Utilization of iMobile as the primary means of communication amongst hospital staff at TMCA-North - A Quality Improvement Project

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Introduction

- One of the **leading causes of patient harm** in hospitals year-to-year is inadequate staff communication of critical information.[1]
- Hospital communication includes **synchronous** (in-person, phone calls) and **asynchronous** (documentation, paging) means.
- **Pagers** are associated with user dissatisfaction, interrupted workflow, and inefficiency.[2]
- **Smartphones**, now owned by majority of US physicians, have both pros and cons in the hospital setting. [3, 4]
  - Pros: User friendly. Rapid, bidirectional messaging. Multifunctional applications.
  - Cons: SMS is not HIPAA-compliant, not integrated with EMR, fails Joint Commission secure text message guidelines. [5, 6, 7, 8]
- Enter **HIPAA-compliant group messaging (HCGM)** applications.
- Features range broadly but at their core offer **secure**, **bi-directional, text messaging**. [9]
- When compared with one-way paging, studies show HCGM…
  - Reduced communication failures, had higher user satisfaction, sped up daily work tasks, were preferred over paging, was less disruptive, decreased time to find provider, and, notably, **reduced length of stay**. [10, 11, 12, 13, 14, 15, 16]
- Our psychiatry residency program at the Medical Center of Aurora Behavioral Health and Wellness Center (TMCA-North) sought to reap the aforementioned benefits by **increasing user adoption of iMobile/MH-CURE** (a HCGM) amongst residents, nurses, and staff.

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Objective

- Assess the general attitudes towards workplace communication and the usage of iMobile/MH-CURE, and promote and increase employee utilization thereof as the primary means of asynchronous intra-hospital communication regarding patient care in order to improve HIPAA compliant communication standards.

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Methods

- An initial (pre-intervention) survey link (questionpro.com) was disseminated via email on **November 22nd, 2022** to 208 recipients:
  - Physicians (attendings and residents), nurses, behavioral health technicians, social workers.
- A 23-slide training PowerPoint that provided instructions on how to use the smartphone (or desktop) iMobile/MH-CURE app was disseminated to the same 208 recipients on **December 9th, 2022**.
- In-person and email follow-up with recipients occurred during the following weeks, reminding them to complete the training, utilize the iMobile/MH-CURE app, and encourage other staff members to do the same.
- A final (post-intervention) survey link (questionpro.com) was disseminated via email on **January 30th, 2023**.
- A manual "snapshot" of the number of staff member assigned to patients was done September 30th, 2022 and February 17th, 2023.
- Data regarding unique logins before and after December 9th, 2022 was provided by the MH team on March 7th, 2023.
- Statistical analysis was completed between February 16th and 24th:
  - Select pre- and post-survey data were tested for change using the Mann Whitney U Test (for unpaired data).
    - Compared to assess for a significant shift in the distributions
  - Additional data was reviewed to assess for trends and comparisons.

