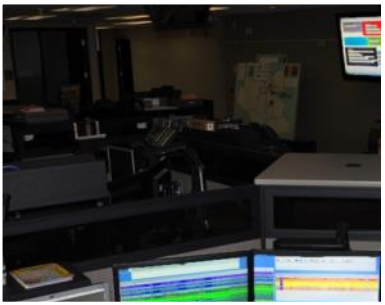
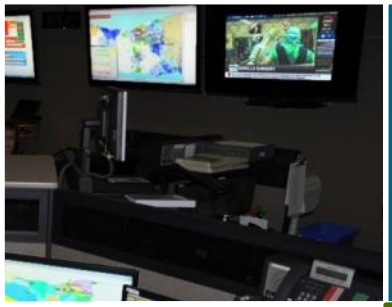
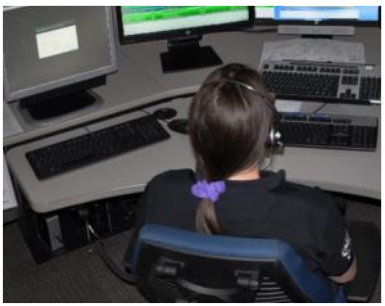
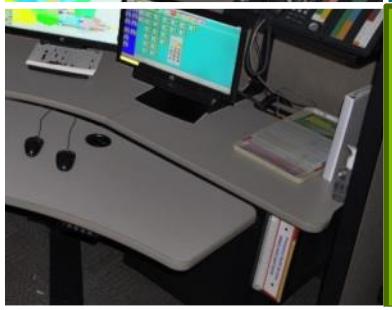





