any considerations, consult with on-call trauma team leader through CritiCall Ontario.

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CRITICALL ONTARIO

Refer to ABA (American Burn Association Burn Centre Referral Criteria)
Please refer to the Neurosurgery Cranial and Spinal Consultation Criteria for isolated Cranial and Spinal Neurosurgical cases found on site

BURNS CENTRE CONSULTATION GUIDELINES

These guidelines are meant to facilitate consultations with, and/or transfer to, a Burns Centre and should be applied using clinical judgement. Final decision to transfer remains at the discretion of the referring and receiving physicians.

The decision to transfer should be made within 1 hour.

For ALL paediatric and adult burns, contact CritiCall Ontario for consultation and potential referral to a Burn Centre.

All consultations should be coordinated through CritiCall Ontario: 1-800-668-4357

Systems Criteria

Any patient with a major burn injury (without other traumatic mechanism) requiring consultation or who requires more care than can be provided at the referring centre based on the assessment of the ED physician. A major burn injury with traumatic mechanism should be transferred to the regional Lead Trauma Hospital.

Physiological Criteria

CONSIDER TRANSFER TO A BURN CENTRE

- ≥ 20% TBSA partial and/or full thickness at any age
- ≥ 10% TBSA partial and/or full thickness for ages ≤ 10 and ≥ 50
- Full thickness burns ≥ 5% TBSA at any age
- Age ≥ 65 with 2nd or 3rd degree burns, any size
- Inhalation + partial and/or full thickness burns ≥ 5% TBSA
- Children with burn injury presenting to a hospital that does not have the appropriate equipment or qualified personnel to provide care for children
- Electrical burns
- Chemical burns
- Burns to hands, face, feet, joints, genitalia, perineum
- Burns with comorbidity
- Burns with patients who require special social, emotional, or rehabilitation care

Refer to ABA (American Burn Association) Burn Centre Referral Criteria

SPECIAL CONSIDERATIONS

High risk considerations which may warrant transfer at a lower clinical threshold. These considerations include:

- ≥ 50 years of age;
- Anticoagulation;
- Immunosuppression;
- Pregnancy;
- Diabetes;
- Other significant medical problems

For any considerations, consult with on-call physician through CritiCall Ontario.

CONSIDER CONSULT WITH BURN CENTRE FOR CARE PLAN TO REMAIN AT PRESENTING HOSPITAL

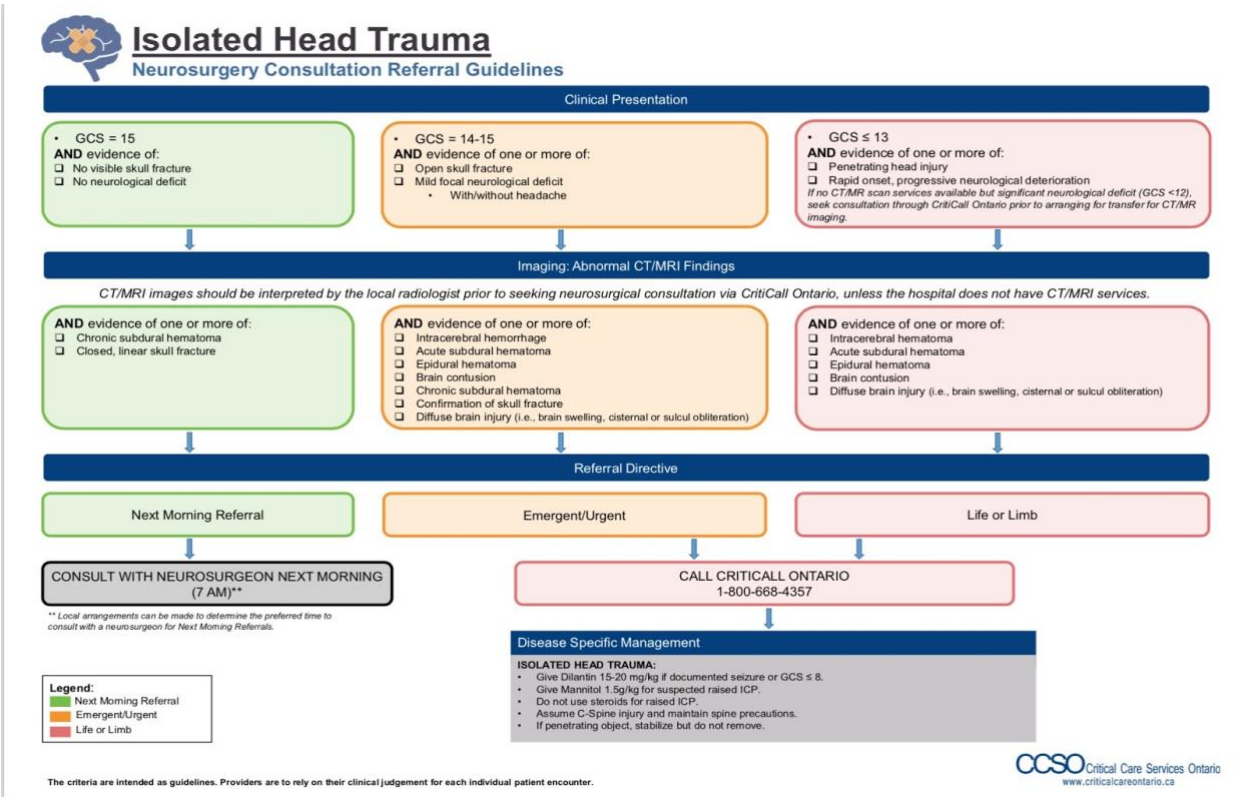
- Advice for non-urgent or non-emergent burns at hospital with qualified personnel and equipment for burn care and scar management
- Burns <10% TBSA in adults who do not require transfer but seek medical advice or ambulatory burns clinical referral for assessment