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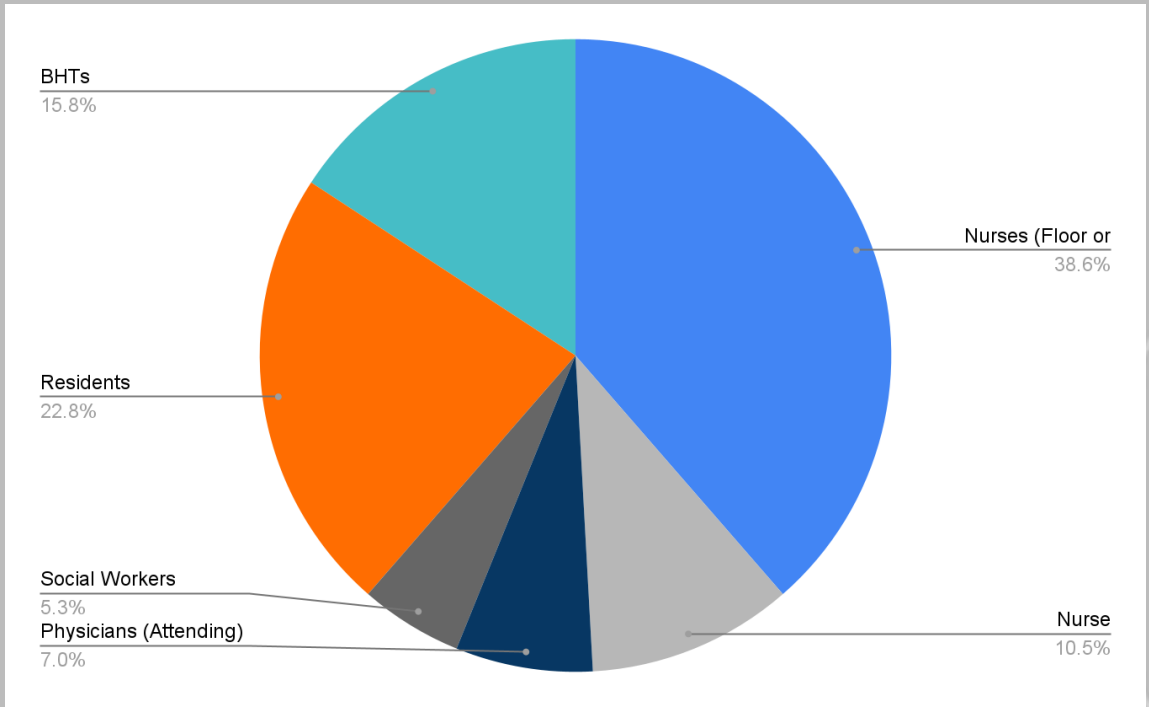
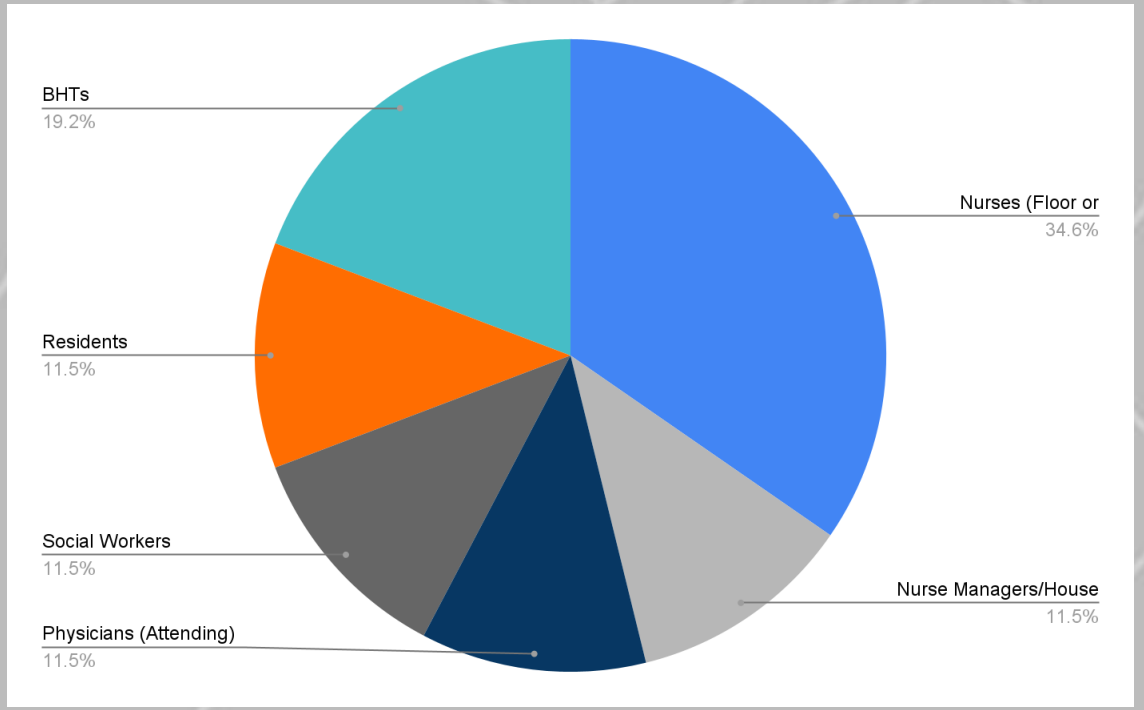
Results: Total Participants

- 57 completed the **initial** (pre-intervention) survey
- 36 attested that they completed the training PPT.
- 26 completed the **final** (post-intervention) survey, with 21 (80.77%) stating they completed the PPT.

