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#### Published In/Presented At

Iqbal, S.A. & Beauchamp, G.A. (2020). *Feasibility of implementation of an emergency department discharge opioid taper protocol at Lehigh Valley Health Network*. Poster presented at Lehigh Valley Health Network, Allentown, PA.

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# Feasibility of Implementation of an Emergency Department Discharge Opioid Taper Protocol at Lehigh Valley Health Network

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## Background

- In 2017, there were approximately 47,000 deaths from opioid overdose. About one third of those deaths are from prescription opioids [1].
- Opioids account for about 67.8% of all overdose related deaths [1].
- In 2012, providers in PA wrote 83.3 opioid prescriptions per 100 persons compared to the national average of 81.3 prescriptions per 100 persons. This has decreased 30% from 2012 to 2017[1].
- American College of Emergency Physicians issued clinical guidelines advocating for the use of short-acting agents, at the lowest dose, for the shortest duration [2].
- The integration of these guidelines into the electronic medical record (EMR) can help standardize practices and limit variation among providers [3].
- In PA, most pharmacies will not fill a prescription that is over the dosage of 50 milligram morphine equivalents per day (MMED) without prior authorization [4].
- In an effort to reduce prescribing at Lehigh Valley Health Network (LVHN), the Opioid Stewardship Team has implemented single-click, tapered opioid discharge prescription orders in the EMR.

## Problem Statement

The goal of this patient safety and quality improvement study is to assess the feasibility of implementing a discharge opioid taper protocol in select Emergency Departments at Lehigh Valley Health Network from July 1, 2018 to December 31, 2019.