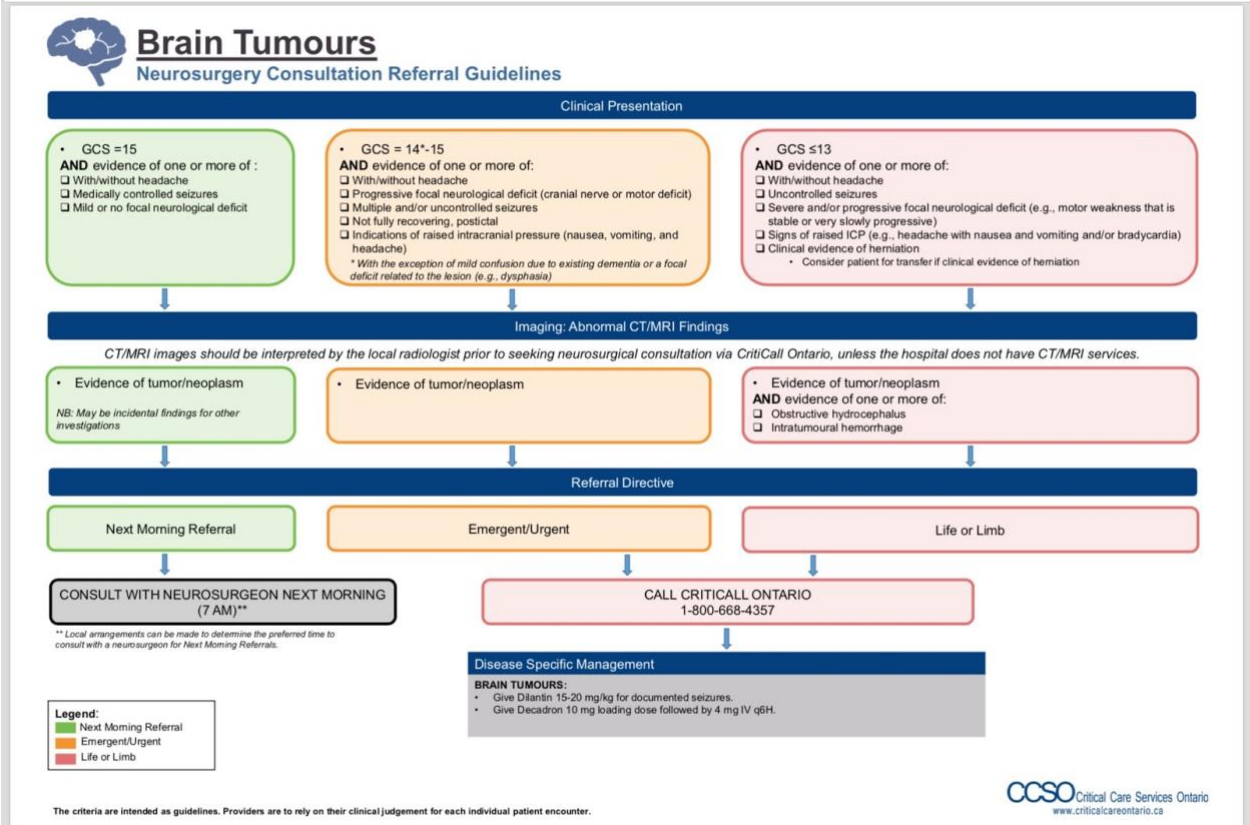
For any considerations, consult with on-call physician through CritiCall Ontario.

CCSO Critical Care Services Ontario

CRITICALL ONTARIO

Appendix U: Criticall Guidelines





Intracerebral Hemorrhage

Neurosurgery Consultation Referral Guidelines

Clinical Presentation

- GCS = 15
AND evidence of:
  - ❑ Neurologically stable
  - ❑ With/without headache

- GCS = 14*-15
AND evidence of one or more of:
  - ❑ Mild focal neurological deficit with no/slow progression
  - ❑ With/without headache

** With the exception of mild confusion due to existing dementia or a focal deficit related to the lesion (e.g., dysphasia)*

- GCS ≤ 13
AND evidence of one or more of:
  - ❑ Progressive neurological deterioration

Imaging: Abnormal CT/MRI Findings

CT/MRI images should be interpreted by the local radiologist prior to seeking neurosurgical consultation via CritiCall Ontario, unless the hospital does not have CT/MRI services.

AND evidence of one or more of:
- ❑ Any hemorrhage ≤ 2.0 cm
- ❑ Vascular malformation with resolved intracranial hemorrhage

NB: Patients with hypertensive hemorrhagic stroke (≤ 3.0cm) are medically managed by neurology and do not require urgent consultation.

