

Mackenzie Health

Achieving Value from the EHR- Initial Implementation to Ongoing Operations

November 4, 2021

Introductions



Sharon MacSween
Director Clinical
Informatics



Dr. Victoria Chan
Deputy CMIO, Director of
Utilization & Analytics,
Respirologist

- ❖ Two-site model + RCC (112 beds)
- ❖ Smart hospital vision
- ❖ Digital health strategy
- ❖ Hospital services & integrated care



VISION

Create a world-class health experience

MISSION

Relentlessly improve care to create healthier communities

CORTELLUCCI VAUGHAN HOSPITAL

261 BEDS
(99 FLEX)

SPECIALIZED SERVICES:

- Inpatient Integrated Stroke Care
- Inpatient Mental Health Care
- Obstetrics
- Pediatrics

CORE SERVICES:

- Critical Care
- Emergency Care
- Medicine
- Surgery

MACKENZIE RICHMOND HILL HOSPITAL

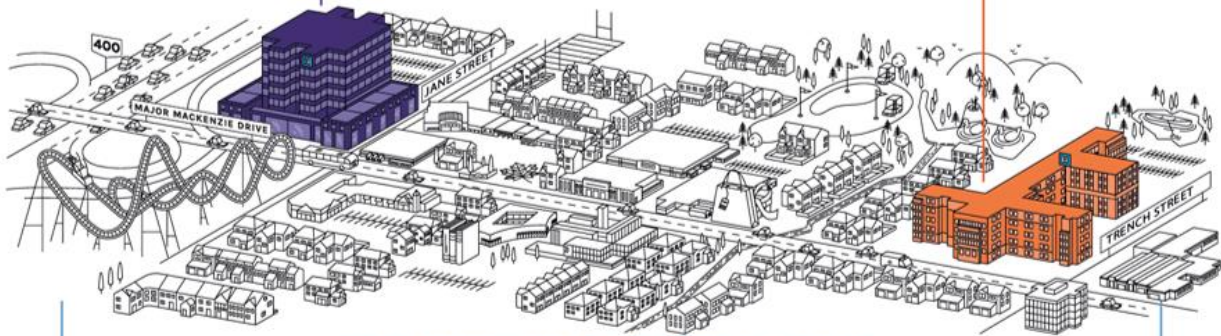
221 BEDS
(209 FLEX)

SPECIALIZED SERVICES:

- Chronic Kidney Disease Program
- Complex Continuing Care
- Outpatient Clinics
- Rehabilitation

CORE SERVICES:

- Critical Care
- Emergency Care
- Medicine
- Surgery



COMMUNITY-BASED SERVICES:

Autism, Behaviour Management, Brain Injury, Cardiovascular Rehabilitation, Complex Continuing Care, Diabetes Education, Dialysis, Domestic Abuse and Sexual Assault

About Mackenzie Health



600+
Physicians



4000+
Staff



1000+
Volunteers



Hospital Beds
Final capacity
593



209,626
Emergency and
Urgent Care Visits



563,738 Outpatient
26,313 Admissions
35,932 Surgeries



212,358
Diagnostic
Exams



3152 Births

Our Present – Integrated Approach

- The need for linking **people**, **processes** and **technology** to better serve patients and families.
- The need for **integration** and **interoperability** with a **patient centered** approach.
- The need for technology to act as an **enabler** to deliver a world-class health experience.



An iceberg graphic with a white top above a blue water line and a larger, greyish-blue bottom below. Three white circles on the left side of the iceberg are connected by lines to the three main text blocks on the right.

EMR

- Clinical Documentation
- End User entered data



Data Analytics

- Dashboards
- Analytics
- Real-Time Reporting



Improved Patient Care

- Closed loop clinical processes
- Unified communications across all healthcare providers
- Clinical decision support tools



Ontario Laboratories Information System (OLIS)

Exchange

He



eHealth Ontario

Ontario Laboratories Information System



electronic
ORK
electronic
CHILD HEALTH NETWORK



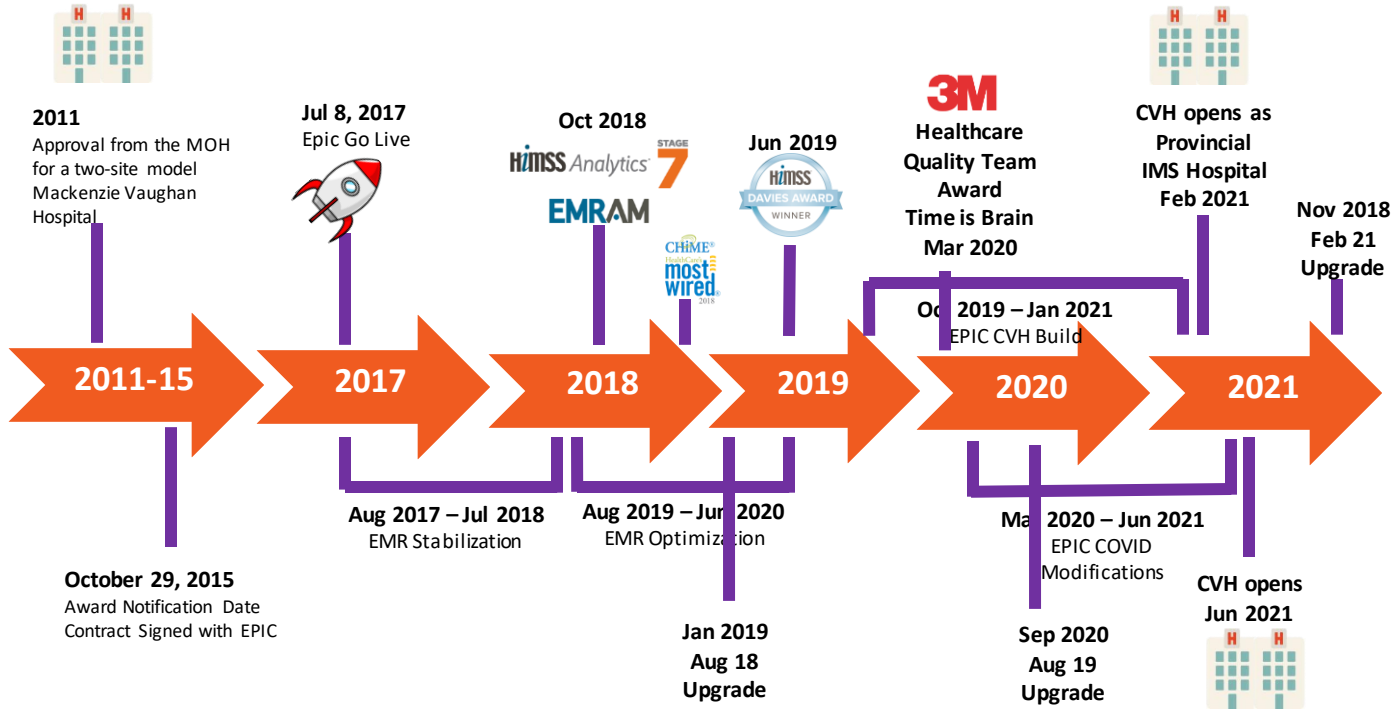
Connecting
Ontario
POWERED BY EHEALTH ONTARIO