System Transformation Update 3

PHSSC

November 10, 2020




Niagara Region

NIAGARA EMERGENCY MEDICAL SERVICES

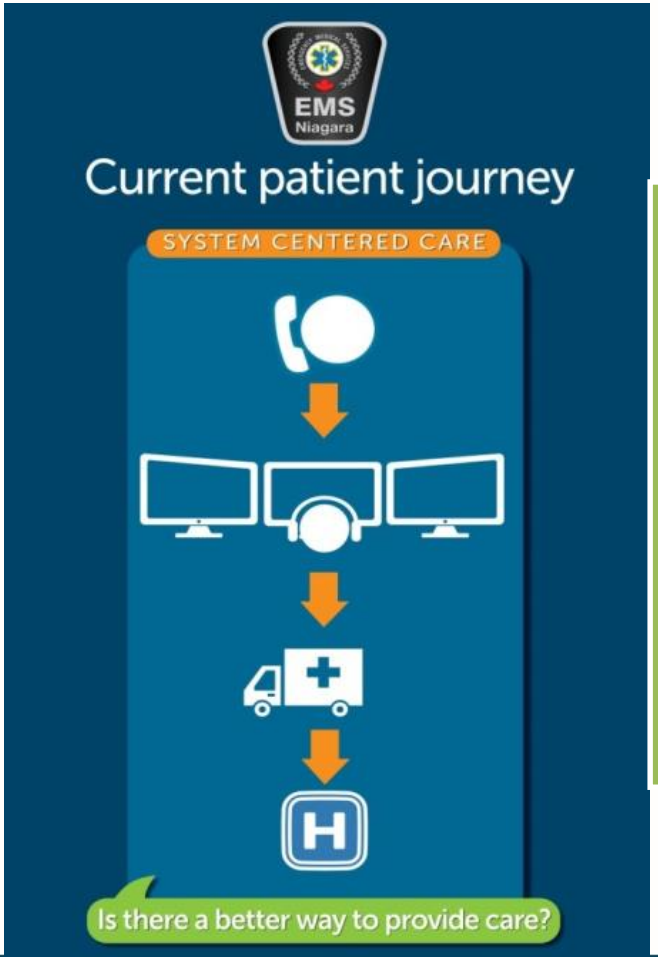
EMS Niagara

Background

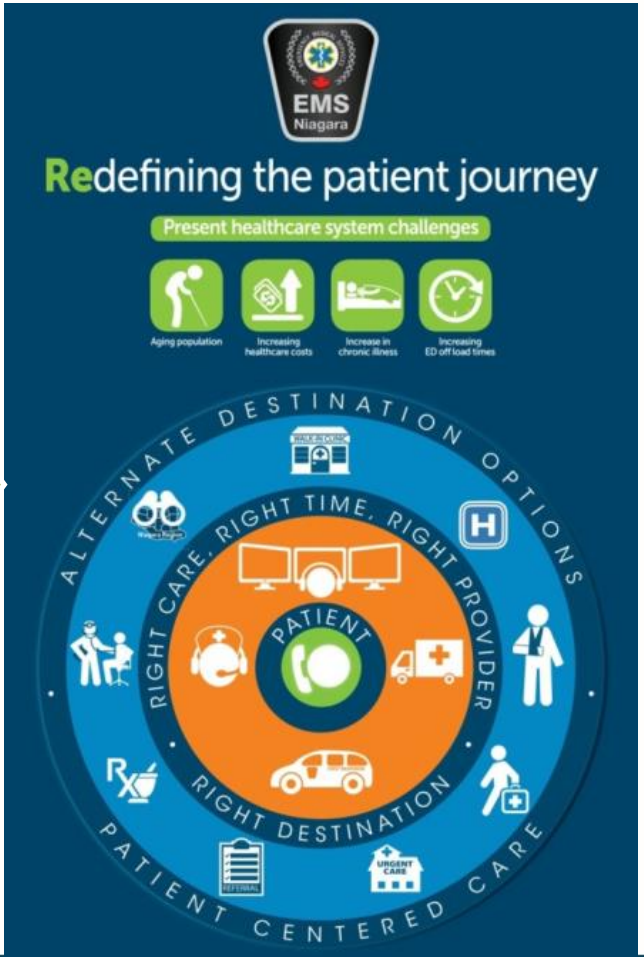
PHD 20-2019 – November 5, 2019

- Provided an update to the System Transformation undertaken by Niagara EMS as first directed by Council in PHD 17-2017
- On September 24, 2019, the final key system changes were initiated and the system has been under observation to assess the impact of this major transformation

The Future of NEMS



"Central to each (country's) vision is the concept of providing pre-hospital care as a system, rather than just a single service type, that can provide a flexible response to a wide range of patient complaints with other related healthcare providers. " (Sheffield, pg. 44)