AND evidence of one ore more of:
- ❑ Infratentorial intracranial hemorrhage without obstructive hydrocephalus
- ❑ Intraventricular hemorrhage
- ❑ Supratentorial hemorrhage: 2-5 cm
- ❑ *Non-traumatic* subarachnoid hemorrhage

AND evidence of one more of:
- ❑ Obstructive hydrocephalus
- ❑ Infratentorial intracranial hemorrhage ≥ 3 cm
- ❑ Lobar hemorrhage ≥ 5 cm
- ❑ *Non-traumatic* subarachnoid hemorrhage

If no CT/MR scan services available but significant neurological deficit (e.g., lateralizing signs, GCS <12, presence of xanthochromia in lumbar puncture), seek consultation through CritiCall Ontario prior to arranging for transfer for CT/MR imaging.

Referral Directive

Next Morning Referral	Emergent/Urgent	Life or Limb
CONSULT WITH NEUROSURGEON NEXT MORNING (7 AM)**	CALL CRITICALL ONTARIO 1-800-668-4357	

*** Local arrangements can be made to determine the preferred time to consult with a neurosurgeon for Next Morning Referrals.*

Disease Specific Management

NON-TRAUMATIC SUBARACHNOID HEMORRHAGE:
- Keep systolic blood pressure (SBP) between 120mmHG and 180mmHG (use pressors or antihypertensives as necessary).
- Consult neurosurgeon prior to giving Mannitol.

INTRACEREBRAL HEMORRHAGE:
- Give Dilantin 15-20 mg/kg for documented seizures.
- Manage and set target BP in consultation with neurosurgeon.
- Discuss with neurosurgeon the appropriateness of transfer using CT and clinical criteria.

Legend:
- Next Morning Referral
- Emergent/Urgent
- Life or Limb

The criteria are intended as guidelines. Providers are to rely on their clinical judgement for each individual patient encounter.

CCSO Critical Care Services Ontario
www.criticalcareontario.ca

Spine

Neurosurgery Consultation Referral Guidelines

Clinical Presentation

- Radiculopathy with mild or no weakness
- Spine pain

- Acute radiculopathy with significant weakness
- Stable or slowly progressive quadriparesis
- Stable or slowly progressive paraparesis

- Quadriplegia
- Paraplegia
- Rapidly progressive quadriparesis
- Rapidly progressive paraparesis

OR

- Cauda Equina Syndrome
AND one or more of:
  - ❑ Decreased rectal tone
  - ❑ Saddle anesthesia
  - ❑ Bilateral motor weakness

If history of trauma and new, severe deficit, arrange for urgent MRI and/or CT.

Imaging: Abnormal X-Ray/CT/MRI Findings

CT/MRI images should be interpreted by the local radiologist prior to seeking neurosurgical consultation via CritiCall Ontario, unless the hospital does not have CT/MRI services.

AND evidence of one or more of:
- ❑ Stable compression fracture
- ❑ Evidence of spinal column tumour
- ❑ Cervical or lumbar disc herniation

NB: Degenerative and deformity findings should be referred to primary care provider for follow-up/management. See Quality-Based Pathway for Clinical Handbook for Non-Emergent Integrated Spine Care

AND evidence of one or more of:
- ❑ Spinal column fracture
- ❑ Subluxation/dislocation facet joints in cervical spine
- ❑ Collapse of vertebral body
- ❑ Cervical or lumbar disc herniation with significant canal compromise
- ❑ Spinal cord compression due to new mass (tumour or infection)

If no CT scan services available but significant neurological deficit and abnormalities on plain x-rays, seek consultation through CritiCall Ontario prior to arranging for transfer for CT/MR imaging.

AND evidence of one or more of:
- ❑ Thecal sac compression
- ❑ Severe spinal canal compromise

If no local CT/MRI services available, seek CritiCall Ontario consultation prior to arranging for transfer for CT/MR imaging.

Referral Directive

Next Morning Referral	Emergent/Urgent	Life or Limb
CONSULT WITH NEUROSURGEON NEXT MORNING (7 AM)**	CALL CRITICALL ONTARIO 1-800-668-4357	

*** Local arrangements can be made to determine the preferred time to consult with a neurosurgeon for Next Morning Referrals.*

Disease Specific Management

CAUDA EQUINA SYNDROME
- *The absence of urinary retention indicates the exclusion of possible Cauda Equina Syndrome.*

Next steps
- Once clinical diagnosis established, must be corroborated by MRI to establish diagnosis prompting referral.
- Optimize laboratory values (i.e., coagulation) for operative intervention.

SPINAL CORD INJURY
CT scan is first line imaging modality.

Cervical:
- Be vigilant in patients with new deficit and/or significant neck pain after trauma with normal CT scan. These patients require MRI to rule out spinal cord injury without radiographic abnormality.
- Immobilize in rigid cervical collar.

Thoracolumbar
- Assess bowel and bladder function.
- Keep on bedrest with head of bed flat.
- Investigate for associated spinal and systemic injuries (e.g., bowel injury, occult spinal injury).

ACUTE (<48 hours) SPINAL CORD COMPRESSION (METASTATIC)

Management
- Delineate primary lesion, if applicable.
- Avoid hypotension (SBP <100).
- Give Dexamethasone 16 mg IV x1.
- Look for lesions; the whole spine must be imaged with MRI + Gadolinium.