Connecting
Ontario

OntarioMD
Empowered Practices. Enhanced Care.



Our EMR Journey...



Post Implementation Achievements



96.1% Medication
98.9% Blood Products
97.9% Human Milk



The Bridges team has processed over 1 Billion Interface Messages since July 8, 2018 in our interface engine

servicenow

99% CLOSURE RATE SINCE JULY 8, 2017

Closed: 29,328/29,669 incidents



96.3% Sustained Computer Order Management

67.0% Reduction in scanning
OVER 200,000 pages eliminated monthly

Speech Recognition



75.0% Reduction in manual transcription

Patient Kiosks

Environmental Services (EVS)



12.0 min Reduced Average Turnaround



90.0% Utilization Rate
86.0% Reduction: time to register

Automation of Patient Transport



7.0 min Reduced Average Turnaround

Design & Flow

Space was redesigned to accommodate the implementation and the requirement of the new technology and workflow (10 kiosks installed).



Results

- Patient registration is **80% faster** (savings of **12:49 mins**)
- **17% increase** volume (+29,676 visits per year) with existing staff (savings of **2.5 FTEs** annually)
- **90% of patients** scheduled have checked in using kiosks (including 2,889 Surgical Admits since July 8, 2017)
- Armband identification at registration was standardized

	May 2017 (Pre-Epic)	Sept 2018 (Epic)
Avg. Scheduling Time (min)	4:51	2:35
Avg. Wait Time to Check-In (min)	3:52	0:00
Avg. Time to Check-In (min)	7:21	0:40
Total Time (min)	16:04	3:15

***90% of patients check in using kiosks*

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Achieving Clinical Outcomes

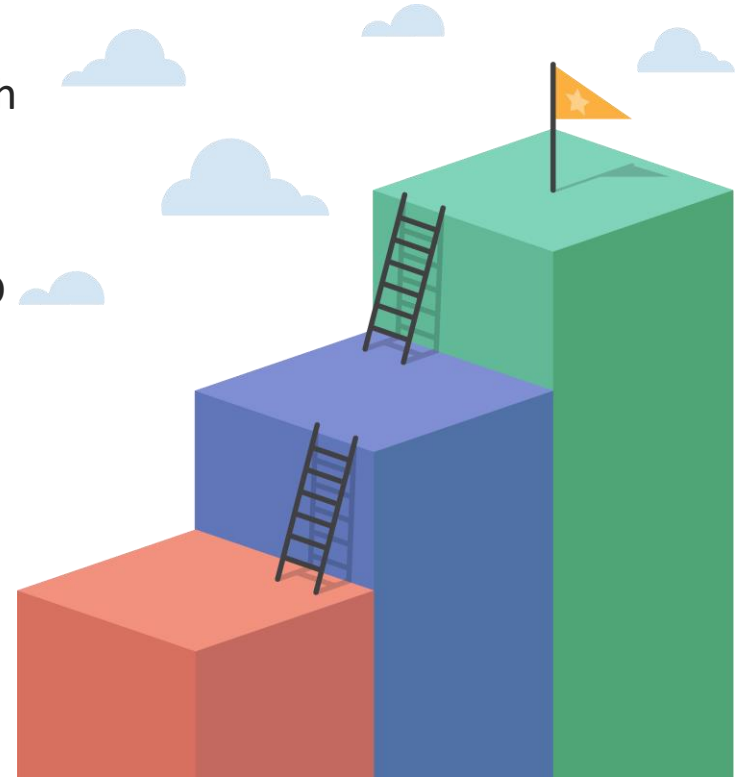
COPD

- Chronic Obstructive Pulmonary Disease -



Objective

- Standardized treatment of COPD exacerbation patients
- Decrease LOS of COPD admissions by leveraging health care technology
- Improve bed flow to decrease ED congestion for COPD patients



COPD Statistics – Before EHR

5.6 days
LOS

55%
E-patient
pathway

↑ **60**
Yearly
admissions

→ **\$200k**
Yearly
savings

↑ **28%**
Bed turnover

↑ **31%**
Pathway
utilization

↓ **ED**
Congestion

Stroke

- Reduction of Door to Needle Time



1 in every **10** min

STROKE FACTS



3rd
*Leading cause
of death*



1st
*Leading cause of
adult
neurological
disability*



1 OUT OF **4**
*People over 25 will
have a stroke at some
point in their life*

Stroke Statistics – Before EIMR

10min

Door to CT

53.5min

Door to tPA

31%

80+
AlphaFIM

27%

Home
Discharge

↑ 47%

Improvement

↑ 50%

Improvement

↑ 36%

Outcome

↑ 52%

Outcome

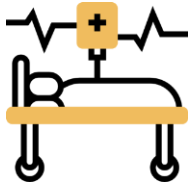
\$360,326/year

(Based on: 1.4 patients/month, 28 patient days, \$766 rehab bed/day)

