BMJ Open Quality

Advancing language concordant care: a multimodal medical interpretation intervention

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To cite: Sharfuddin N, Mathura P, Mac A, *et al*. Advancing language concordant care: a multimodal medical interpretation intervention. *BMJ Open Quality* 2024;**13**:e002511. doi:10.1136/bmjoq-2023-002511

► Additional supplemental material is published online only. To view, please visit the journal online (http://dx.doi.org/10.1136/bmjoq-2023-002511).

Received 21 July 2023
Accepted 2 January 2024

Check for updates

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ABSTRACT

Background Ensuring language concordant care through medical interpretation services (MIS) allows for accurate information sharing and positive healthcare experiences. The COVID-19 pandemic led to a regional halt of in-person interpreters, leaving only digital MIS options, such as phone and video. Due to longstanding institutional practices, and lack of accessibility and awareness of these options, digital MIS remained underused. A Multimodal Medical Interpretation Intervention (MMII) was developed and piloted to increase digital MIS usage by 25% over an 18-month intervention period for patients with limited English proficiency.

Methods Applying quality improvement methodology, an intervention comprised digital MIS technology and education was trialled for 18 months. To assess intervention impact, the number of digital MIS minutes was measured monthly and compared before and after implementation. A questionnaire was developed and administered to determine healthcare providers' awareness, technology accessibility and perception of MIS integration in the clinical workflow.

Results Digital MIS was used consistently from the beginning of the COVID-19 pandemic (March 2020) and over the subsequent 18 months. The total number of minutes of MIS use per month increased by 44% following implementation of our intervention. Healthcare providers indicated that digital MIS was vital in facilitating transparent communication with patients, and the MMII ensured awareness of and accessibility to the various MIS modalities.

Conclusion Implementation of the MMII allowed for an increase in digital MIS use in a hospital setting. Providing digital MIS access, education and training is a means to advance patient-centred and equitable care by improving accuracy of clinical assessments and communication.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Language discordant care increases risk for medical errors and leads to reduced patient satisfaction and quality of care.
⇒ Digital modalities have the potential to increase access to medical interpretation services, however these services are underused.

WHAT THIS STUDY ADDS

⇒ Implementation of a Multimodal Medical Interpretation Intervention (MMII) increased digital medical interpretation service use.
⇒ The MMII increased access to digital medical interpretation technology, educated staff on the importance of medical interpretation in care delivery and raised awareness of various medical interpretation modalities.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Access to multiple medical interpretation service options, including digital modalities, ensures that all patients receive language concordant care.
⇒ It is essential that clinicians and patients are aware of the various interpretation modalities available, and when and how to use medical interpretation services.

INTRODUCTION

Problem description

Inaccurate communication with patients leads to gaps in patient assessment and care, and further contributes to disparities in healthcare access and delivery. In Canada, 12.7% of the population speak predominantly a non-English/non-French language at home.[1] In Alberta, 21% of the population speak a non-official language, and this number is expected to increase.[1] Absence of clear and effective communication with patients leads to increased risk of medical errors, missed or misdiagnoses and delayed management, longer hospital stays and higher readmission rates.[2 3] This further contributes to reduced patient care and satisfaction overall.[2 3] Ad hoc interpreters, such as family members or medical staff, increase risk of adverse outcomes by failing to produce accurate interpretations, violating patient confidentiality and constraining discussion regarding sensitive and/or personal topics.[2 3]

While available, digital medical interpretation services (MIS) were not consistently used in Edmonton, Alberta, due to historic preference for ad hoc, in-person or no interpretation.[4] The COVID-19 pandemic led to the halt of all in-person interpreters across

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Edmonton, and constrained access to ad hoc interpreters due to visitor restriction in all hospitals. This resulted in digital MIS options, such as phone and video, as the only available options. Due to longstanding institutional practices, and lack of accessibility and awareness of these options, digital MIS remained underused.[5]

Available knowledge

Language discordant care is defined as clinical assessment or communication that takes place in a language other than the patient's preferred language.[6] Consequences of language discordant care include increased risk for medical errors, longer hospital stays and higher readmission rates with reduced patient satisfaction and quality of care.[2 3 7] Delivering care in the presence of language barriers is also associated with poorer understanding of disease and treatment options, and negatively affects the process for obtaining informed consent.[8] Professional medical interpreters reduce these risks while improving patient experience.[9] Such services include having an in-person professional interpreter or connecting with a professional interpreter via phone or video.[10]