Legend:
- Next Morning Referral
- Emergent/Urgent
- Life or Limb

The criteria are intended as guidelines. Providers are to rely on their clinical judgement for each individual patient encounter.

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Ruptured Abdominal Aortic Aneurysm (rAAA) Assessment, Consultation & Referral Guide

CorHealth Ontario

This guide is intended as a support tool to assist consultations with vascular specialist and/or transfer to a Vascular Centre for patients with moderate to high suspicion for ruptured AAA. The guide should be applied using clinical judgement.

Ruptured AAA is a surgical emergency. Consultation with a vascular specialist should be initiated **within 30 minutes of first medical contact with a patient suspected of rAAA.**

If vascular services are not available on-site, contact **CritiCall Ontario to facilitate ALL** rAAA consultations and potential referral to a Vascular Centre.

Time Goal:
≤ 30 minutes*
From first medical contact to CritiCall Ontario activation

≤ 30 minutes*

Clinical Presentation (Clinical Assessment Target Time ≤ 10 minutes*)

- ☐ Abdominal pain or back pain AND hypotension.[1, 2, 3] Proceed to POCUS or rapid radiologic assessment.
- ☐ Known AAA AND abdominal pain or back pain, hypotension, or impending cardiovascular collapse.[1, 2, 3] Proceed to rapid radiologic assessment IF it will not delay referral to a vascular specialist.

*If rAAA is considered as part of differential diagnosis based on clinical presentation, a rapid radiological assessment or POCUS must be completed to confirm or rule out presence of AAA.[1, 2, 3] If no CT/CTA on-site or CT/CTA is not immediately available, proceed with request for vascular consult if clinical presentation and ultrasound findings suggest presence of rAAA.

Rapid Radiologic Assessment: CTA (Rapid Radiologic Assessment Target Time ≤ 20 minutes*)

After-hours: Do not delay consult with vascular specialist for on-call technologists & radiologists. Do not transfer patient to other hospital for purpose of CT/CTA. Proceed to consult based on clinical presentation and POCUS.

- ☐ Abdominal and pelvic CT/CTA at 1mm cuts. CTA is preferred. Creatinine not necessary prior to CTA.
- ☐ Imaging should be automatically transferred to ENITS. If unable to transfer to ENITS a digital copy of imaging must be transferred with the patient.[1, 2, 3]

Consult with Vascular Specialist

Discussion with vascular specialist[1, 2] includes:

- ☐ CTA Imaging availability via ENITS/ local image repository or will be sent with patient[1, 2, 3]
- ☐ Goals of care[2]
- ☐ Medical comorbidities[2]
- ☐ Hemodynamics[2]
- ☐ Respiratory support

Phone
CritiCall Ontario
1-800-668-4357

Immediate Clinical Management

- ☐ Intravenous access with two large bore peripheral IVs (central and/or arterial access not immediately necessary).[1, 2]
- ☐ Permissive hypotension (to maintain mental status and target systolic blood pressure of 70-90 mmHg).
- ☐ Blood products are preferred to treat hypotension.[1, 2, 3] Cross-match blood types if it will not delay patient transfer.
- ☐ Medication for pain.[2]
- ☐ Foley catheter placement may be considered if it will not delay transfer.
- ☐ Other actions that may help improve patient outcomes are patient warming[4] and avoidance of elective intubation.

Rapid Transfer

- ☐ Arrange immediate transfer. Cases confirmed Life or Limb[5], transportation will be arranged by CritiCall Ontario. Cases not confirmed Life or Limb[5], transportation arranged by referring hospital.
- ☐ Physician or nurse escort may be required as determined by referring physician.

Arrival at receiving hospital to intervention start
Time Goal ≤ 30 minutes*

Receiving Hospital

- ☐ Emergent evaluation and intervention by receiving vascular team

This information is for guidance only and is not a requirement.

*Time goals are not standards for medicolegal purposes. Times will vary based on patient presentation and other circumstances.

References:

1. Mell MW etal. Western Vascular Society Guidelines for Transfer of Patients with Ruptured AAA. J Vasc Surg 2017; 65:603-8.
2. Chaikof etal. The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm. J Vasc Surg. 2018; 67:2-77.
3. Hinchliffe RJ etal. Transfer of patients with ruptured abdominal aortic aneurysm from general hospitals to specialist vascular centres: results of a Delphi consensus study. Emerg Med J 2013;30:483-486.
4. Spahn etal. Management of bleeding and coagulopathy following major trauma: an updated European guideline. Critical Care 2013; 17:R76.
5. Ontario Life or Limb Policy: http://www.health.gov.on.ca/en/pro/programs/criticalcare/life.aspx

Consult, transfer and repatriation of the patient is supported by the Ontario **Life or Limb policy**.

Final decision to transfer remains at the discretion of the referring and receiving physicians.

CorHealth Ontario March 2019

Extracorporeal Membrane Oxygenation (ECMO) Consultation Guidelines

The criteria are intended as guidelines for ADULTS. Providers are to rely on their clinical judgement for each individual patient encounter.