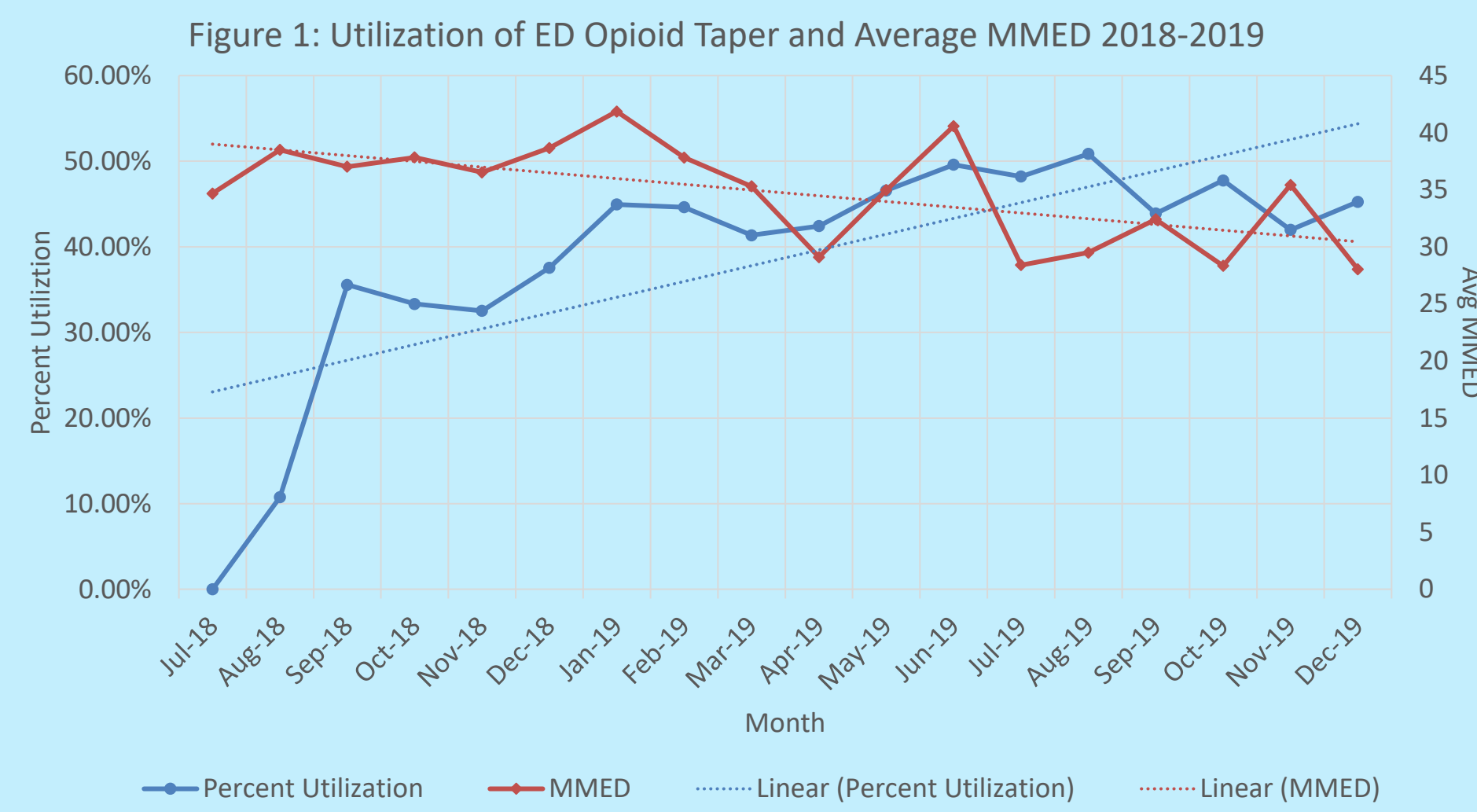
## Methods

- Prospective Observational Study
- IRB Designation: Non-Human Subjects Research & Quality Improvement
- Subjects: ED Providers  
Intervention: Three single-click discharge opioid tapered prescriptions order sets in the EMR (Table 1)