Ad hoc or informal interpreters, described as family, friends, bystanders or clinical staff without professional medical interpretation training, increase risk of adverse outcomes by failing to interpret accurately and affecting patients' abilities to comfortably disclose all their concerns.[11] For instance, many patients report feeling embarrassed, uncomfortable or guilty when consulting with ad hoc interpreters, as their presence may limit discussion around sensitive topics such as mental health or intimate information.[12 13] This may lead to emotional and/or psychological trauma, distrust in the healthcare team and lower quality of care.[11] Consultations without professional interpreters or with informal ad hoc interpreters introduce challenges for open and honest communication between patients and their healthcare team.[11] Conversely, language concordant care delivered through professional medical interpretation modalities is associated with increased patient understanding of their disease processes, greater compliance and adherence with management plan and follow-up as well as a greater sense of autonomy and dignity in navigating one's care.[3 14]

Despite the availability of professional MIS across Canada, these tools are not universally employed when language barriers exist between patients and clinicians.[6] An important factor leading to MIS underutilisation is the perceived lack of interpersonal skills among providers to navigate situations where patients/families do not want professional interpreters present.[15] Previous studies have also found that healthcare providers may feel that the use of digital MIS, especially phone services, can result in the loss of patient-provider intimacy and increased risk for miscommunication.[10 16] Some feel that the presence of an interpreter can lead to a vast amount of information being given in a short period of time to patients, as clinical staff prepare for 'one big conversation' using MIS, as opposed to fewer shorter sessions.[17] Barriers at the organisational level also contribute to MIS underutilisation, including limited interpreter availability, perceived time constraints and inaccessibility or difficult-to-use interface of digital MIS platforms.[15] Organisational culture, structural discrimination and lack of clinician knowledge or awareness of medical interpretation resources are additional factors that lead to reduced MIS use.[6]

Remote telephone and video MIS are important in facilitating access to professional interpreters while ensuring high clinician and patient satisfaction.[18] Digital applications, especially those that enable video interpretation, overcome language barriers and allow for important discussions involving patient decision-making and informed consent.[18 19] The global COVID-19 pandemic has highlighted the crucial need for integrating multimodal MIS platforms, including remote options, into everyday healthcare practice. While trained in-person interpreters can be costly and pose availability concerns, digital interpretation services are available at low costs and allow for on-demand face-to-face encounters via video when in-person is not possible.[18 19] Digital MIS are critical for ensuring accurate communication, providing timely and accessible care and improving the reach of public health and safety information.

Rationale

Our team aimed to bridge gaps in communication and ensure language concordant care by developing and implementing a Multimodal Medical Interpretation Intervention (MMII). The MMII comprised an Interpreter on Wheels (IOW), informative posters and education sessions, with the goal of improving language concordant care in one hospital located in Edmonton, Alberta, Canada. While the benefits of digital MIS are widely reported,[9 14 18 19] digital MIS were routinely underused in our hospital due to perceived time constraints, difficulty with navigating digital MIS platforms and lack of knowledge and understanding about language concordant care among interdisciplinary staff. Therefore, we employed Switch Framework by Chip Heath and Dan Heath for encouraging change in our hospital, which has three components: motivating change by appealing to emotion and urgency, directing your team by outlining clear goals and shaping the path by removing obstacles and creating an environment supportive of the desired change.[20] These change management principles guided the development of our multipronged intervention, as we incorporated education on the importance of language concordant care, celebrated team milestones and used feedback from staff to continuously improve the MMII.

Specific aims

We aimed to improve language concordant care by increasing digital MIS usage by 25% in our hospital within 18 months of intervention onset.

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METHODS

Context

This quality improvement (QI) study was conducted at a quaternary, teaching hospital in Edmonton, Alberta, Canada. The hospital has 885 beds and provides a comprehensive range of diagnostic and treatment services, including transplant, interventional neurological and cardiac care.[21] The use of MIS was not part of daily practice in our hospital, despite the associated cost paid by the provincial health authority. Specifically, there was underutilisation of digital MIS modalities with an overreliance on in-person MIS. The COVID-19 pandemic led to a halt in all in-person interpreters across the province to reduce disease transmission and risk. This resulted in digital MIS as the only available MIS modalities that could be accessed across the province.

Patient and public involvement

Patients or the public were not involved in the design, conduct, reporting or dissemination of our study.

