

A day in the life-Urban Laboratory

A LARGE TEACHING ACADEMIC HOSPITAL NETWORK

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HRLMP-Transfusion Medicine Laboratory



5 LABS AND 2 CORPORATIONS

- Mainly 5 labs
 - Hamilton General Hospital (HGH)
 - McMaster University Medical Centre (MUMC)
 - Juravinski Hospital and Cancer Centre (JHCC)
 - St. Joseph's Hospital (STJ)
 - West Lincoln Memorial Hospital (WLMH)

KNOWN FOR

HGH- trauma centre, cardiac surgeries, ICU and burns ICU

MUMC- paediatric care, and some high risk obstetric care

JHCC- regional cancer program, ICU, Stem cell, cellular therapy

STJ-kidney/ urinary, transplants, mental health/addictions, respiratory care, mother and infant care

WLMH- community hospital



Transfusion Medicine Laboratory

ABOUT THE 5 LABS

- 4 TM only labs
 - usually core lab is next door
- 1 Core lab- WLMH
- Number of Staff:
 - 26 FT MLTs, 10 PT MLTs, 8 FT MLAs
 - STJ: 5FT MLTs, 3 PT MLTs, 2 FT MLAs
 - HHS: 21FT MLTs, 7 PT MLTs, 6 FT MLAs
 - WLMH has 10 MLTs

SHIFT LENGTH

- Hybrid of 8 hours and 12 hours
 - HHS hybrid- pilot started 2023, more in 2024
 - Half MLTs 12 hour and other half 8 hours - mostly PT and seniors
 - MLAs 8 hours
 - STJ all 12 hours except senior



A day in the Life- Urban Laboratory

AUTOMATION

Two instruments –solid phase (Capture technology)

- ECHO Lumena at all sites
- NEO Iris – First site to have this in Canada
 - Both are manufactured by Immucor
- Tests: Group and Screen (GS), DAT, Crossmatch, Unit Group confirmations

MANUAL TESTING

Routine and Special testing

- Depends on the site
 - E.g. MUMC- Nierhaus (fetal/maternal cell staining test)
 - Prenatal antibody titres
 - Antibody investigations



Referrals

- Referrals from Haldimand and Norfolk county hospitals
 - Simple and Complex cases
- Referred samples for WINRHO/RHIG from Stonechurch Family Health Centre
- Referred samples to XM blood for St. Peter's Hospital (part of HHS with mostly older adults)

Referred out to CBS

- Genotype
- Antibody investigation if needed
- Other at senior and technical specialist (TS) discretion



HHS Heliport-HGH



The majority of our patients come to us direct from scene 73% with the majority of them coming by land ambulance, about 26% of our patients come from other hospitals.



Trauma Centre- Hamilton General Hospital

Lead Level I Trauma Centre since 1992

> 1000 (1150) trauma team activations a year

Severity

- 41 % of these have an ISS (injury severity score) >16 (i.e. major trauma)
- 13.7% of them had an ISS between 12-15 (serious injury)
- 45.0% had an ISS <12 minor injuries.

20% of our patients are 65 year and older

Most of our injuries are Blunt (82%) resulting from

- MVC (33%),
- Falls (21%) ,
- motorcycles (11%)
- pedestrian accidents (10%)
- 17% of our injuries are penetrating from stab or GSW



Massive Hemorrhagic Protocol OR Code Omega

Where?

All sites and most recently JHCC as of Aug 12th, 2024

Each hospital has a unique code that matches their population and blood product availability

What type?