Pre-Intervention Survey (n = 57)



Post-Intervention Survey (n = 26)



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Results: Need for improvement?

Do you perceive the need to improve and/or streamline workplace communication?

- 78.95% said “Yes”

Please describe what you feel could be improved upon:

- **Standardized form of communication**
  - “All team members should utilize the same system and process. **Relying on physicians' personal cell phones for communication is ineffective and time-consuming.”**
  - “More efficient means of communication, use of a single modality, **ability to know who is responsible for various patients**.”
  - “I feel it would be **helpful if more staff utilized the iMobile devices** so that everyone is available during the workday.”
  - “I believe that all staff should be using a single **HIPAA compliant** communication platform for all communication.”
  - “Communication through iMobile **needs be more consistent.**”

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Results: Need for improvement?

Please describe what you feel could be improved upon:

- **Communication with physicians**
  - "**Reliable communication with appropriate providers** when nursing staff needs to get in touch with the primary team."
  - "More direct communication with primary treatment teams, not going through on call resident. Having patients assigned to their treatment teams on iMobile"
  - "If there is an emergency or timely need to reach someone, it is **difficult to get a hold of the correct person**. Some staff page the on-call first, but there is no clear cut off on when to call the primary (attending) MD or on-call or to know if there is a resident working with the provider. Physicians tend to communicate just with whatever nurse they see on the unit versus who is actually assigned to a given pt they are referencing."

- **HIPAA compliance**
  - "1) Communication to the correct individual. 2) Secure communication"
  - "Not all of the residents and attendings use iMobile. Some prefer to be contacted with their personal cell phones which **I am often uncomfortable with due to HIPAA** (especially when texting). You can be sure you aren't violating HIPAA."
  - "Why do we have an iPhone, if none of the doctors or residents are on it? Why am I forced to use my personal phone for work? Much less that it is a HIPPA violation that is being forced on me?"

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Results: Communication failures

Over the past 2 months (pre)/6 weeks (post), can you recall any errors or failures in communication?

Pre-intervention

- 54.39% said Yes
- 45.61% said No

If you answered "Yes", please briefly describe what occurred:

- “Attempting to contact the physician via personal phone and having the wrong number - no patient information was revealed.”
- “HCAT communicated wrong patient to staff”
- “I am frequently being contacted about patient's that I am not caring for--either through iMobile or text messaging. This has yet to result in negative patient outcomes.”
- “The wrong patient was discharged. There were two patients with the same name discharging on the same day and the wrong patient was discharged with the wrong transport. Staff was not being careful enough with their patient identifiers and not communicating with one another to make sure this did not happen.”

Post-intervention

- 34.62% said Yes
- 65.38% said No

If you answered "Yes", please briefly describe what occurred:

- “1. Code on Unit 2. iMobile broadcast 3. Staff unaware of how to broadcast on iMobile”
- “Got a message from pharmacy to enter pt weight at least 3 days after was sent”
- “There were several occasions a night resident was unable to be reached over imobile by phone and by text message.”
- “Most attendings not in imobile and their residents arent logged in/are not on the doctors list/schedule.”
- “I asked a resident about whether or not she wants me to take a blood test from a patient. I texted her that morning through imobile. the message was unseen until the afternoon. she responded around 3pm, we already sent out the patient to ED