Ethical considerations and guidelines

We used the ARECCI Ethics Guidelines for Quality Improvement and Evaluation Projects,[22] which identified our project as minimal risk, which did not require full ethics board review as per local organisational policies.[22] The Standards for Quality Improvement Reporting Excellence V.2.0 guidelines for reporting QI were followed.[23]

Baseline measurement

Initial data collection involved gathering information on the total number of minutes of MIS use per month prior to the implementation of the MMII. The total number of minutes of MIS use per month was recorded beginning in January 2019 until the implementation of the MMII in March 2020. Prior to the MMII, the median total for MIS use was 3587 min, with a median of 1469.5 min for phone MIS use and a median of 1990 min for in-person MIS use over 14 months. We continued measuring the total number of minutes for phone and in-person MIS use per month following implementation of the MMII. The intervention introduced a video modality for MIS; thus, we also measured the number of minutes of video MIS use per month following implementation of the MMII.

Intervention

To develop the MMII, we formed an interdisciplinary QI team consisting of a General Internal Medicine (GIM) physician who also serves as the Department of Medicine Chair and Edmonton Zone Clinical Lead, GIM Sub-Specialty Chief Resident, a QI specialist, provincial health authority MIS manager (and subject matter expert) and medical and nursing students. Our core team also collaborated extensively with the Emergency Medicine Executive Director, GIM unit managers, nursing managers and provincial health authority senior leadership.

The MMII consisted of four components: (1) increasing accessibility of medical interpretation services by implementing an IOW and speed dial phone MIS option, (2) education about MIS for interdisciplinary staff, (3) increasing patient awareness of MIS through posters and (4) providing support for staff on how to integrate MIS into clinical encounters through decision support tools. The IOW was a tablet that had on-demand video and phone MIS access icons on its home screen, which were available at all hours. It was attached to a traditional intravenous line device which had wheels allowing for portability. We also preprogrammed hospital unit phones with a speed dial feature to enable immediate connection with a medical interpreter. Previously, accessing phone MIS required a series of phone prompts, including entering a confidential hospital code. The speed dial feature on hospital phones bypassed these actions, resulting in an immediate connection, which was also available on demand, 24 hours a day, 7 days a week.

Frontline clinical interdisciplinary staff (physicians, nurses and allied health members), unit managers and learners (resident physicians, medical and nursing students) were educated on the importance of using MIS for clinical care delivery. The formal education/training sessions were 45 min and took place in-person or via Zoom led by the GIM Chief Resident and MIS manager. Additional demonstrations of how to use the IOW and speed dial phone MIS options were led by the MIS manager and took place over frequent 20 min huddles on the selected intervention units at the start of shifts to orient and remind staff members on the steps and considerations for using the various MIS options.

We developed and displayed multiple patient-facing posters in high traffic areas of the hospital units, which stated that MIS was available and could be requested at no cost to patients in the top 20 languages spoken in the province (online supplemental file 1). To support staff during clinical encounters, we also created a clinician-focused tip sheet (online supplemental file 2) summarising the evidence on using MIS to advance language concordant care and step-by-step instructions on using the various digital MIS modalities. A clinical decision support tool (online supplemental file 3) featured a table showing the various MIS modalities (phone, video, in-person) and the associated costs, indications, language availability, connection time and other considerations that would aid a clinician or healthcare worker in deciding when to use MIS and which modality was best suited to the situation. Figure 1 illustrates a timeline of when specific components of our intervention were implemented.

Strategy

PDSA cycle 1 (figure 2): the development of the MMII began with establishing a shared goal between senior leadership at Alberta Health Services, MIS Department and physician leads to improve language concordant care. To ensure patients receive language concordant care, we increased accessibility and awareness of digital MIS through the implementation of a single IOW in the emergency department in March 2020. This increased convenience and ease with accessing digital MIS platforms. We

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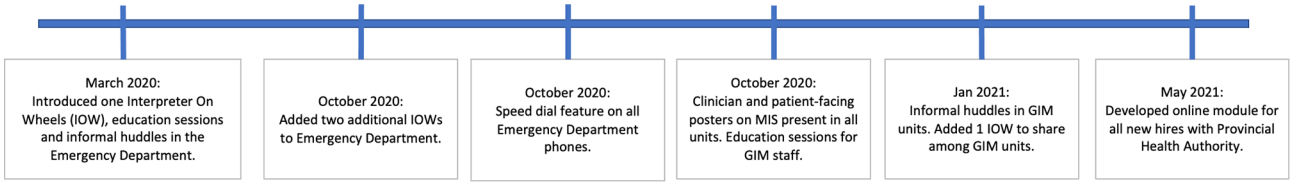