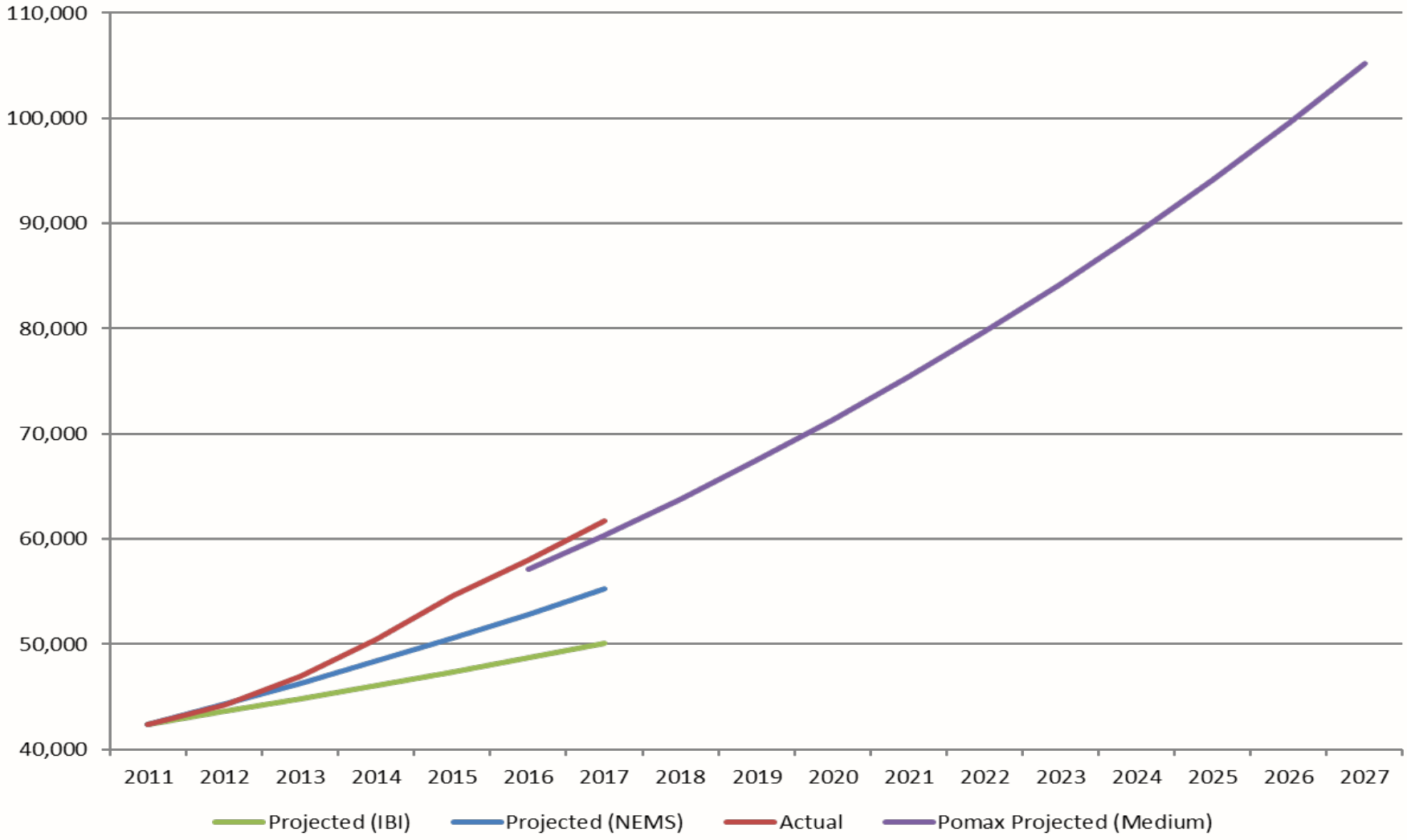


System Transformation

3 Phases

1. Mobile Integrated Healthcare model - implemented Q2 2018
2. Evidence-based Clinical Response Plan – implemented September 24, 2019
3. Emergency Communications Nurse (ECN) secondary triage – implemented September 24, 2019