***Clostridioides difficile* (C. difficile)**

- formerly, *Clostridium difficile* -

Deadly Impact



38,000

illnesses yearly



1/5

Relapse



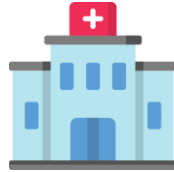
2,000

deaths yearly



10x

*more likely to be
infected under
antibiotics*



46.0%

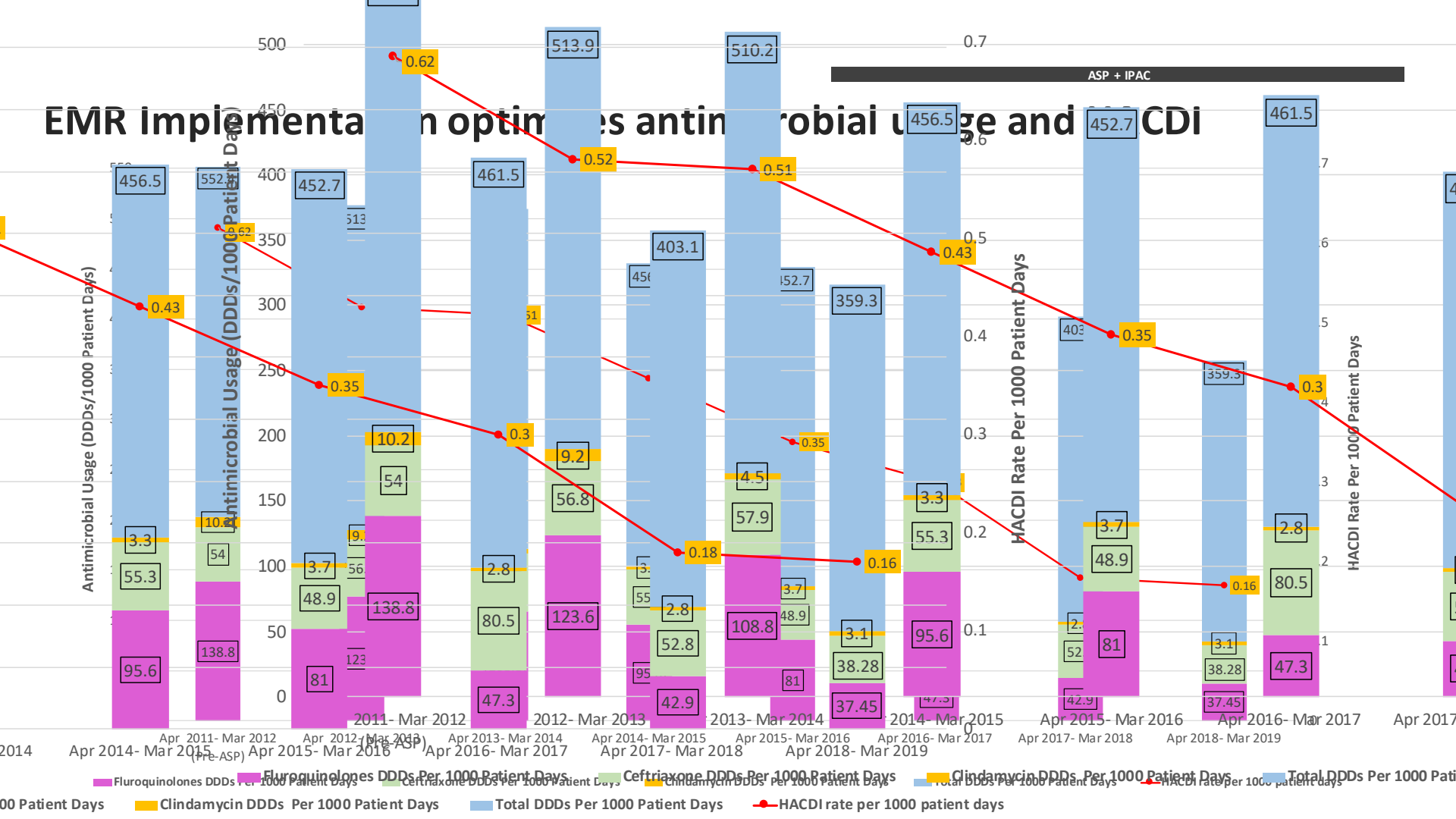
Hospital Acquired



80% cases

65+ age group

EMR Implementation optimizes antimicrobial usage and HACDI



Ongoing Operations – Achieving Value Through Analytics

Efficient Culture of Data Driven Decision Making

Clinical/Financial Leaders



Clinical Utilization Analytics Core Consultant



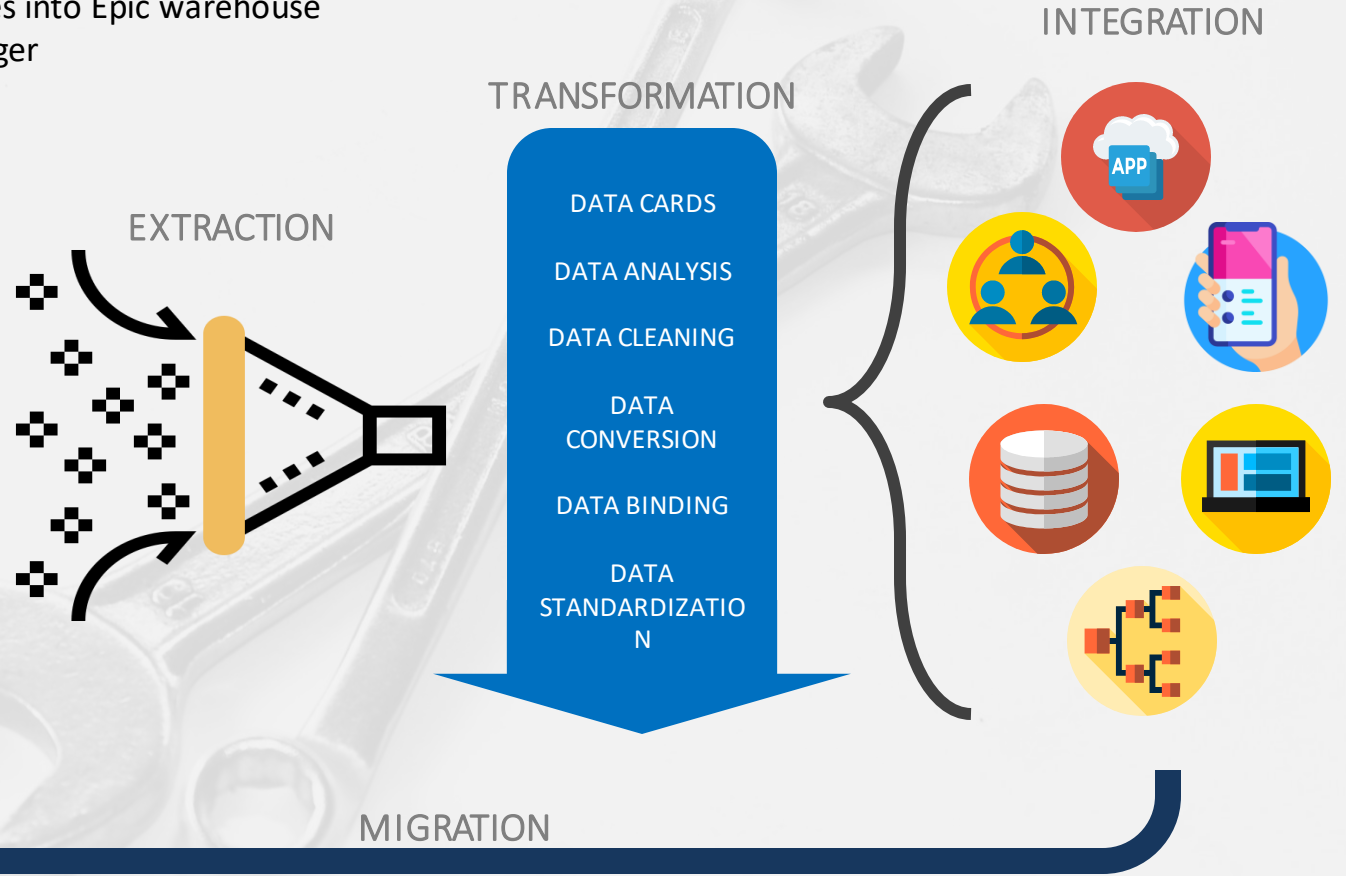
Clinical and Financial Decisions driven by
RIGHT DATA, at the ***RIGHT TIME***, in the ***RIGHT FORMAT***