RESPIRATORY

Consider ECMO for the following Diagnostic Indications	DO NOT Consider ECMO for the following Diagnostic Indications
❑Acute Respiratory Distress Syndrome (ARDS) ❑Hypercapnic respiratory failure ❑Bridge to lung transplantation ❑Primary graft dysfunction after lung transplantation ❑Status asthmaticus	Absolute ❑Disseminated malignancy ❑Known severe brain injury ❑Prolonged cardiopulmonary resuscitation (CPR) without adequate tissue perfusion ❑Severe chronic organ dysfunction (emphysema, cirrhosis) ❑Severe chronic pulmonary hypertension ❑Non-recoverable advanced comorbidity such as central nervous system (CNS) damage or terminal malignancy Relative ❑Where anticoagulation precluded, advanced age, obesity ❑End-stage renal disease

Recommended Interventions for Patients with ARDS

Initial Assessment and Management

1. Diagnose and treat underlying ARDS | 2. Measure patient height and calculate predicted body weight
3. Standard lung-protective ventilation strategy|4. Diuresis or resuscitation as appropriate

MILD	
Criteria	**Recommended Intervention**
❑**PaO_2/FiO_2 Ratio 200 - 300 mm Hg** ❑pH > 7.20 ❑PEEP ≥ 5cm H_20	**Noninvasive ventilation** Recommended: • Lung Protective Strategy: Low Tidal Volume Ventilation Consider: • Consultation for Level 3 ICUs • Continue current strategy and deescalate interventions when possible after patient improves

MODERATE	
Criteria	**Recommended Intervention**
❑**PaO_2/FiO_2 Ratio 150 - 200 mm Hg** ❑pH < 7.20 ❑PEEP > 5cm H_20	**Controlled Mechanical ventilation** Recommended: • Lung Protective Strategy: Low Tidal Volume Ventilation Consider: • Check esophageal pressure to help guide ventilator management • Recruitment maneuvers* • High PEEP Strategy* * Consider with caution

SEVERE	
Criteria	**Recommended Intervention**
❑**PaO_2/FiO_2 Ratio < 150 mm Hg** ❑Uncompensated hypercapnia with pH < 7.20 ❑PEEP > 5cm H_20	**Controlled Mechanical ventilation** Strongly Recommended: • Prone positioning (unless contraindicated) Recommended: • Lung Protective Strategy: Low Tidal Volume Ventilation • Neuromuscular blocking agent • High PEEP Strategy Consider: • Inhaled pulmonary vasodilators • Recruitment maneuvers
❑**If PaO_2/FiO_2 Ratio ≤ 80 mm Hg:** • < 80 mm Hg for > 6 hours • < 50 mm Hg for > 3 hours • $PaCO_2$ ≥ 60 mm Hg for > 6 h** ** With respiratory rate increased to 35 breaths per minute and mechanical ventilation settings adjusted to keep a plateau airway pressure of ≤ 32 cm of water.	**CONSIDER REFFERAL FOR POTENTIAL ECMO** Patient Consideration: • Mechanically ventilated < 7 days • BMI ≤ 40kg/m2 or Weight ≤ 125 kg • Age: 18-65

ALL ADULT CONSULTATIONS FOR ECMO SHOULD BE COORDINATED THROUGH CRITICALL ONTARIO: 1-800-668-4357

CARDIAC

Consider ECMO for the following Diagnostic Indications	DO NOT Consider ECMO for the following Diagnostic Indications
❑Myocardial infarction-associated cardiogenic shock ❑Fulminant mycocarditis ❑End stage pulmonary hypertension ❑Extracorporeal cardiopulmonary resuscitation ❑Post-cardiotomy cardiogenic shock ❑Bridge to ventricular assist device (VAD) implantation or heart transplantation ❑Primary graft failure after heart transplantation ❑Prevention of acute right ventricular failure after left ventricular assist device (LVAD) implantation	Absolute: ❑End stage heart failure and not a candidate for transplant or destination therapy of VAD support ❑Disseminated malignancy ❑Known severe brain injury ❑Unwitnessed cardiac arrest ❑Prolonged CPR without adequate tissue perfusion ❑Unrepaired aortic dissection ❑Severe aortic regurgitation ❑Severe chronic organ dysfunction (emphysema, cirrhosis) ❑Peripheral vascular disease ❑Non-recoverable advanced comorbidity such as CNS damage or terminal malignancy Relative: ❑Where anticoagulation precluded, advanced age, obesity ❑End-stage renal disease

For Paediatric and Neonate patients, please consult your appropriate Paediatric ECMO Centre OR call CritiCall Ontario.

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Version 1.0

Appendix W: Guidelines for Obstetrical Patients

MARKHAM STOUFFVILLE HOSPITAL CORPORATION	**330.914.601.015 Pregnant Patients - Assessment in Emergency Department**
Location: Interdisciplinary Manual\Obstetrics	Version: 3.00
Document Owner: Patient Care Manager Childbirth Services	Original Approval Date: 06/24/2004
Electronic Approval: Patient Care Director Childbirth and Childrens Services and Care Transitions	Approved Date: 10/02/2018
Review Frequency: 3 years	Next Review Date: 11/01/2019

POLICY:

- Any pregnant patient presenting to the Emergency Department (ED) for assessment will be assessed by the ED triage nurse or ED Facilitating Nurse (FN) upon arrival and if necessary, will be registered for further assessment and ED physician involvement.
- All pregnant patients at 16 weeks or more gestation that present to the ED for assessment, regardless of their condition, will prompt a call from the ED triage nurse or ED FN to the Childbirth & Children's Services (CCS) FN or perinatal RN to determine appropriate location of care and to coordinate resources for appropriate maternal and fetal monitoring and intervention.
- Pregnant patients less than 16 weeks gestation will be registered to ED.