EMS Call Volume Projected vs Actual

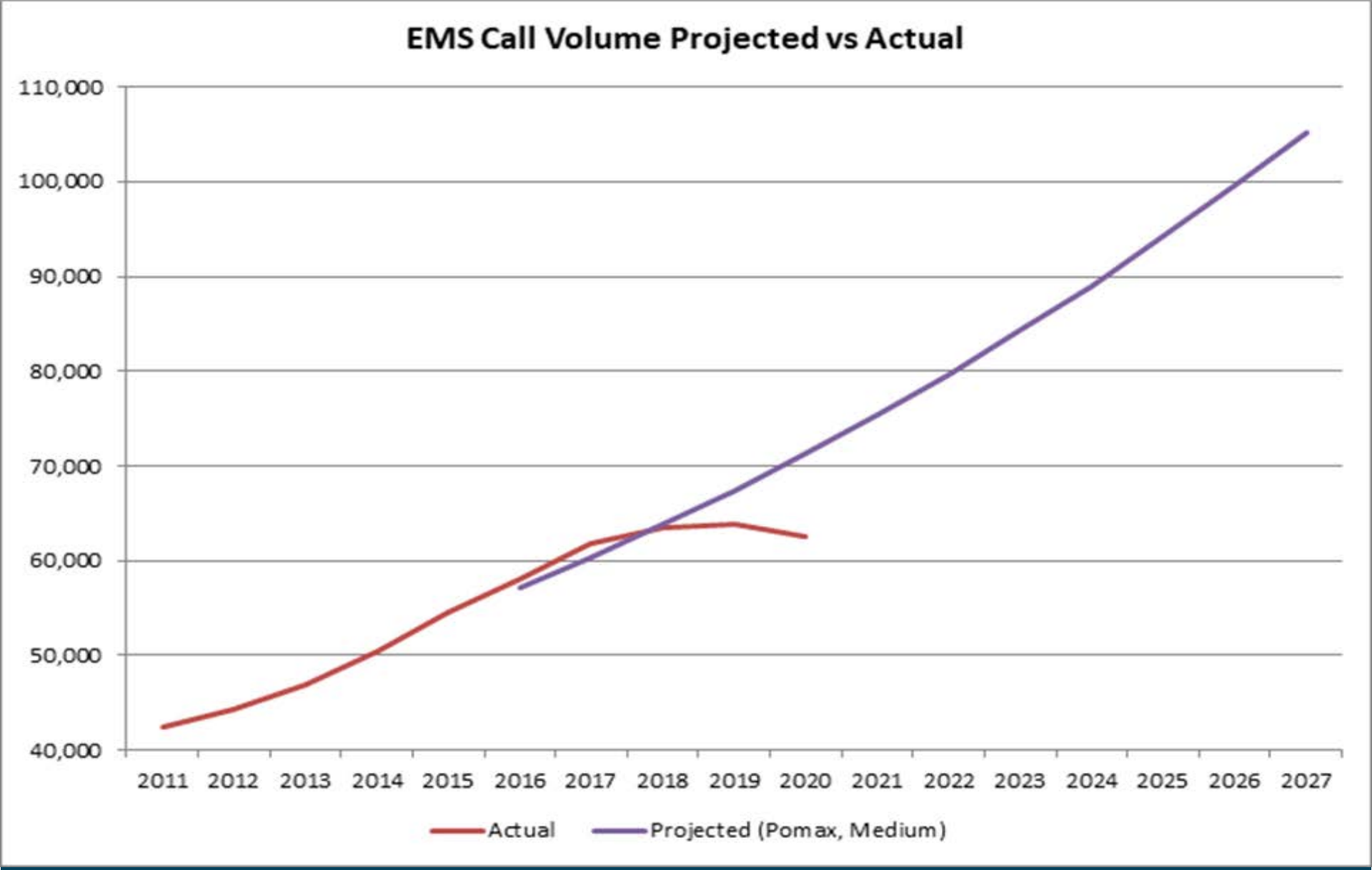


Top Five EMS Transports to EDs in Niagara (2013-2015)