Data Warehouse – Extract | Transform | Load (ETL)

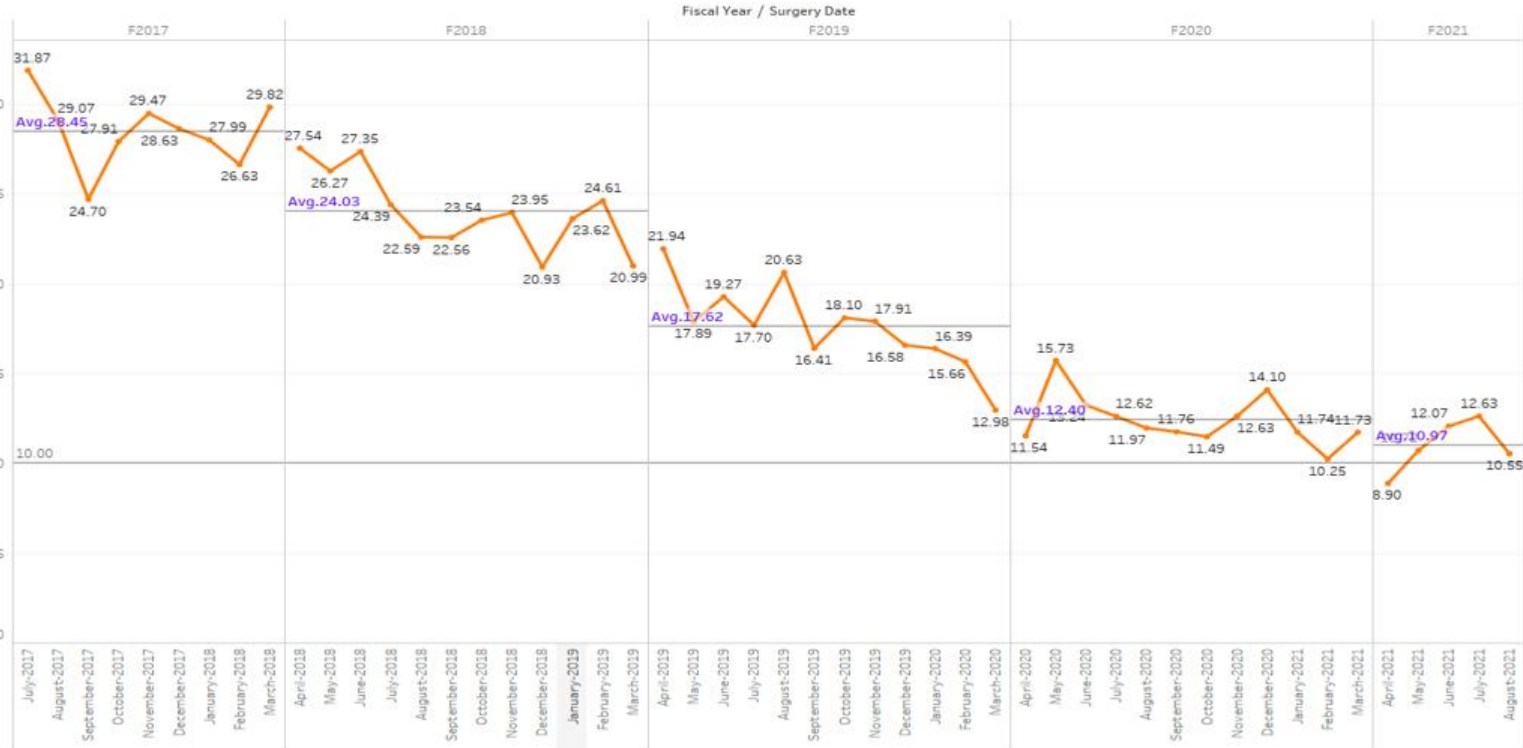
- Import external databases into Epic warehouse
- Case costing, general ledger
- Patient satisfaction
- Winrecs
- Provincial benchmarking