Adult , obstetrics, pediatric

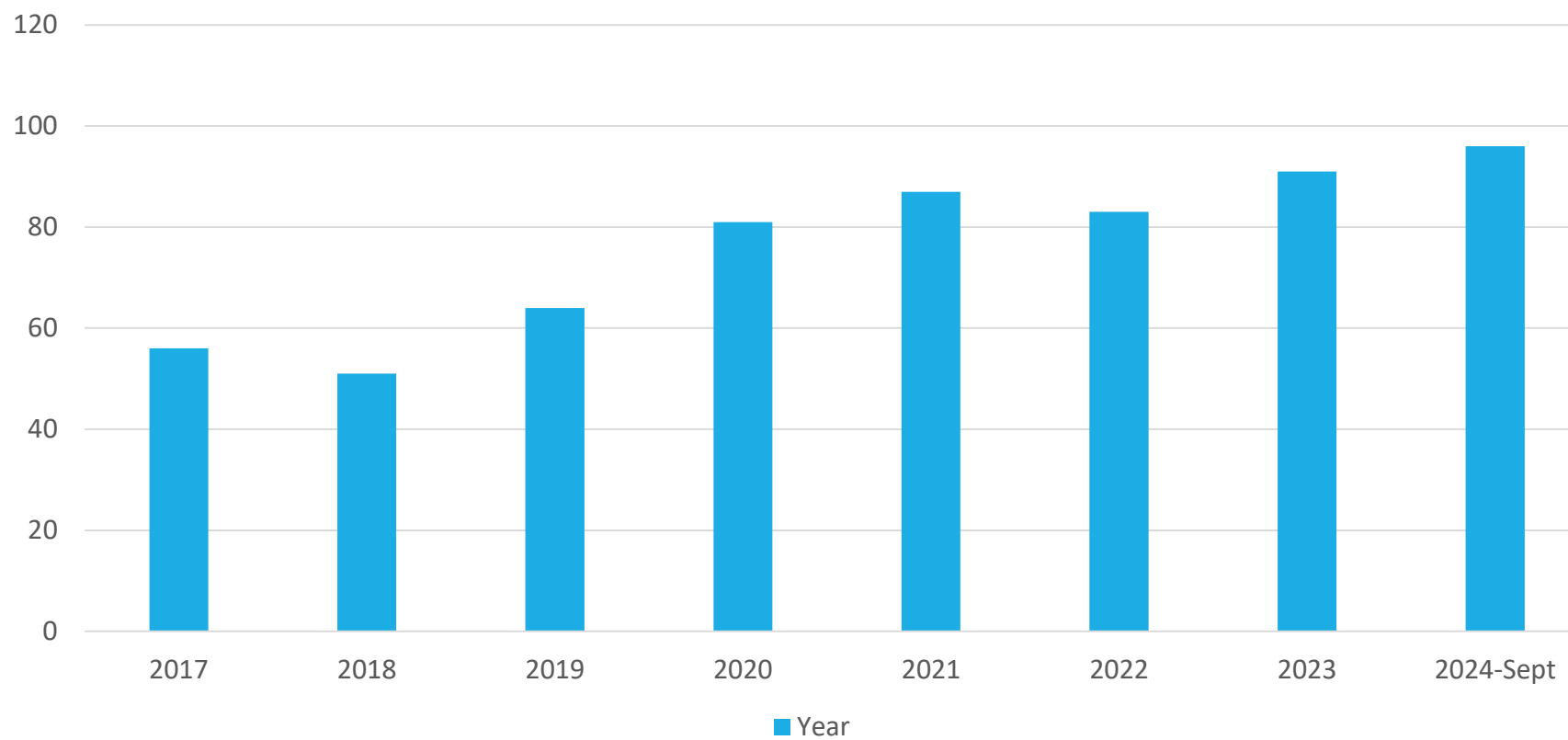
For example

Juravinski Code Omega	
Cooler 1	4 RCC
Cooler 2	4 RCC, 4 FP
Cooler 3	4 RCC, 2 FP, 4 g Fibrinogen
Cooler 4 and subsequent	4 RCC, 2 FFP