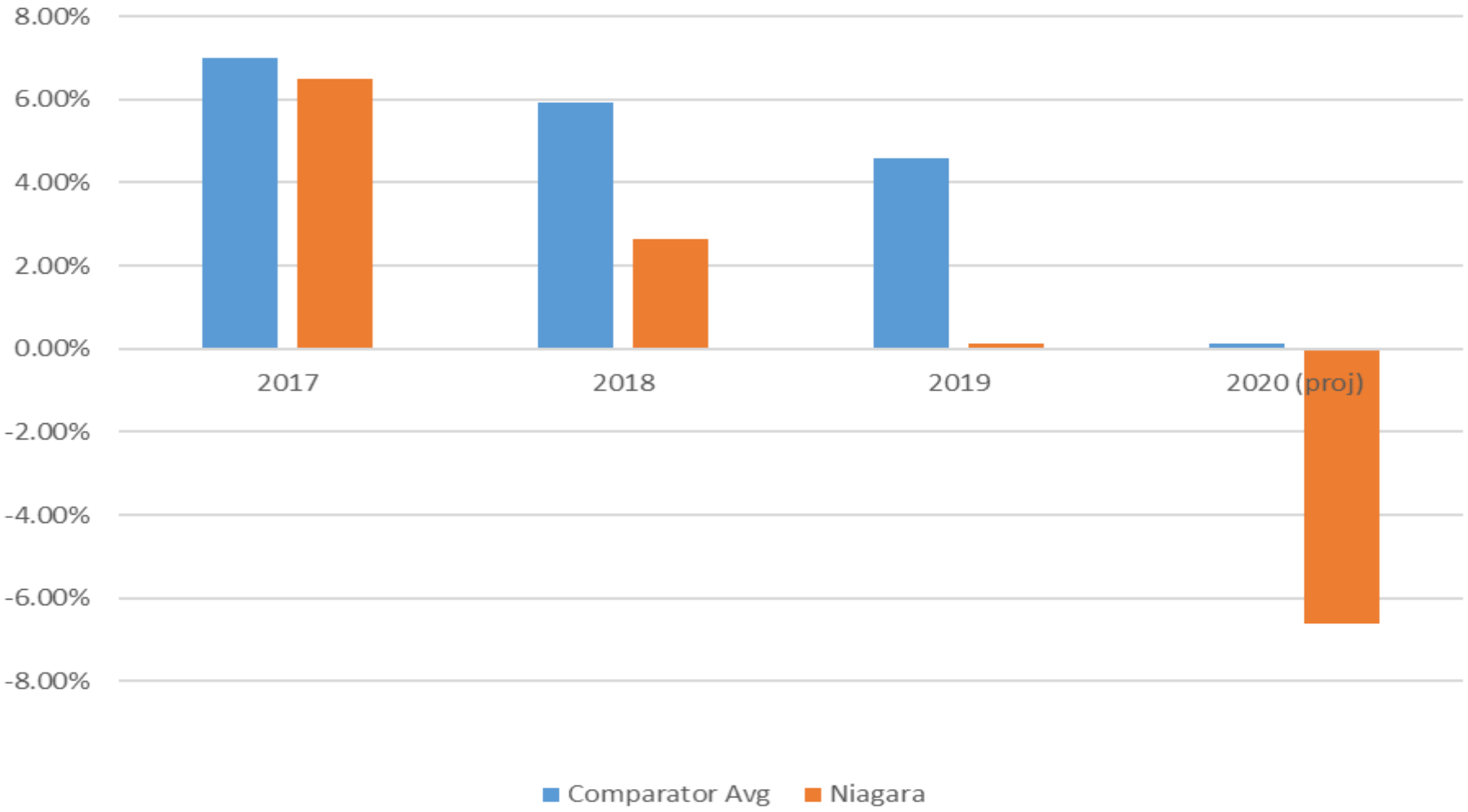
Niagara	1	2	3	4	5
0<1 years	Resp. Distress	Seizure/Post Ictal	General Illness/ Weakness	Other Medical/ Trauma	Newborn/Neonatal
1-4 years	Seizure/Post Ictal	General Illness/ Weakness	Resp. Distress	Soft Tissue Pain/ Trauma/Edema	Other Medical/ Trauma
5-9 years	Musculoskeletal Trauma	Seizure/Post Ictal	Soft Tissue Pain/ Trauma/Edema	Behaviour/ Psychiatric	Resp. Distress
10-14 years	Musculoskeletal Trauma	Behaviour/ Psychiatric	Soft Tissue Pain/ Trauma/Edema	Syncope	Seizure/Post Ictal
15-19 years	Musculoskeletal Trauma	Behaviour/ Psychiatric	Alcohol Intoxication	Soft Tissue Pain/ Trauma/Edema	Drug Overdose
20-24 years	Musculoskeletal Trauma	Behaviour/ Psychiatric	Abdominal Pain NYD	Soft Tissue Pain/ Trauma/Edema	Seizure/Post Ictal
25-44 years	Musculoskeletal Trauma	Abdominal Pain NYD	Behaviour/ Psychiatric	Soft Tissue Pain/ Trauma/Edema	GI Problems/Pain/ Vomiting/Nausea
45-64 years	General Illness/ Weakness	Musculoskeletal Trauma	Abdominal Pain NYD	Soft Tissue Pain/ Trauma/Edema	Ischemic Chest Pain
65-74 years	General Illness/ Weakness	Resp. Distress	Musculoskeletal Trauma	Abdominal Pain NYD	GI Problems/Pain/ Vomiting/Nausea
75-84 years	General Illness/ Weakness	Musculoskeletal Trauma	Resp. Distress	GI Problems/Pain/ Vomiting/Nausea	Abdominal Pain NYD
85+ years	General Illness/ Weakness	Musculoskeletal Trauma	Resp. Distress	Soft Tissue Pain/ Trauma/Edema	GI Problems/Pain/ Vomiting/Nausea