- Seamless data driven operations
- Democratization of data

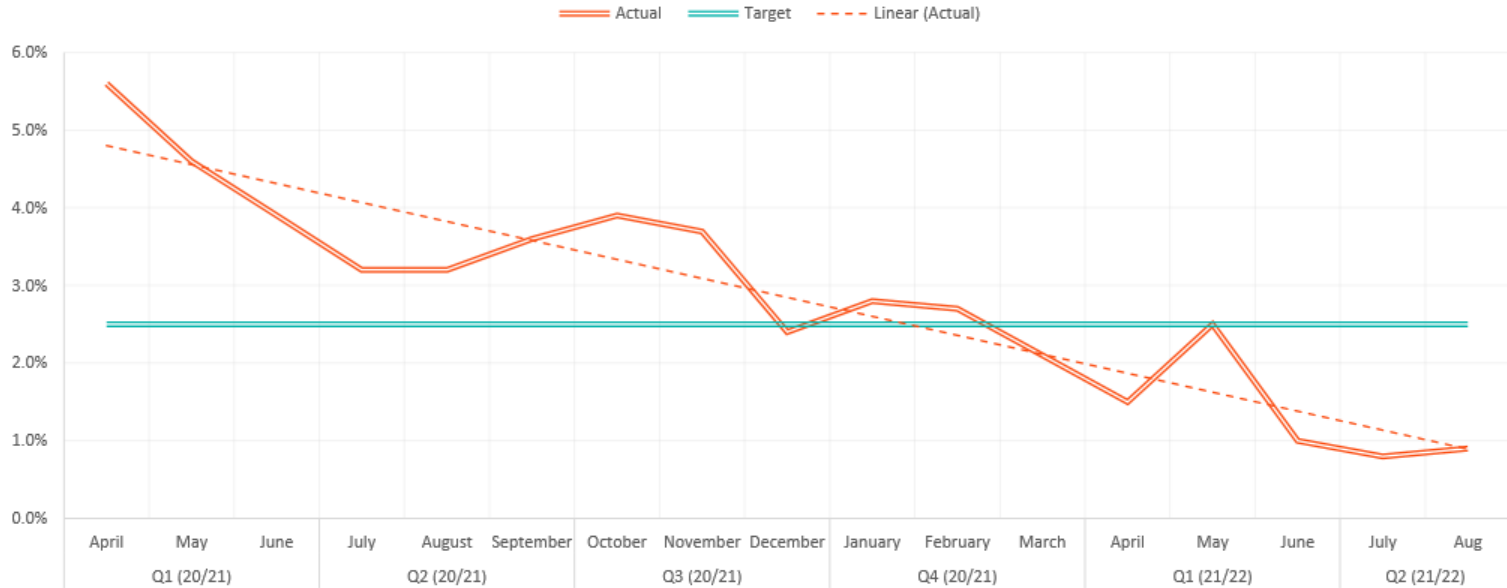


Average Number of Opioid Tablets Prescribed



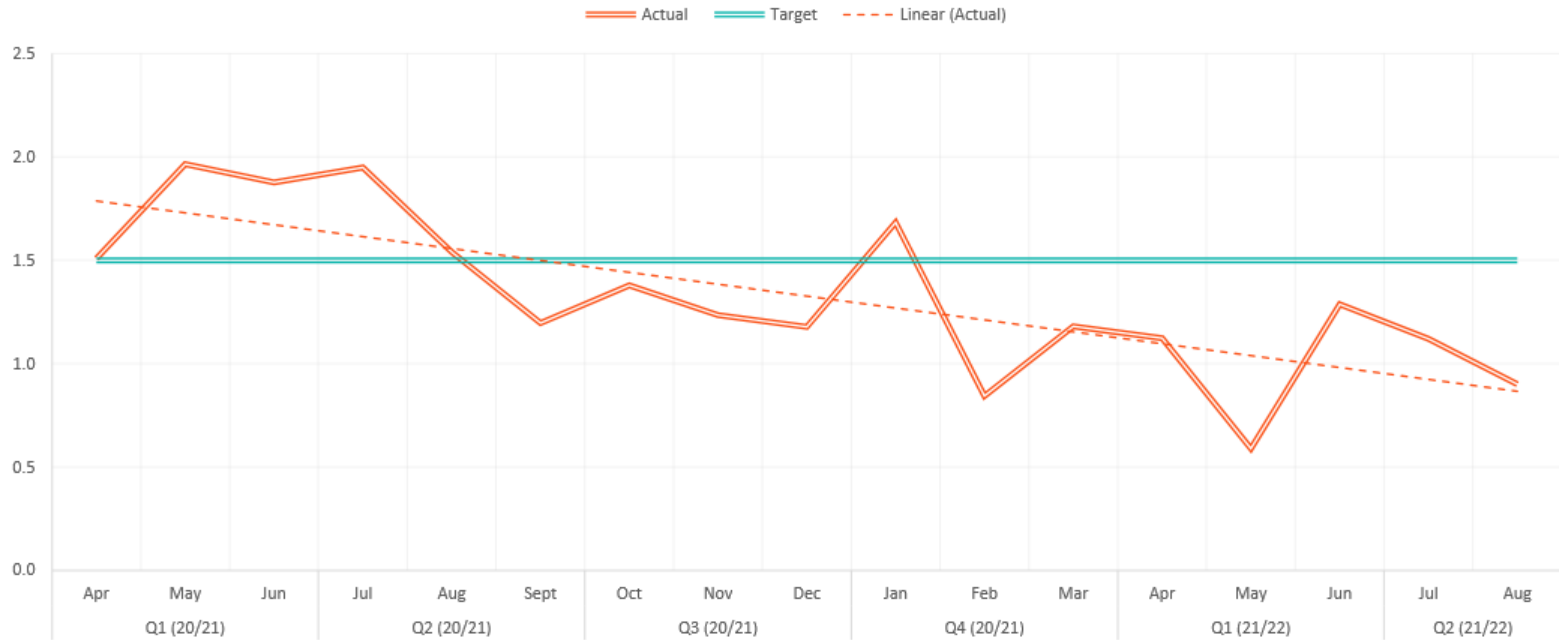
Hospital Acquired Pressure Injuries Stage 2 and Above

FY 2020/21 AND 2021/22



Falls with Injury per 1000 Patient Days

FY 2020/21 AND 2021/22



Our Covid Story Using Analytics



COVID Analytics and Major BI Developments

MH COVID-19 Throughput Dashboard

MRH Admitted Patients with Suspected or Confirmed COVID-19

Last Refresh: 10:43:36 AM
Report completed: Tue 9/3 10:43 AM

20 # of Patients With COVID-19 Infection Status
35 # of Patients Pending COVID-19

MH COVID19 IPAC Infection Status	Number of Patients
> Confirmed	20
> Pending	35

MRH Admitted Patients COVID-19 Recovered (Not COVID19 Infectious)

Last Refresh: 10:43:38 AM
Report completed: Tue 9/3 10:43 AM

Inclusion criteria of this statistic is based on the patient's infection status header. Please note COVID19 recovered simply means patients is no longer COVID19 infectious/transmissible based on IPAC workflow. This may not mean full clinical recovery. Please review patient chart as needed and/or consult most responsible clinician if needed.