Trauma Centre and MHPs

Number of Code Omegas per Year at Hamilton General Hospital



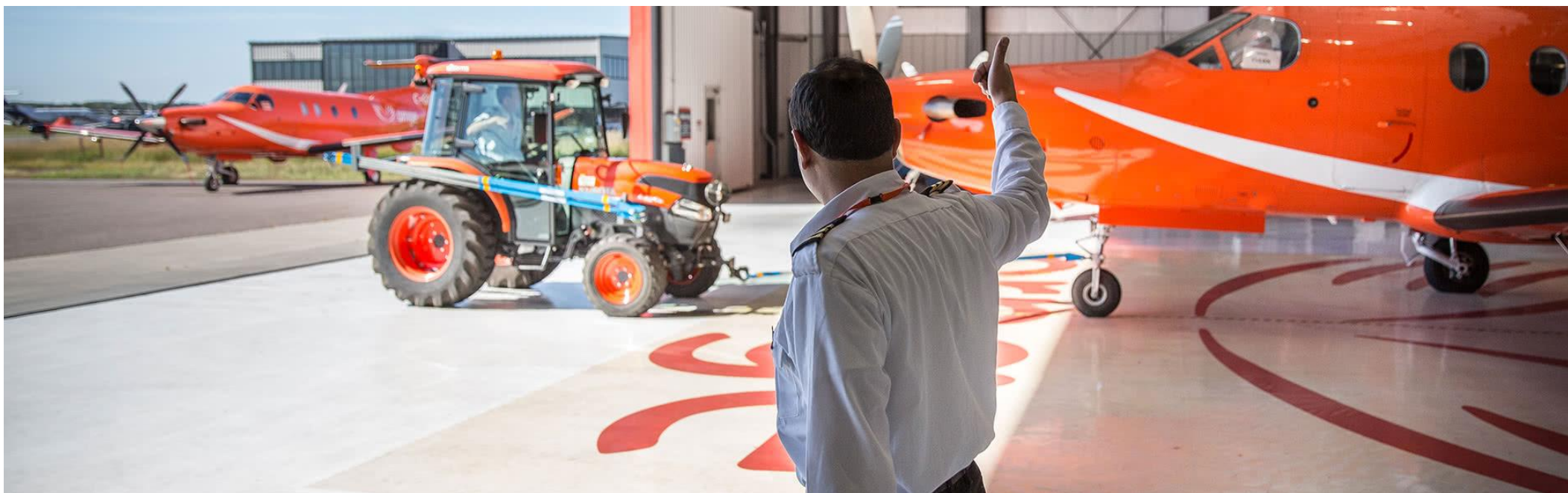


Trauma Centre and MHPs Cont'

- Debrief
 - Quarterly meetings for transfusion Medicine
 - RNs, MDs, Lab invited- Senior, Technical specialist
 - Committee meetings at HGH and MUMC (paeds focused)
 - Coming soon: committee at STJ, JHCC
 - Recently: JHCC had a debrief in the lab with MLTs, MLAs, TS, Medical director after the first few