EXPECTED OUTCOMES:

- To provide a systematic approach for timely, accurate, and appropriate assessment of pregnant patients presenting to the ED.
- To facilitate communication between emergency and obstetric providers to determine the most appropriate place to provide care and coordinate resources.

DEFINITIONS:

Imminent Birth: Fetal parts visible on perineum and/or patient actively bearing down pushing; may also include labial separation with bulging perineum and rectum and/or sensation of need to have bowel movement with or without passage of stool (MORE^{OB}, 2018)

Incompetent Cervix: A defect of the cervix leading to preterm cervical dilation without labour (MORE^{OB}, 2018)

Malpresentation: Any fetal part (e.g., fetal shoulder or buttocks) other than the fetal head that presents to the mother's pelvis (MORE^{OB}, 2018)

Placental Abruption: Partial or complete premature separation of the normally implanted placenta from the uterine wall; typically presents with constant abdominal pain (greatest at the site of placental attachment) with or without vaginal bleeding (MORE^{OB}, 2018)

Placenta Previa: The placenta is touching or covering the internal os of the cervix; may present with painless vaginal bleeding (MORE^{OB}, 2018)

Prolapsed Cord: The presentation of the umbilical cord below or adjacent to the fetal presenting part; a prolapsed cord may be identified via visualization or with palpation during vaginal examination (MORE^{OB}, 2018)

Uterine Rupture: The complete separation of the myometrium (muscular wall of the uterus) with or without extrusion of the fetal parts into the maternal peritoneal cavity; signs and symptoms may include: fetal heart rate-FHR abnormalities, vaginal bleeding, acute onset of abdominal pain with or without maternal tachycardia, hypotension or hypovolemic shock (MORE^{OB}, 2018)

PROCEDURE(S):

1. ED triage nurse or ED FN will initiate assessment and/or conversation for any pregnant patient presenting to the ED for assessment.
2. The ED visit will be registered prn for further assessment and ED physician involvement.
    - *See Appendix A: Decision Tool for Pregnant Patient in Emergency Department*
3. The ED triage nurse or ED FN will **call the CCS FN Ext. 1121 (or ask for Perinatal RN at Ext. 7389 if CCS FN unavailable)**, for any pregnant patient presenting to the ED for assessment, to:
    a. Communicate patient presence and any assessment findings,
    b. Determine the most appropriate location for care, and
    c. Determine the need to register the patient in ED, if not already done
4. If the pregnant patient is to remain in the ED, then collaboration between emergency and CCS providers should transpire to coordinate resources as required (e.g., FHR, non-stress test-NST, or continuous fetal monitoring in ED)
    - If ED triage nurse or ED FN uncomfortable or unable to obtain FHR, CTAS 1 and immediate request for ED physician bedside ultrasound may be considered
5. If a patient registered and assessed in the ED requires ongoing obstetrical assessment, the ED FN should call the CCS FN Ext. 1121 to follow up for potential transfer to CCS for further obstetrical assessment and/or observation prn. Consult between ED physician and OB on call and/or Hospitalist Registered Midwife (RM) may be required before transfer to CCS occurs.

REFERENCES:

Journal of Obstetricians and Gynaecologists of Canada (2015). SOGC Clinical Guideline: Guideline for the Management of a Pregnant Trauma Patient. Retrieved January 14, 2018 from http://www.jogc.com/article/S1701-2163(15)30232-2/pdf

Intermountain Healthcare (July, 2014). *Management of Pregnant Patients in the Emergency Department.* Retrieved January 14, 2018 from https://intermountainhealthcare.org/ext/Dcmnt?ncid=521396209

Murray, M., Bullard, M., Grafstein, E., & CEDIS National Working Group (2004). *Revisions to the Canadian Emergency Department Triage and Acuity Scale Implementation Guidelines.* Canadian Journal of Emergency Medicine, 6(6), 421-427.

Salus Global Corporation (2018). MORE^{OB}. Retrieved February 8, 2018 from http://www.moreob.com

The American College of Obstetricians and Gynecologists. Women's Health Care Physicians (July, 2016). *Hospital-Based Triage of Obstetric Patients; Committee Opinion Number 667.* Retrieved January 14, 2018 from www.acog.org/-/media/Committee-Opinions/Committee-on-Obstetric-Practice/co667.pef?dmc=1&ts=20160624T0648582181