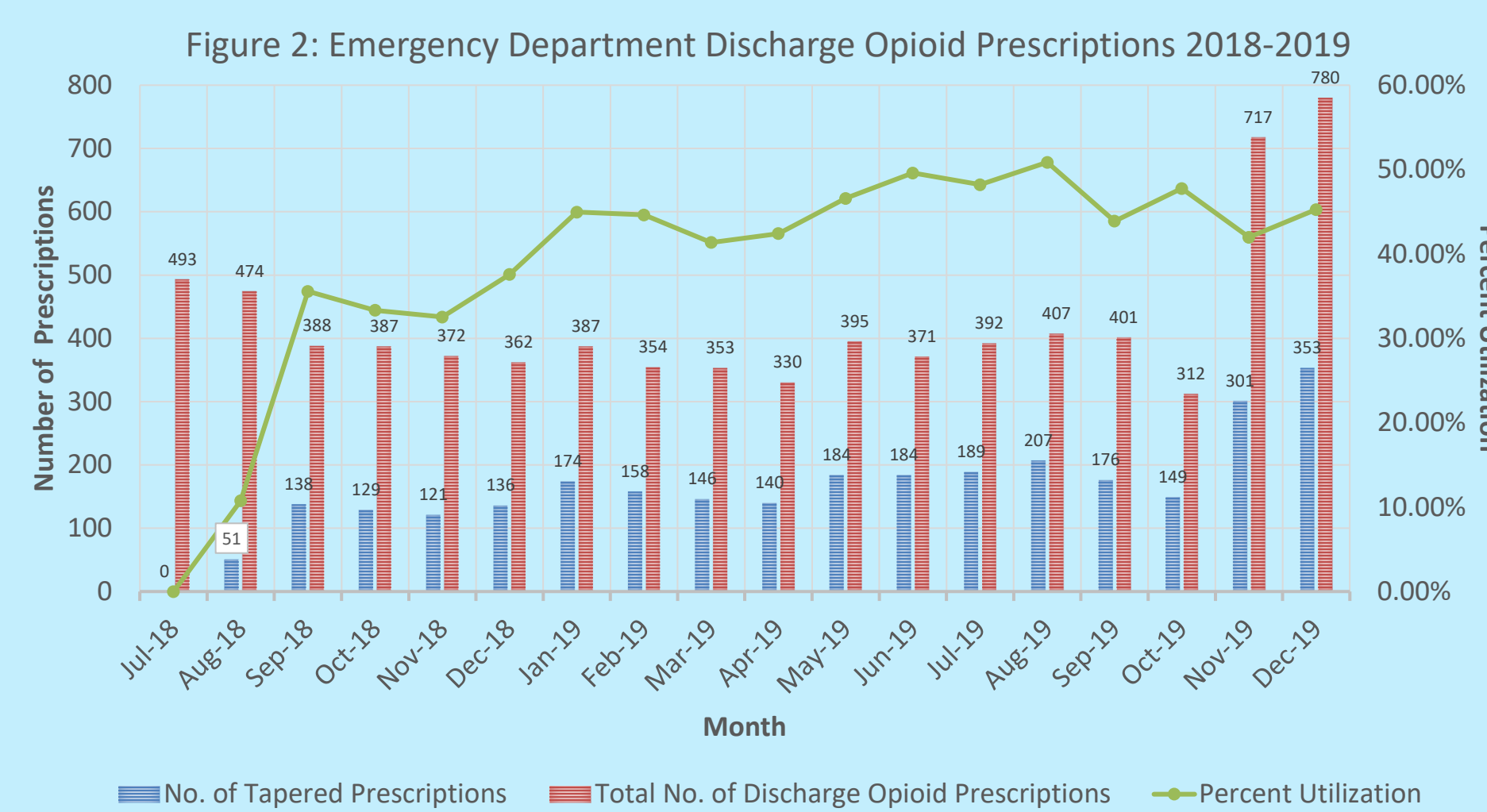
Order Sets	Taper Schedule		
	Day 1: one tab QID	Day 2: one tab BID	Day 3: one tab QD
Oxycodone	30 MMED	15 MMED	7.5 MMED
Oxycodone/ Acetaminophen	30 MMED	15 MMED	7.5 MMED
Hydrocodone/ Acetaminophen	20 MMED	10 MMED	5 MMED