11 # of Patients Recovered COVID-19 (Not COVID19 Infectious)

Department	# of Patients
MRH A2 STROKE	3
MRH C3 MEDICINE AQUA	1
MRH C3 MEDICINE ORANGE	1
MRH C4 MEDICINE PURPLE	2
MRH C4 SURGERY AQUA	1
MRH C5 MOTHER	1
MRH D4 SURGERY PURPLE	2
Total count	11

MRH Admitted Patients on Invasive Ventilators

Last Refresh: 10:43:39 AM
Report completed: Tue 9/3 10:43 AM

Criteria for inclusion:
1) patient is on a hospital invasive ventilator
2) patient is older than 10 years old
3) patient had a value entered into Flowsheet Row "Vent Mode" as of 12 Midnight OR into Flowsheet Row "O2 Delivery Method" Contains the text "CPAP"

CVH Admitted Patients with Suspected or Confirmed COVID-19

Last Refresh: 10:43:37 AM
Report completed: Tue 9/3 10:43 AM

38 # of Patients With COVID-19 Infection Status
1 # of Patients Pending COVID-19

MH COVID19 IPAC Infection Status	Number of Patients
> Confirmed	38
> Pending	1

CVH Admitted Patients COVID-19 Recovered (Not COVID19 Infectious)

Last Refresh: 10:43:38 AM
Report completed: Tue 9/3 10:43 AM

Inclusion criteria of this statistic is based on the patient's infection status header. Please note COVID19 recovered simply means patients is no longer COVID19 infectious/transmissible based on IPAC workflow. This may not mean full clinical recovery. Please review patient chart as needed and/or consult most responsible clinician if needed.

10 # of Patients Recovered COVID-19 (Not COVID19 Infectious)

Department	# of Patients
CVH 2 CRITICAL CARE ABC	1
CVH 6 MEDICINE DEF	4
CVH 7 MEDICINE ABC	3
CVH 7 MEDICINE DEF	2
Total count	10

CVH Admitted Patients on Invasive Ventilators

Last Refresh: 10:43:38 AM
Report completed: Tue 9/3 10:43 AM

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17	0	2	19
# of Vented Patients	# of Vented Patients	# of Vented Patients	# of Vented Patients

Real-Time COVID Monitoring Tools

- Enables clinical leadership and physicians to monitor Two-Site Hospital COVID snapshots:
1. COVID+, COVID PUI, Recovered
 2. Ventilator utilization
 3. ICU Capacity and Bed Management



COVID Analytics and Major BI Developments

Analytical COVID Trends:

Enables trending analysis and monitoring of COVID statistics faster than MoH

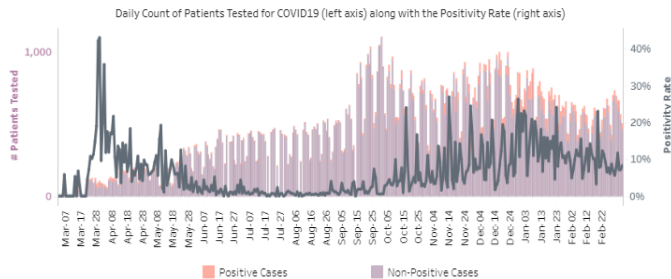
Anticipate upcoming admission demand



Last Updated on: March 7, 2021

Positivity Rate

10988 patients were confirmed positive as of March 08.



Deaths

86 patients (2 Emergency, 1 Inpatient Palliative, 83 Inpatient Non-Palliative) have died due to COVID-19.



Admissions

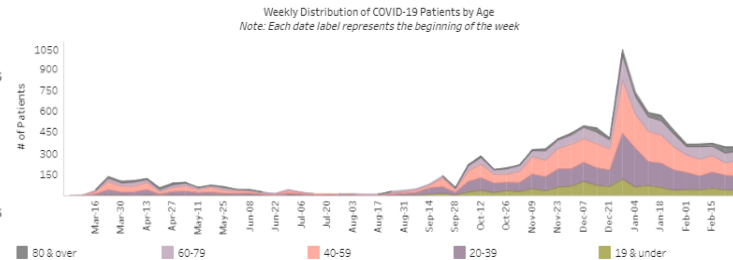
928 distinct patients with a positive COVID19 test result had a total of 1,040 inpatient visits. 165 of the 1,040 visits were in ICU for an average LOS of 14.3 days.

COVID-19 Positive Case Statistics

Positive Case Demographic

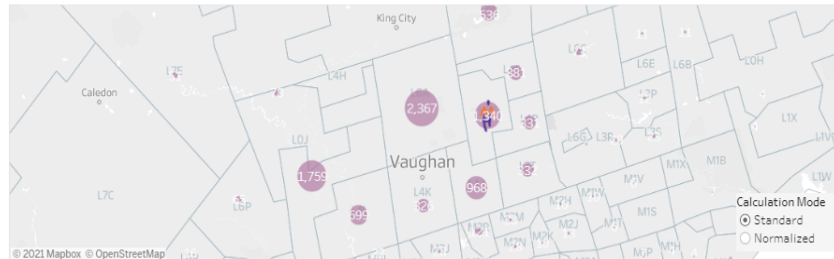
Male
50%
5,491 Cases

Female
50%
5,448 Cases



Concentration of Positive Cases by Area (Calculation Mode: Standard)

Standard mode is the simple count of positive cases whereas in the normalized mode the number of cases is divided by the population size of the area and multiplied by 100,000.