Mental Health

Falls & Generally Unwell


EMS Call Volume Projected vs Actual
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
Actual
Projected (Pomax, Medium)

Call Volume Growth
Niagara v. Provincial Comparators Average



“Unscheduled” Mobile Integrated Health Teams

Multidisciplinary teams – designed for purpose – alternative response to low acuity 911 calls and targeted populations:

- Falls Intervention Team (Paramedic/OT) – “FIT”
- Mental Health and Addictions Response Team (Paramedic/MH Nurse) – “MHART”
- Community Assessment and Response Team (Paramedic) –”CARE”
- Emergency Communications Nurse System (ECNS)
- Other
  - Palliative Care Teams
  - Consumption & Treatment Site
  - Shelters

One Year Post Full Implementation

- ✓ 3.8% decrease in number of calls for falls in 2019 compared to the previous 2 years of increases of 9.4% and 14.2% respectively
- ✓ 6.3% decrease of transports to hospital for falls patients compared to the same time frame - meaning falls patients are receiving real time support resources to mitigate against future falls where hospitalization is required
- ✓ a decrease of 6.9% in transports of mental health patients to the emergency department despite an increase of 8.1% in the number of mental health related calls - meaning these patients are accessing real time alternative, more appropriate health care through the MIH teams
- ✓ more than 3000 referrals to community health and social services