- Education was provided on these orders to residents, advance practice clinicians, and attending physicians. Frequency was determined by scheduling convenience.
  - Grand Round information sessions (August 2018, October 2018, August 2019)
  - Online training modules (November 2019)
  - Email reminders (July 2018, November 2018, July 2019, November 2019)
- A data analytics dashboard was utilized to track ED Discharge Opioid Prescriptions from July 2018 to December 2019.
- Milligram Morphine Equivalent Daily (MMED) and Percent Utilization of Tapered Rx out of Total ED Opioid Rx were measured over time.

## Results

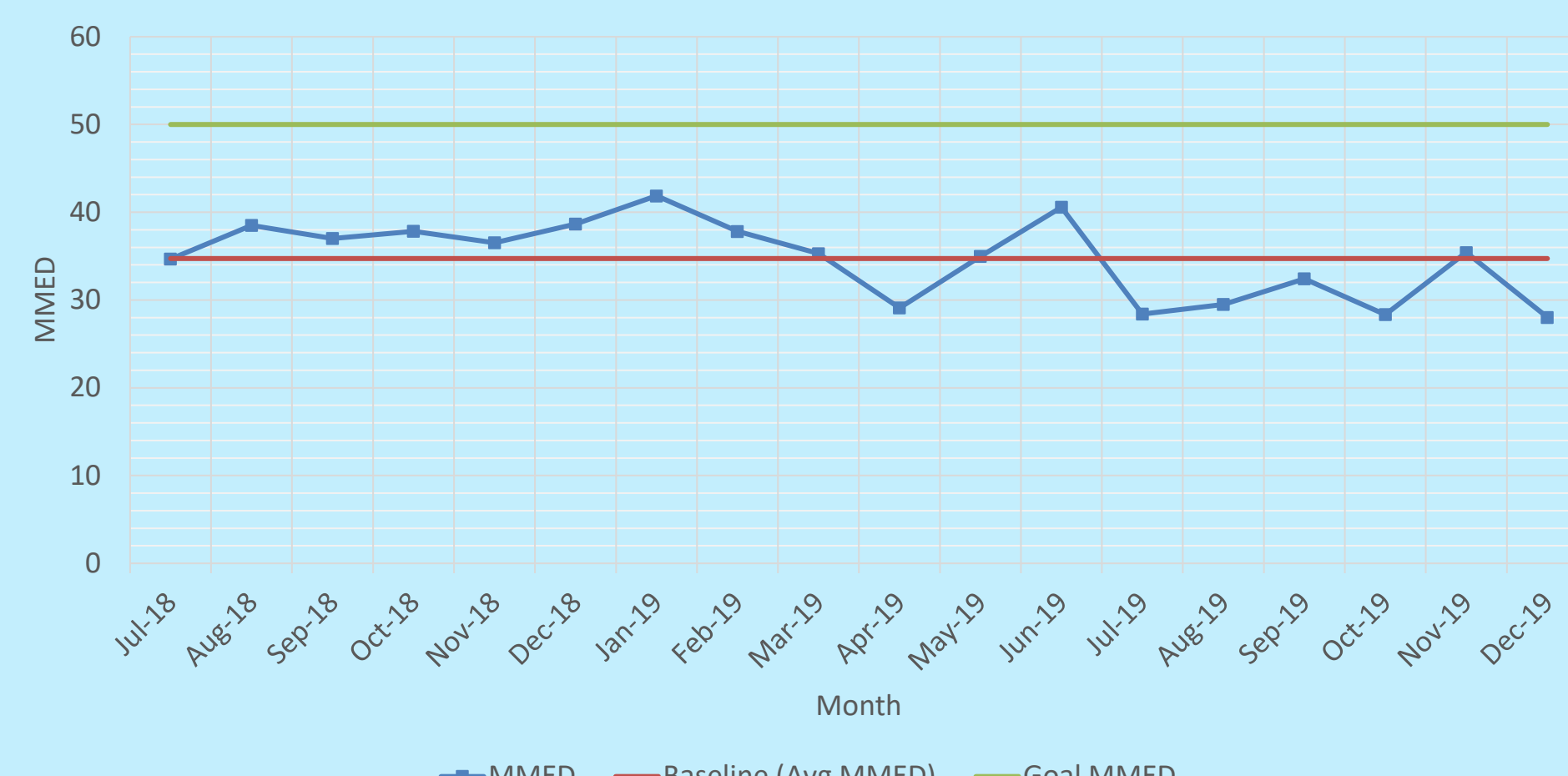


- Average MMED during the study period: 34.72 MMED.
  - Lowest: Dec. 2019 at 28.03 MMED
  - Highest: January 2019 at 41.86 MMED
- Average percent utilization following implementation in Aug. 2018: 41.02%.
  - Lowest: Aug. 2018 at 10.76%.
  - Highest: Aug. 2019 at 50.86%.
- There has been a slight negative trend in the average MMED and a slight positive trend in rate of utilization demonstrated in Figure 1.



- Since implementation in Aug. 2018, the total number opioid prescriptions slightly decreased.
- The average numbers of tapered and total prescriptions written from Aug. 2018 to Oct. 2019 were about 152 and 379, respectively.
- However, the averages from Nov. 2019 to Dec. 2019 were nearly doubled at 327 and 749, respectively.
  - Highest number of tapered prescriptions: Dec. 2019 at 353 prescriptions
  - No significant change in the percent utilization of the taper before and after Nov. 2019.

Figure 3: Run Chart of Emergency Department Average Discharge Opioid MMED 2018-2019



- A run chart of MMED was created using Institute for Healthcare Improvement (IHI) worksheet.
  - Baseline: mean MMED of 34.72, Goal line: 50 MMED
  - There is one shift consisting of at least 6 continuous data points on either side of the baseline
  - 5 runs of sequences of consecutive points on either side of the baseline. Expected runs for our data set of n=18 should be between 6-14 runs.
- All the data points were below the goal line of 50 MMED

## Discussion

### Data Interpretation:

This quality improvement and patient safety study demonstrated that implementing a discharge opioid weaning protocol is indeed feasible in the emergency department setting.

- Average dosages consistently remained under the goal of 50 MMED
- There has been an increase in the utilization of the ED discharge opioid taper order set in the EMR.

### Slightly decreasing trend in MMED:

- The average MMED during the study period is 34.72. The lowest MMED was 28.03 MMED in Dec. 2019
- Tapers include one 30 MMED, and two 20 MMED.
- With increase in utilization, it is expected that MMED will continue to decrease.

### Slightly positive trend in the Percent Utilization:

- Maximum utilization at 51% in Aug. 2019.
- These trends likely indicates growing compliance with safe opioid prescribing recommendations.

### Run Chart Interpretation:

- Interpreted using rules from the Institute for Healthcare Improvement [8].
- Signals of non-random variance were identified
  - 1 shift
  - 5 runs (fewer than the expected runs of 6-14)
- These are signs that an improvement has occurred following implementation of a process.

### Future Directions:

- Assessing the trends over a longer period of time
- Expanding the use of the taper order set to other departments at LVHN
- Examining other data points such as the frequency of 30-day return visits following use of a tapered order set.

### Project Limitations:

- Limited retrospective data prior to July 2018
- Limited frequency and consistency of education/communication provided

### SELECT Principles:

- Leadership
  - Creating Institutional Change via Kotter's 8-Step Model [9]
- Health Systems
  - Patient Safety
  - Health Informatics and the EMR
  - Quality Improvement
- Values-Based Patient-Centered Care
  - Encouraging conversation about Safe Opioid Used
  - Emphasis on reducing stigma

## Conclusion

This study concludes that implementing three different opioid 3-day/7-tablet taper options is feasible and increased the frequency of ED discharge opioid prescriptions that utilized a tapering dose. This change may improve patient safety by decreasing the risk of adverse outcomes related to opioid use, and it ensures discharge prescriptions are less than 50 MMED, as mandated by many commercial pharmacies for acute opioid prescribing.

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