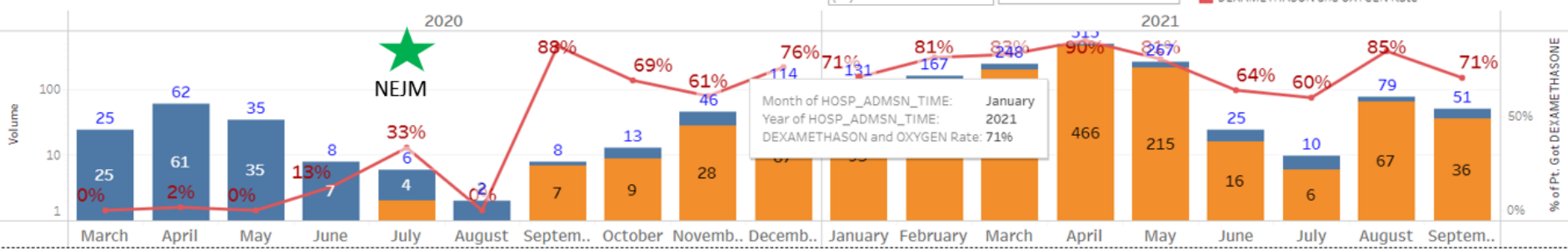


Top 8 Cities by Positive Cases

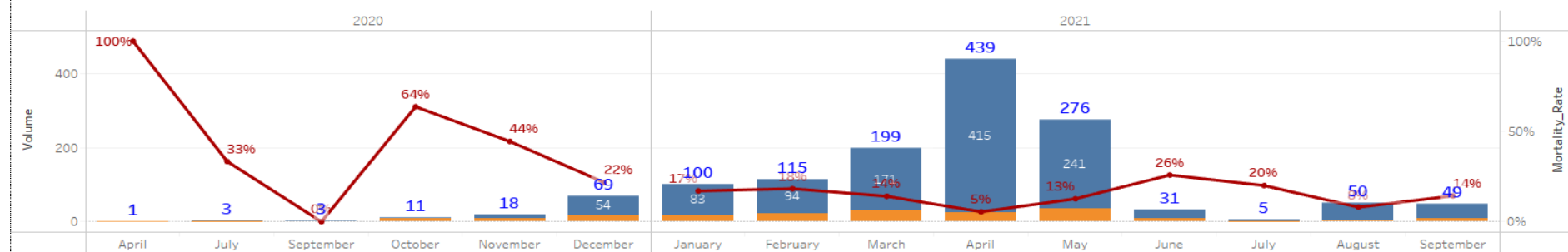
Top 8 Postal Codes by Positive Cases (Calculation Mode: Standard)

Covid Positive Admitted Patients Dexamethasone, Remdesivir, Tocilizumab and Oxygen Usage Stats

Dexamethasone Utilization: Patients Had Dexamethasone Vs. No Dexamethasone



Mortality Rate of Covid Inpatient when Treated with Dexamethasone





Supply Chain Analytics

* This section is based on the last 14 days information. No info populated means no item has appeared in these criteria.

Items Supply < 10 Days	
Items	
HAND SANITIZER (400ML)	8.3
LEVEL 3 SURGICAL GOWNS	0.0

Items Supply 10-15 Days	
Items	

Items Supply 15-30 Days	
Items	
FACIAL SHIELD - FOAM	20.5

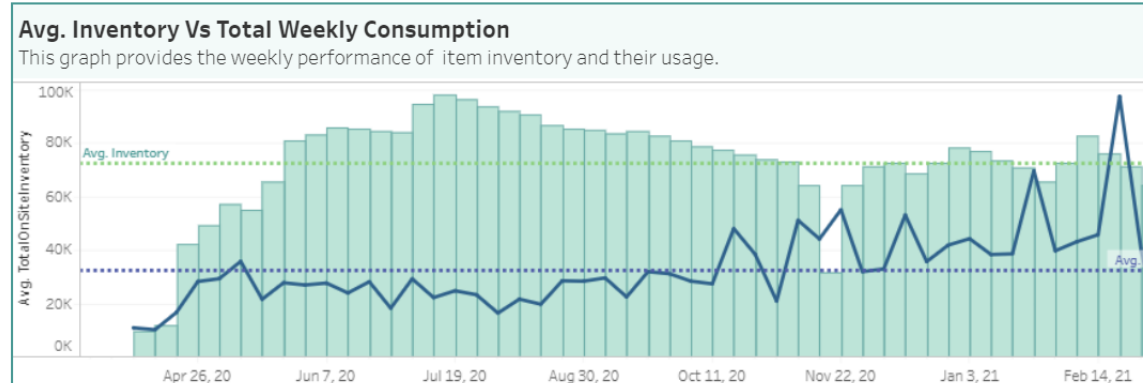
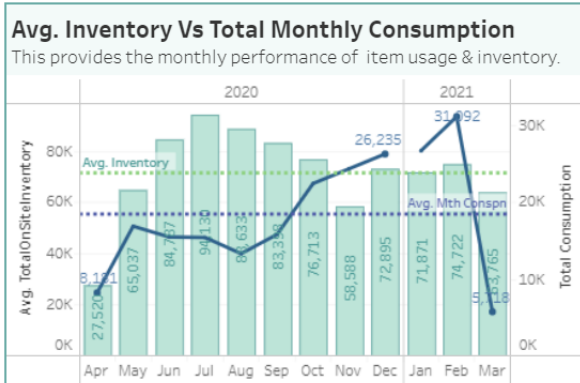
Near Real-Time PPE Inventory and Usage management analytics for clinical leadership

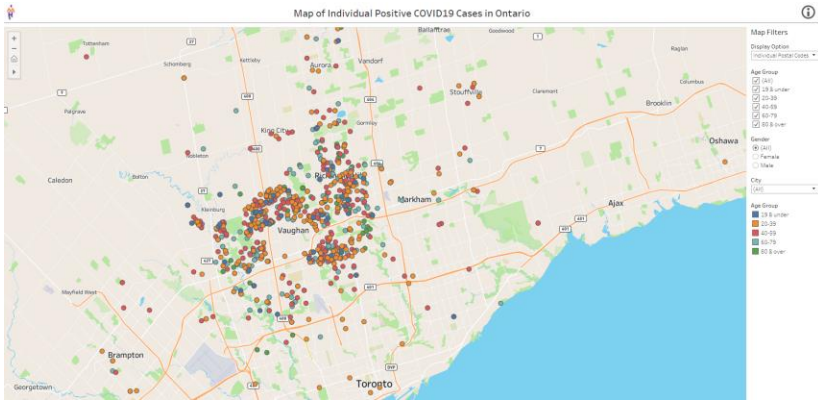
Measures █ Avg. TotalOnSiteInven... █ UnitOfMeasure