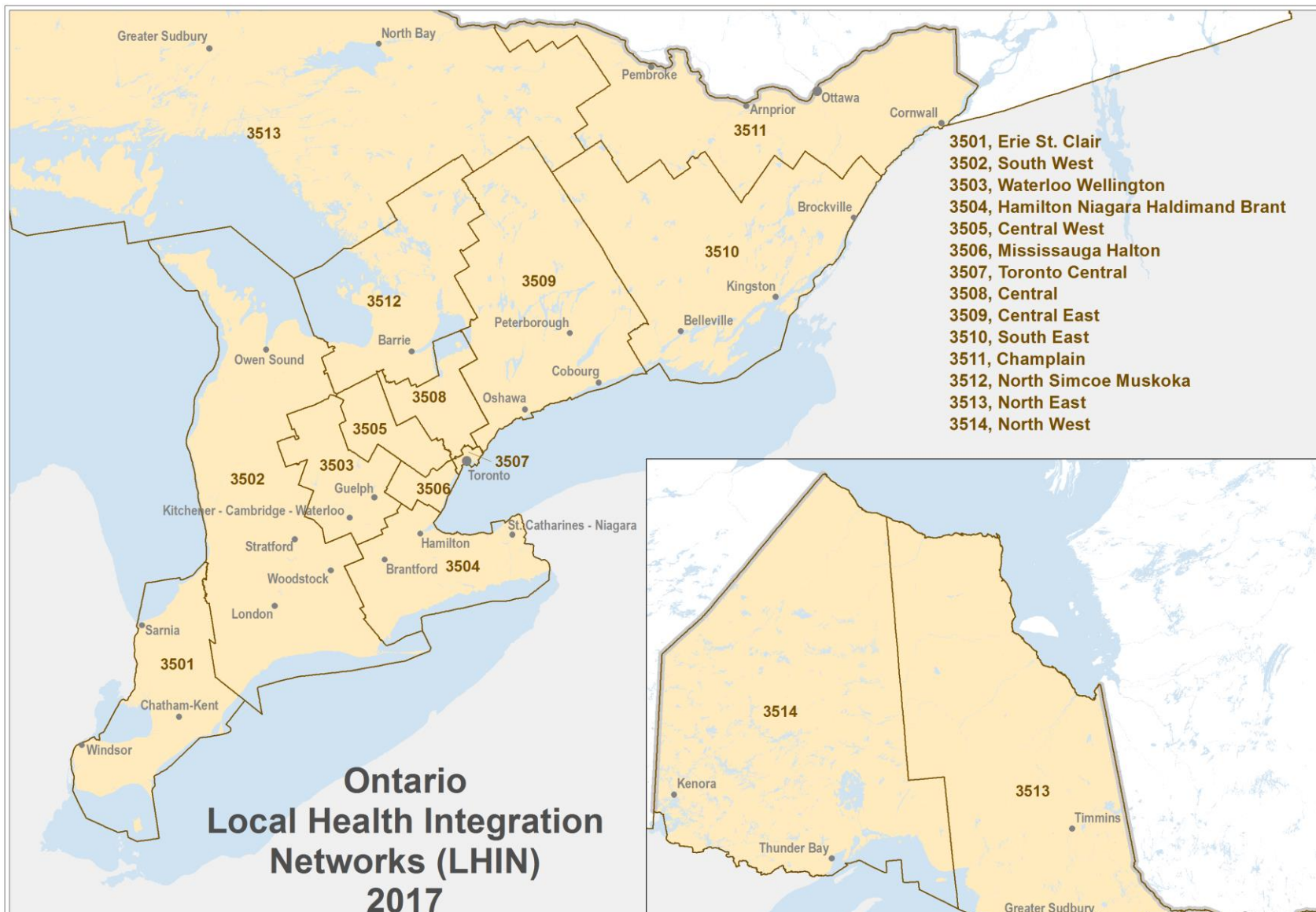
ORNGE Interaction



- Minimal- phone call from sending hospital that Ornge is landing at HGH or MUMC if units being sent
- 2022-2023 about 100 patients were transported via Ornge to HHS



Catchment area



- Covers local health integration networks (LHINs)
- 3 – Waterloo, Wellington,
 - 4-Hamilton, Niagara, Haldimand, Brant,
 - west part of 6- Oakville, Georgetown, Milton, Burlington



Transfusions per year

Numbers for 2023

30,483 units of RBC



6,673 units of FP



10,847 units of PLTs



295,568 grams of IVIG





MLA role

Duties such as

- receiving and issuing blood products
- administrative tasks
- maintenance

Have allowed MLTs to focus on critical testing and verifying



Source of blood products

Canadian blood Services- Brampton

Delivery

- daily routine delivery on weekdays
- Saturdays routine delivery- usually smaller –platelets only most times
- Any other time: weekends, holidays ASAP, STAT



Just in Time

- EPIC and Wellsky allow for
 - Use of computerized physician order entry/order sets
 - GS complete
 - Release when clinical side is ready
 - Electronic XM
 - No units tied up to patients, therefore Just In Time
- For patients with antibodies Full XM of at least 2 units (usually we have 4 ready) for valid GS



Blood Products-Redistribution Program

When possible –about 5 times a year

Last sent product to St. Michael's hospital in Toronto- they have a haemophilia clinic that is more likely to use certain factor products

Within HHSC and STJ products are shipped to the site most likely to use it

- Dynacare courier travels through the sites every 1h 20 min on weekdays from 8 am-8pm
- Dynacare has a STAT courier service that delivers within an hour
- Courier can take products and samples



Blood Products-Blood conservation Strategies

ONTraC=Ontario Nurse Transfusion Coordinator

Christa Chernesky, RN for HHS

- Blood conservation coordinator
- Promote alternative to blood transfusion to optimize the patient's own blood

Where?

- HGH cardiac cases prior to surgery
- JH cancer patients





Competency

Statement from Standards

The health care facility and blood transfusion service shall ensure that there is ongoing training for all persons involved in the administration of blood components/ products. A formal program to assess skills in the administration of blood components shall be developed and maintained in conjunction with all healthcare professionals and staff involved in the administration of blood components/products.



Competency

LAB STAFF

Regular interval

- competency assessments, e.g. IQMH (The Institute for Quality Management in Healthcare) proficiency testing
- reassessment
 - Retraining when necessary
- records maintained

PHYSICIANS AND NURSES

- Assigned bloody easy mandatory modules every 2 years
- TM asks for a copy of nurses compliance report (must be available during accreditation inspection)



TM Inquiries

Who advises TM when challenges come up?

- Senior on site or technical specialist on call
- Hematologist on call if a question of dosage

Do MLTs or MLAs screen transfusion orders?

- no formal procedure to screen
- we may share what a normal dose is e.g. 4 g fibrinogen
- IVIG orders may be questioned based on IVIG calculator dose- most times doctors change the order to the MLTs suggestion/calculation
 - STJ needs hematologist approval for platelets
 - Most sites need thrombosis Dr. approval for Prothrombin Complex Concentrate (PCC) unless there is a brain bleed



Anecdote time...

A day at McMaster..



Resources

Hamilton Health Sciences. (2024)<https://www.hamiltonhealthsciences.ca/>

Hamilton Regional Laboratory Medicine Program. (2024)
<https://www.hamiltonhealthsciences.ca/areas-of-care/services/laboratory/>

HGH Adult Trauma Program 2022-2023 Report.pdf

Ornge. (2024)<https://www.ornge.ca/home>

Statistics Canada.(2024) <https://www150.statcan.gc.ca/n1/pub/82-402-x/2017001/maps-cartes/rm-cr08-eng.htm>



Thank you

Do you have any questions or comments?