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Results: Primary outcomes

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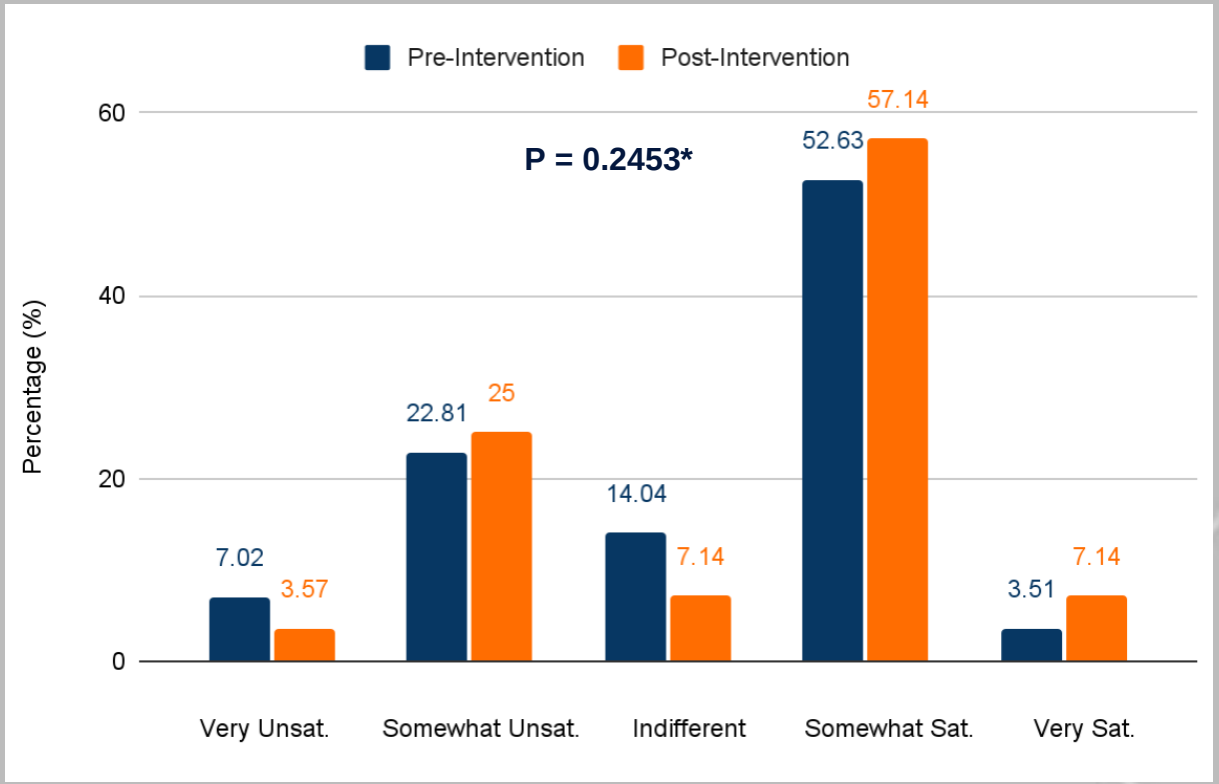
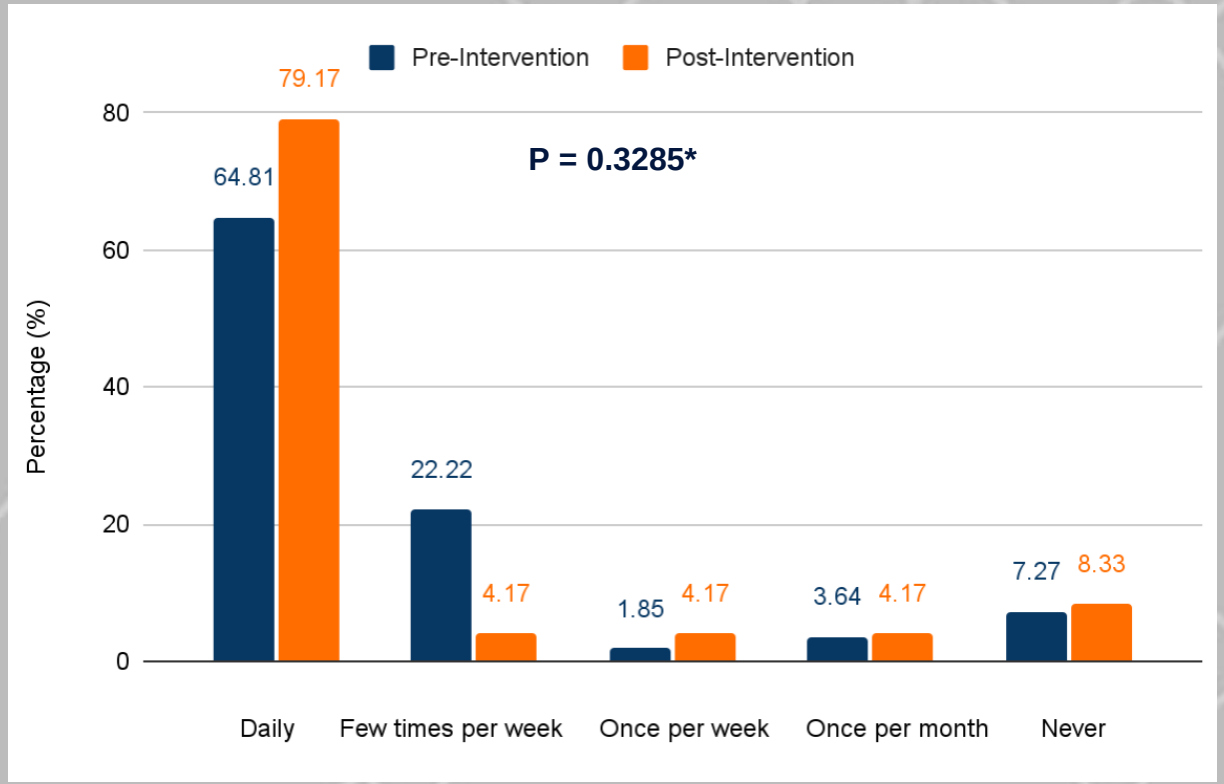
In general, how satisfied are you with workplace communication?