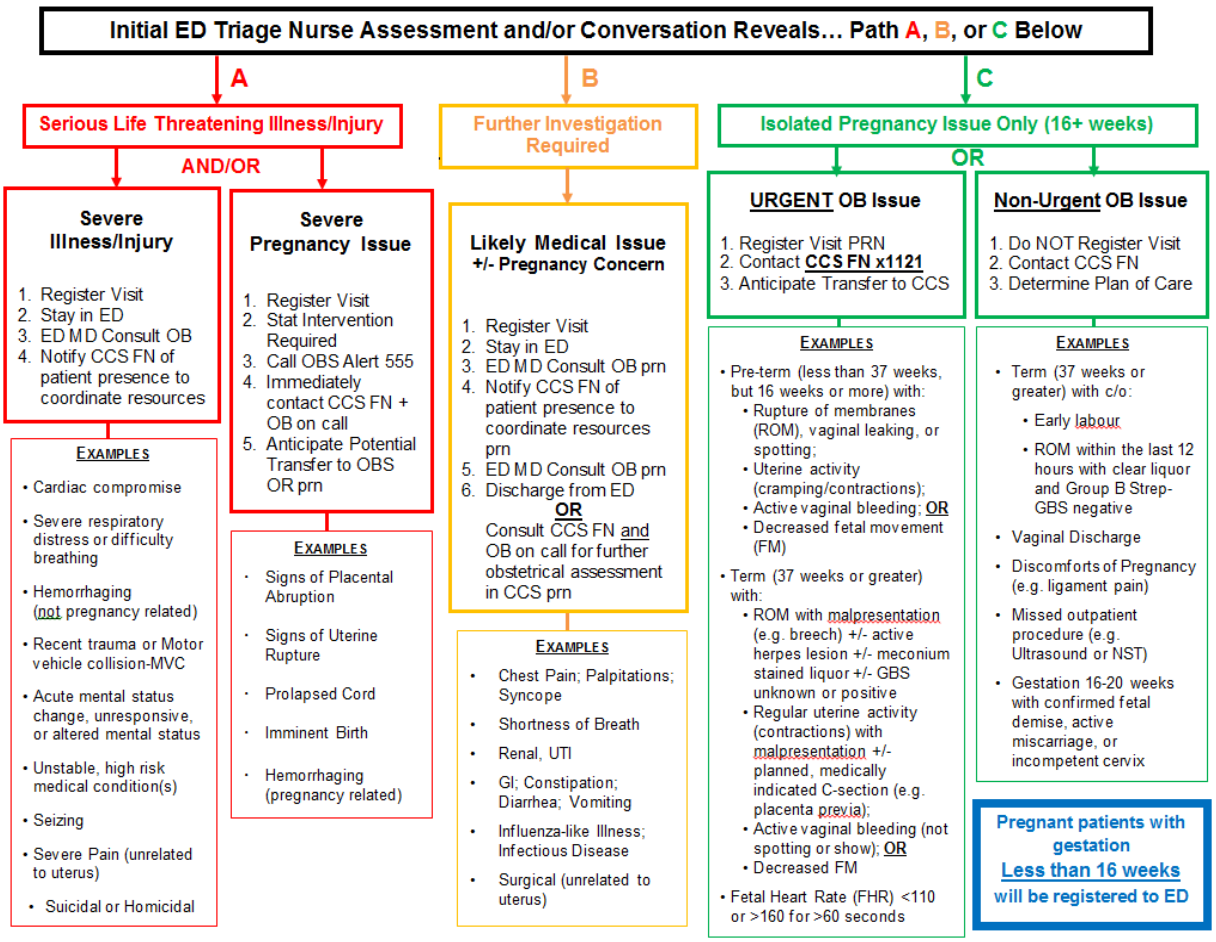
ENDORSEMENTS:

Childbirth Services Operations
Chief of Obstetrics and Gynaecology
Chief of Emergency Medicine
Professional Practice Leader, Emergency Department
Manager, Emergency Department

PREVIOUS REVIEWED/REVISED DATE(S):

Previous Review Date: 01/03/1999
Previous Revision Date: 13/01/2006; 22/06/2018

Decision Tool for Pregnant Patient in Emergency Department



Appendix X: Guidelines for the Pediatric Mental Health Patient

MARKHAM STOUFFVILLE HOSPITAL CORPORATION	**350.914.605.170 Care of a Paediatric Patient with a Mental Health Concern Arriving in the Emergency Department**
Location: Interdisciplinary Manual\Paediatrics	Version: 1.50
Document Owner: Patient Care Manager NICU and Childrens Services	Original Approval Date: 03/10/2017
Electronic Approval: Patient Care Director Childbirth and Childrens Services and Care Transitions	Approved Date: 10/29/2018
Review Frequency: 3 years	Next Review Date: 08/01/2019

POLICY:

All paediatric patients admitted from the Emergency Department or outpatient clinic for mental health concerns will be managed and treated at Markham Stouffville Hospital (MSH) until the patient is transferred to an accepting child adolescent mental health unit / facility.

GUIDELINES:

- For paediatric mental health patients presenting to the Emergency Department (ED) the "Care of a Paediatric Patient with a Mental Health Concern Arriving in the ED" (Appendix A) will be followed
- The Ontario Telemedicine Network (OTN) can be used to assess external patients at Uxbridge Cottage Hospital and the "Algorithm for a Paediatric Patient with a Mental Health Concern Arriving in the ED" (Appendix A) followed.
- Patients who are demonstrating aggressive or agitated behavior in the ED or who require any form of restraint will remain in the ED until a regional bed is found elsewhere. They cannot be transferred to the paediatric inpatient unit while demonstrating this behaviour.
- Mental Health patients admitted to the paediatric inpatient unit may require one-to- one observation provided by a hired sitter. Observation levels may change depending on the patient's risk level, behaviour and/or availability of family support.
- Patients placed on a Form 1 must have a hired sitter arranged prior to transfer to the paediatric inpatient unit
- The medically stable patient on the paediatric unit will have the admitting psychiatrist as their MRP in partnership with the paediatrician unless reassigned to another psychiatrist.
- The medically unstable patient on the paediatric unit will have a paediatrician as MRP in partnership with the psychiatrist.