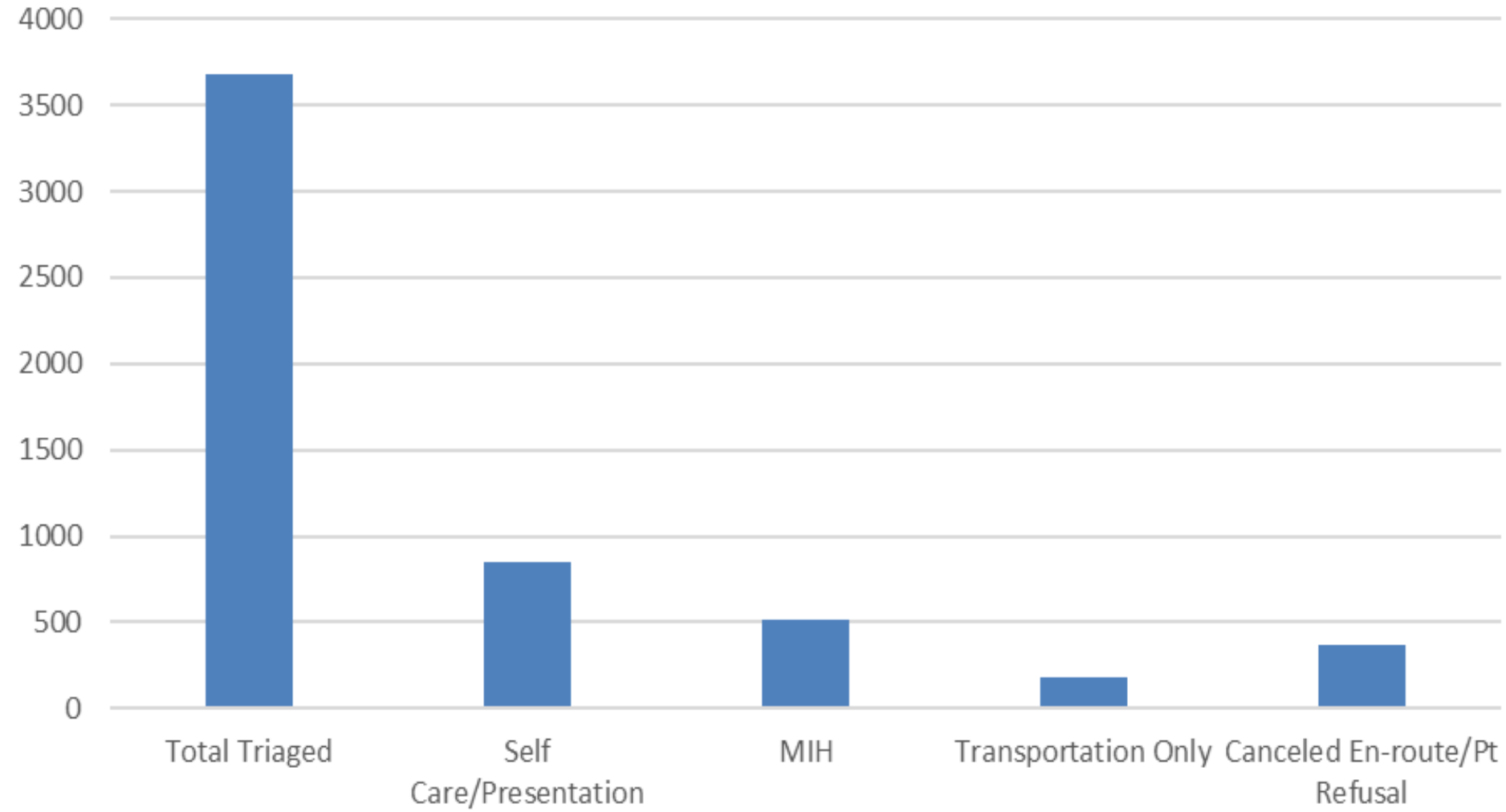
One Year Post Full Implementation

ECNS Specific

- 62K unique 911 calls
- ECNs triaged 3,675 of these
- represents 5.92% of total call volume

= increased availability for paramedics to respond to high acuity calls

Disposition of Pts Triaged by ECN



New Clinical Response Plan (CRP)

- Responses tailored to each Determinant rooted in Best Practice and Clinical Evidence
- Decreased risk through improved use of limited emergency resources – “Code Red” avoidance
- Decreased risk through decreased use of lights & siren from ~40% to ~10%
- Decreased consumption of municipal fire resources from ~20% to ~10%

Economic Analysis

- Conducted by Dr. Feng Xie, Health Economics Professor at McMaster University's Department of Health Research Methods, Evidence and Impact (HEI)
- MIH results in 50% fewer transports to ED for similar patient type
- traditional ambulance mean costs per minute of delivered service were estimated at $1.865
- MIH mean costs per minute of delivered service were estimated at $0.679
- this is 64% lower cost than traditional ambulance delivery model for same patient cohort

Economic Analysis

- Similar economic analysis underway for ECNS
- Early analysis of ECNS indicates reinvestment of $613K of emergency resource time over 1 year
- The decrease in call volumes and the alternate, more cost efficient MIH means of response results in cost avoidance of adding traditional ambulance resources