How often do you utilize iMobile/MH-CURE for communication?



*Tested for changes between the pre and post survey using Mann Whitney U Test.

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Results: How quickly are people responding?

How quickly are you typically able to get a hold of/response from the following staff members on day shift?

Pre-Intervention	<5 min	5-10 min	10-30 min	>30 min	N/A
Nurse (Floor or Charge)	63.49%	17.46%	4.76%	1.59%	12.70%
Nurse Manager	31.67%	20%	18.33%	3.33%	26.67%
Physician (Attending)	13.11%	32.79%	22.95%	11.48%	19.67%
Social Worker	19.67%	39.34%	16.39%	4.92%	19.67%
Resident	33.33%	36.51%	11.11%	3.17%	15.87%
HCAT Personnel	46.77%	24.19%	3.23%	0%	25.81%

Post-Intervention	<5 min	5-10 min	10-30 min	>30 min	N/A
Nurse (Floor or Charge)	67.86%	14.29%	0%	0%	17.86%
Nurse Manager	33.33%	29.63%	14.81%	0%	22.22%
Physician (Attending)	10.71%	21.43%	35.71%	7.14%	25%
Social Worker	22.22%	37.04%	11.11%	3.70%	25.93%
Resident	44.44%	33.33%	0%	0%	22.22%
HCAT Personnel	46.15%	7.69%	3.85%	0%	42.31%

- **Nurses** went from 80.95% in <10 min to 82.15%
- **Nurse Managers** went from 51.67% in <10 min to 62.96%
- **Residents** went from 69.84% in <10 min to 77.77%
- Fewer people overall reported response times >10 min (except for Attendings)
    - But more people selected N/A in the post-intervention survey

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Results: Is iMobile your main mode?