EXPECTED OUTCOMES:

Paediatric patients will be cared for in a setting that adheres to legal requirements and maximizes patient safety, comfort, timely disposition and patient flow.

DEFINITIONS:

350.914.605.170 Care of a Paediatric Patient with a Mental Health Concern Arriving in the Emergency Department

Medical Stability: A collaborative clinical decision made by the ED physician, paediatrician or psychiatrist pertaining to the nature of the patient's medical condition.

Paediatric patient – Age 0 to 18th birthday

Intensive Observation: Assessment of a patient more frequently than every 15 minutes, with the continuous physical presence of a staff member in the same environmental vicinity as the patient (refer to policy Observation and Privilege Levels in Inpatient Mental Health)

One to One Observation: Continuous sight contact and within reach of patient at all times (refer to policy Observation and Privilege Levels in Inpatient Mental Health)

Safety Sweep: A visual inspection of a room to remove potentially dangerous/contraband items.

Form 1 – Ministry of Health - Application by Physician for Psychiatric Assessment. Form 1 authorizes apprehension and detention for up to 72 hours in a psychiatric facility for purposes of psychiatric assessment.

Dangerous/Contraband Items: may include, but are not limited to:

- any medications, illicit or unknown substances
- any sharp objects (nail clippers, nail files, scissors, knives)
- mirrors, glass bottles
- belts
- plastic bags

PROCEDURES:

The Crisis Worker will:

1. Obtain all relevant patient information including specific care requirements from a medical and mental health perspective
2. Complete and document a mental status assessment (including Suicide Screening Tool)
3. Liaise with the ED physician, On-Call Psychiatrist and Pediatrician when indicated to review the case and determine an appropriate plan of care
4. If admission is required; attempt to obtain a bed for the patient in an appropriate Mental Health facility/adolescent unit before seeking transfer to the paediatric unit
5. If transfer to another facility is not possible or timely, discuss the care needs of the patient with the Paediatric Patient Care Manager or Clinical Operations Manager (COM) and the Childbirth and Children's Services Facilitating Nurse and consider transferring to the inpatient paediatric unit.
6. In preparation for transferring to the inpatient paediatric unit, ensure the patient is searched in accordance with hospital policy before leaving the ED
7. If patient is known to MSH Child and Adolescents Services, contact Outpatient Mental Health Unit Secretary to inform of admission

The Inpatient Childbirth and Children's Services Facilitating Nurse will:

1. Discuss the patient's care needs with the Crisis Team prior to transfer and obtain staff for one to one observation if required
2. In collaboration with Crisis Worker; determine most appropriate patient room to facilitate safety and meet patient needs
3. Communicate with Crisis Team each morning regarding the ongoing efforts to transfer the patient out to an appropriate facility
4. Communicate with the FN on 1WF - Inpatient Mental Health as needed

The Assigned Paediatric Nurse will:

1. Consider individual patient safety needs and conduct a safety sweep of the room, as needed, prior to the patient's arrival and each shift
2. On admission; ensure the patient has been searched in accordance with hospital policy before leaving the ED
3. Complete and document a mental status exam each shift and implement safety plan as required
4. Liaise with Inpatient Mental Health FN as needed for support and guidance

REFERENCES:

Markham Stouffville Hospital. (2014). 090.917.045 Code White – Violent Person – Both Sites

Markham Stouffville Hospital. (2003). 160.914.914.085 Assessment Parameters – Mental Status

Markham Stouffville Hospital. (2016). 530.914.917.050 Suicide Risk Assessment

Markham Stouffville Hospital. (2008). 160.914.914.015 Professional Documentation Standards

Markham Stouffville Hospital. (2005). 160.914.914.075 Documentation Standards – Adult Mental Health Inpatients (Markham Site)

Markham Stouffville Hospital. (2014). 530.914.500.010 Searching Patients For Potentially Dangerous Items Or Contraband

Markham Stouffville Hospital.(2014). 210.914.914.005 Restraint Minimization Policy

Markham Stouffville Hospital. (2016). 020.501.005 Admission/Transfer to Adult Inpatient Mental Health

Markham Stouffville Hospital. (2015). 530.501.085 Observation and Privilege Levels in Inpatient Mental Health

350.914.605.170 Care of a Paediatric Patient with a Mental Health Concern Arriving in the Emergency Department

ENDORSEMENTS:

Mental Health Operations Committee - January 19, 2017
Emergency Department Operations Committee - January 16, 2017
Paediatric Services Operations Committee – February 21, 2017

PREVIOUS REVIEWED/REVISED DATE(S):

Not applicable

RETIRES:

020.919.101.005 Paediatric Mental Health Cases Presenting in Emergency, No Medical Stabilization Required, 0-16 Years
Original Approval Date: 12/09/2002
Retired: 02/Dec/2016

020.914.101.010 Paediatric Mental Health Cases Presenting in Emergency, No Medical Stabilization Required, 0-16 Years
Original Approval Date: 12/09/2002
Retired: 02/Dec/2016

Uploaded: March 10, 2017

Paediatric Patient (age 0-18th birthday) with a Mental Health Concern Arriving in the Emergency Department