Projected Resource Requirements

Table 33: Ambulance and Paramedic Requirement Models - 10-year Time Frame

Paramedic Enhancements Levels	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Totals
Low Growth Model 3.6% - Ambulances	2		1			1		1		1		1	7
Paramedic FTE	21.6		10.8			10.8		10.8		10.8		10.8	75.6
Supervisors		1.4		1.4		1.4			1.4		1.4		7
Emergency Response Units		1		1		1			1		1		5
Medium Growth Model 5.7% - Ambulances	2		1		1	1		2	1	1	1	1	11
Paramedic FTE	21.6		10.8		10.8	10.8		21.6	10.8	10.8	10.8	10.8	118.8
Supervisors		1.4		1.4		2.8		1.4	1.4		1.4		9.8
Emergency Response Units		1		1		2		1	1		2		8
High Growth Model 8.5% - Ambulances	2	1	1	1	1	1	2	2	1	2	2	2	18
Paramedic FTE	21.6	10.8	10.8	10.8	10.8	10.8	21.6	21.6	10.8	21.6	21.6	21.6	194.4
Supervisors		1.4		1.4		1.4		2.8		2.8		2.8	12.6
Emergency Response Units		1		1		1		2		2		2	9
Patient Based Model Ambulances	2					1					1		4
Paramedic FTE	21.6					10.8					10.8		43.2
Supervisors		1.4					1.4				1.4		4.2
Emergency Response Units		1					1				1		3

As per Pomax - PHD 27-2016

Cost Avoidance

- four 24-hour ambulances = $4.8M ($2.4M net) in offset operating costs to the Regional budget for each of the past two years
- Avoided need for increasing ambulance fleet = additional capital savings of approximately $1.2M (90% eligible for DC funding)

System Sustainability

- Success primarily found through refocusing of priorities
- System changes supported through reserve and temp, one-time funding
- Sustaining the advances made require investment
- Continued demand for expanding role in community safety ie modifications to 911 mental health and addicitions responses
- Recognition that 2020-21 continues to be a very difficult time to consider investments of program changes
- Outlay significantly less than traditional method

System Sustainability

In addition to reallocation of existing FTE

Recommended:

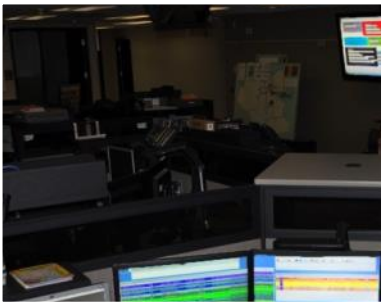
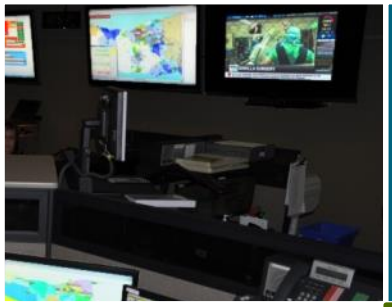
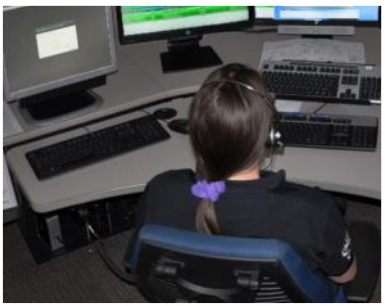
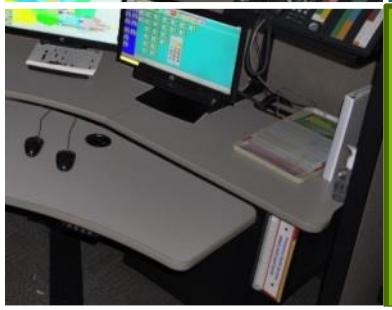
- Conversion of 4.8 Temp FTE's to permanent
- 6.75 new FTE
- Anticipated funding of >50% provided by the MOH
- Impact on the Regional levy is $238K best case - $834K worst case
- Further details will be provided as part of the 2021 operating budget.

Cost Avoidance vs Investment

Avoidance	Investment
4 - 24 hour ambulances 32 FTE	4.8 Temp FTE – Perm 6.75 FTE – New *Previous investment 3 FTE • 1 Non union (2019) • 2 OT's (2020)
$2.4M Net	$238K – $834K Net *$140K Net
Total Levy Offset = $2.16M – $1.56M/year (*less $140K)	

Provincial Consultation

- Staff continues to meet with Ministry officials
- MIH was a priority topic for Niagara Region during 2020 AMO
- Minister of Health Elliott briefed and aware of Niagara's leadership in provincial modernization of ambulance services

Thank you

STAR CARE
Begins with me

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