Is iMobile/MH-CURE your primary means of workplace communication? (explain why or why not)

- **Pre-intervention:**
  - Yes (42%):
    - “I prefer it over calling/texting coworkers on my personal phone. I don't feel comfortable giving a lot of people my personal cell. The ringer on alerts me quick, and I can see BERTs faster”
    - “HIPAA compliant, routes messages appropriately and in a timely manner.”
    - “It is a one stop shop to find out what patients are on the unit, who is assigned to the patients and how to communicate as a team.”
  - No: (56%)
    - “Not everyone uses it, so it becomes a redundant item and i remain using my personal cell”
    - “I like it, but often times people I need to reach are not signed in.”
    - “Not while at TMCA-N, not enough staff uses it, it is not assigned as appropriately as it could be.”
- **Post-intervention:**
  - Yes (60%)
    - 18.18% reported this changed since the intervention.
  - No (40%)

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Results: Post-intervention improvements

Over the past 6 weeks, have you noticed any improvement in workplace communication?

- 64.29% said Yes
- 35.71% said No

If you answered "Yes", please describe what improvements you've noticed:

- "More people are showing up under care teams for individual patients."
- "**More staff logged into imobile**"
- "I think that people are beginning to get more comfortable with communication over imobile and logging in first thing when they come on shift. I would like to make sure that all of the residents are on board with getting our BERTs over imobile - typically this works, but occasionally there are some glitches or a resident says they did not receive one."
- "I have noticed **more consistent iMobile use**."
- "More timely reactions to emergencies, more staff being logged on and reachable consistently"
- "More nurses have been assigned to their pts, SWs have used iMobile more."
- "The use of BERT broadcasting has been more effective over time as more staff members have been utilizing the app and I have been able to communicate with other staff members through the messaging feature when I do not have other means of communication."

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Results: Post-intervention improvements

Over the past 6 weeks, has your overall experience with iMobile/MH-CURE improved?

- 29.63% - Yes, a lot
- 40.74% - Yes, a little
- 29.63% - No, stayed the same

Over the past 6 weeks, have you had better or worse success in reaching fellow staff members via iMobile/MH-CURE versus other forms of communication?

- 12% - Much better
- 56% - Somewhat better
- 28% - Same
- 4% - Somewhat worse

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Results: Snapshot of staff members assigned to pts

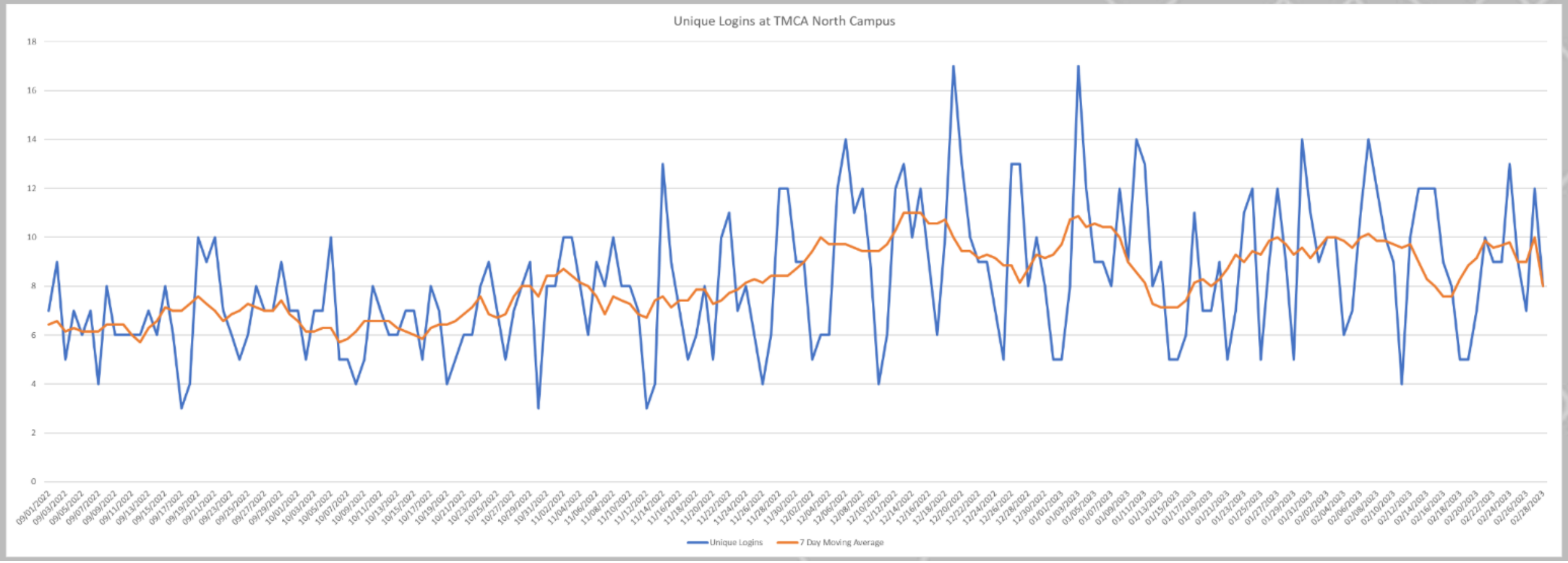
Percentage of patients with staff assigned in iMobile 9/30/22									
Unit	Attending	Resident	BHT	Pharmacist	Clinical Coordinator	IM	Clinical Nurse coordinator	Primary RN	Total pts
all	**80%**	**20%**	**31%**	**98%**	**61%**	**97%**	**46%**	**74%**	**61**
adol	100%	53%	80%	100%	7%	93%	20%	47%	15
adol ext	100%	100%	67%	100%	0%	100%	100%	100%	3
east	75%	0%	0%	100%	100%	100%	100%	100%	4
gero	71%	0%	0%	100%	76%	95%	0%	71%	21
west	71%	6%	29%	94%	94%	100%	100%	88%	17
womens	100%	0%	0%	100%	0%	100%	100%	100%	1