Site:

Date:

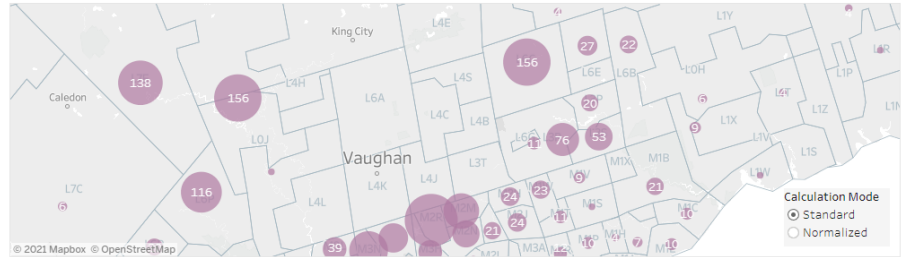
IMS Group: IMS Items:



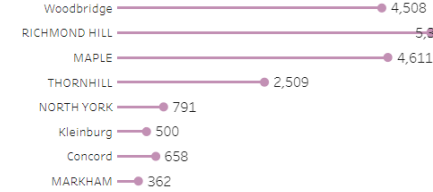


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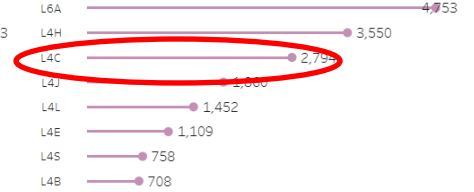
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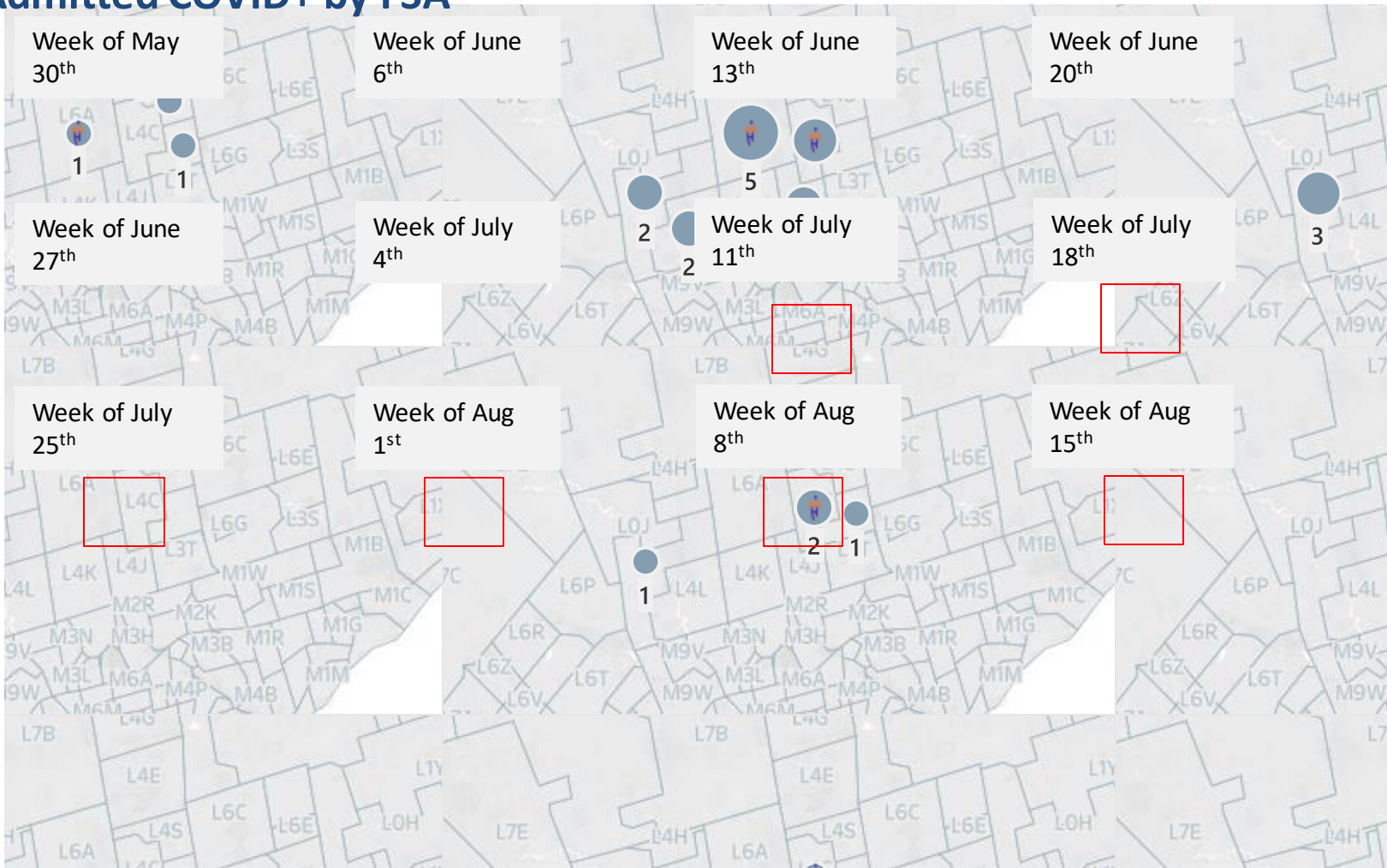
Top 8 Postal Codes by Positive Cases (Calculation Mode: Standard)

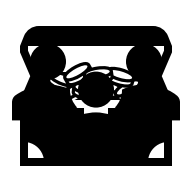


GEOGRAPHIC ANALYSIS, HEAT MAPS

Inpatient Admitted COVID+ by FSA

Fastest growth in both OP COVID+ cases and admitted cases within Woodbridge area





Covid Remote Monitoring Program



By the Numbers:

4,267 patients
with Covid



10,443 virtual
visits



154 patients
placed on home
oxygen



2,700+ patient
calls to 24/7
hotline on evenings,
nights & weekends

884 admissions
DIVERTED
\$11.7M saved



244 patients monitored
themselves with
15,185 entries of data
Into MyChart



366 patients
escalated to ED



1,108 patients
provided home
monitoring kit



224 patients
admitted

Thank you