Percentage of patients with staff assigned in iMobile 2/17/23									
Unit	Attending	Resident	BHT	Pharmacist	Clinical Coordinator	IM	Clinical Nurse coordinator	Primary RN	total
all	**90%**	**25%**	**65%**	**6%**	**73%**	**100%**	**51%**	**93%**	**71**
adol	100%	33%	100%	7%	0%	100%	0%	100%	15
east	91%	18%	100%	18%	100%	100%	100%	91%	11
gero	86%	21%	21%	4%	86%	100%	79%	96%	28
west	88%	29%	82%	0%	100%	100%	18%	82%	17

Results: Number of unique iMobile logins

Average unique daily logins:

- Prior to 12/09/2022: **6.625**
- Between 12/10/2022 - 02/28/2023: **8.23**



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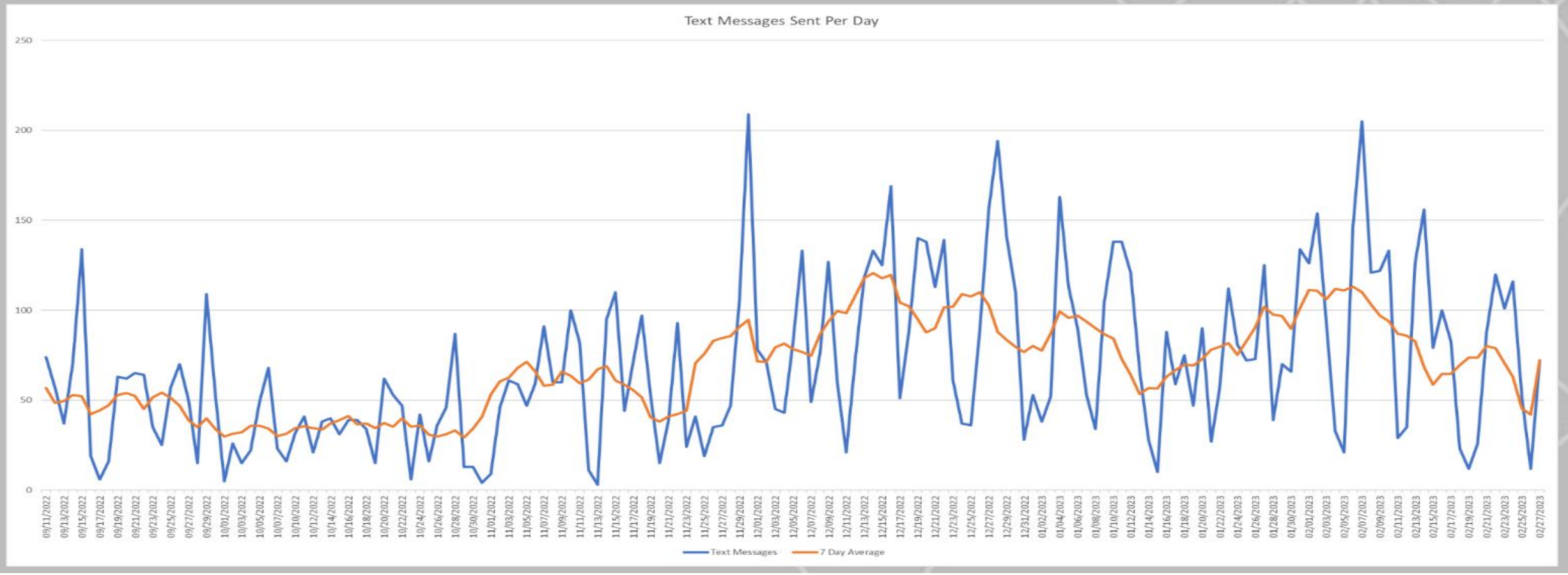
Results: Number of text messages via iMobile

Average daily number of texts:

- Prior to 12/09/2022: **50.67**
- Between 12/10/2022 - 02/27/2023: **87.78**



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Limitations

- Pairing of data between respondents regarding the pre- and post-survey was not done
- Limited enforcement regarding the training and survey response resulted in poor survey response
- Timeline differences making it difficulty to perform meaningful data analysis
- Challenges with tracking use due to differences between “Logged on”, “Assigned”, and Actively using the app
- Biases
    - Self-selection bias: Subjective survey data with bias that survey completers were more likely to undergo the training and therefore may have improved responses
    - Response bias: potential for Acquiescence or “yea-saying”
    - Recall bias

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Discussion

Improvements in perceptions of workplace communication and objective metrics of increased iMobile adoption was not robust.

- May be due to intervention not being effective enough. PPT and informal reminders.
  - “Bottom-up” vs. “Top-down” strategies.
  - Targeted trainings, frequent in-person announcements during interdisciplinary rounds, unit “champions,” use cases.
- Raw day-to-day iMobile usage data pre- and post-intervention was lacking.
  - “Snapshots” vs. “Longitudinal” data.
  - Working with iMobile data warehouses/IT department in the future.
- Difficulty creating paired testing in reality due to issues with poor survey response and “buy-in” at the outset.

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Discussion

Subjective responses in survey data had several consistent themes pre- and post-intervention.

- Employees who actually completed the iMobile training powerpoint found it helpful and informative.
  - Scaling up in the future. Such as providing time for more staff to complete training on-site.
- Calls for more staff (physicians) to actively use iMobile and assign patients so the primary team members are clearly identified.
  - Misperceptions about iMobile (time-consuming, carrying two phones, less efficient, no clear benefit.)
  - Need more robust training and education around iMobile targeted at providers.
- Alternative routes of communication confuse which form of communication is preferred and de-incentivises iMobile use.
  - The more employees that use iMobile, the more that non-users will be incentivized to use it.
- Concern for non-HIPAA compliant communication being used.
- Anecdotal reports of improvements in communication: quicker response times, more staff signed in/assigned to pts, use in BH emergencies

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Conclusion

- Although the subjective data does indicate improved communication and utilization of iMobile at TMCA-North, there was no significant difference in the data analyzed.
- Further interventions are needed with more objective, longitudinal metrics in order to fully assess if said interventions are successful at increasing compliance.
- Stronger training interventions, more top-down enforcement, and greater incentives for using HIPAA compliant communication methods may be required to increase compliance beyond more passive means such as self-reported usage and training attestations.
- Attitudes towards workplace communication and efficacy would be better addressed as compliance increases with paired data to more accurately determine if perceptions regarding communication are improving.

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