Figure 1 Timeline of the Multimodal Medical Interpretation Intervention (MMII). The MMII consisted of the IOW, speed dial phone medical interpretation services (MIS) option, education sessions for staff and three visual cues for staff and patients. Training for all physicians, frontline staff, unit managers and learners (medical students, nursing students, resident physicians) share information on the importance of using MIS and how to use the IOW. Multiple patient-facing and clinician-facing posters were developed to outline considerations for when to use specific MIS modalities and provide step-by-step instructions (online supplemental files 1–3). GIM, General Internal Medicine.

created and displayed three posters between March and October 2020 to educate staff and patients about MIS which were placed on all hospital units (online supplemental files 1–3). We also implemented informal team huddles and demonstrations on how to use the IOW led by the MIS manager in the emergency department. Additionally, the MIS manager delivered 45 min education sessions to emergency department staff via Zoom. In early October 2020, we gathered feedback from emergency department staff via a paper-based survey. Staff indicated that phone MIS was used for most cases, especially for routine clinical assessments and providing instructions to patients. Simple goals of care discussions could also be completed on the phone, which had 240 languages available on demand. Furthermore, staff suggested that another IOW machine be provided, that all equipment be centrally located in the department and that staff refer to the IOW using a personable name instead of 'Interpreter on Wheels' (eg, Max) to increase change acceptance. Staff also indicated that while informal huddles were useful, formal training sessions about MIS ensure clarity on when and how to use MIS.

PDSA cycle 2a (figure 2): based on feedback gathered from the first PDSA, to make digital MIS more accessible for staff, we added a speed dial feature to phones and two additional IOW in the emergency department and in late October 2020.

PDSA cycle 2b (figure 2): based on the feedback from the staff survey to provide MIS education, we expanded the education sessions to also include GIM staff starting in late October 2020. These education sessions were delivered by the GIM chief resident physician on our team to GIM physicians, core and subspecialty internal medicine residents. Key points from these education sessions were reinforced by informal team huddles which began in the GIM units in January 2021.

PDSA cycle 2c (figure 2): one IOW was also added to be shared among the GIM units in January 2021.

PDSA cycle 2d (figure 2): in May 2021, our core leadership team collaborated with the provincial health authority to develop and implement an online module focusing on the importance of language concordant care and the various MIS options available across the province for all new hires to complete.

PDSA cycle 2e (figure 2): between March 2021 and August 2021, learnings and recommendations from the MMII implementation in the emergency department were shared with hospital and regional leadership teams.

Study of the intervention, measures and analysis

We evaluated the MMII using a prepost study design, which involved a quantitative analysis of digital MIS use before and after the MMII and qualitative analysis of the feedback collected through our staff survey. The pre-intervention period spanned from the beginning of January 2019 to the end of February 2020, and the post-intervention period spanned from late March 2020 after the COVID-19 pandemic was declared to the end of December 2021. Our outcome measure was total minutes of digital MIS use per month. We also tracked minutes of phone, video and in-person MIS use per month. We collected our outcome measure for the entire hospital, and unit-specific outcome measurements for the emergency department and GIM units. The balancing measure to track unintended consequences of our intervention was captured through end-user satisfaction, which was evaluated by conducting surveys to gauge staff experience with the MMII and digital MIS tools.

Descriptive analyses were used to describe differences in median minutes of MIS use between pre-intervention and post-intervention periods. Run charts were used to evaluate changes in monthly minutes of MIS use over time and were analysed using standard rules to identify any signals of special cause variation in the charted datapoints.[24]

RESULTS

The median for total MIS use per month (phone, video and in-person) for the hospital increased from 3587 min during the pre-intervention period to 5168.5 min per month following implementation of the MMII (figure 3). This demonstrated a 44% increase in monthly total MIS use. The median for phone MIS use increased from 1469.5 min per month to 4025 min per month post-intervention, indicating a 174% increase in monthly phone MIS use (figure 4). The median for video MIS use prior to the implementation of the MMII was 0 min per month, as the hospital only used phone and in-person

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Figure 2 Plan-Do-Study-Act (PDSA) cycles. To increase accessibility and awareness of digital medical interpretation services (MIS), we began with implementation of the Interpreter on Wheels (IOW) equipment in the emergency department in March 2020. Based on recommendations from the staff survey to provide MIS education, we implemented targeted education sessions for emergency department and General Internal Medicine (GIM) staff, and a speed dial feature on emergency department phones to ease phone MIS access, in October 2020. Also, IOW equipment were provided and accessible to the emergency department and GIM units, as well three posters to share information about MIS for staff and patients were provided and hung (online supplemental files 1–3).

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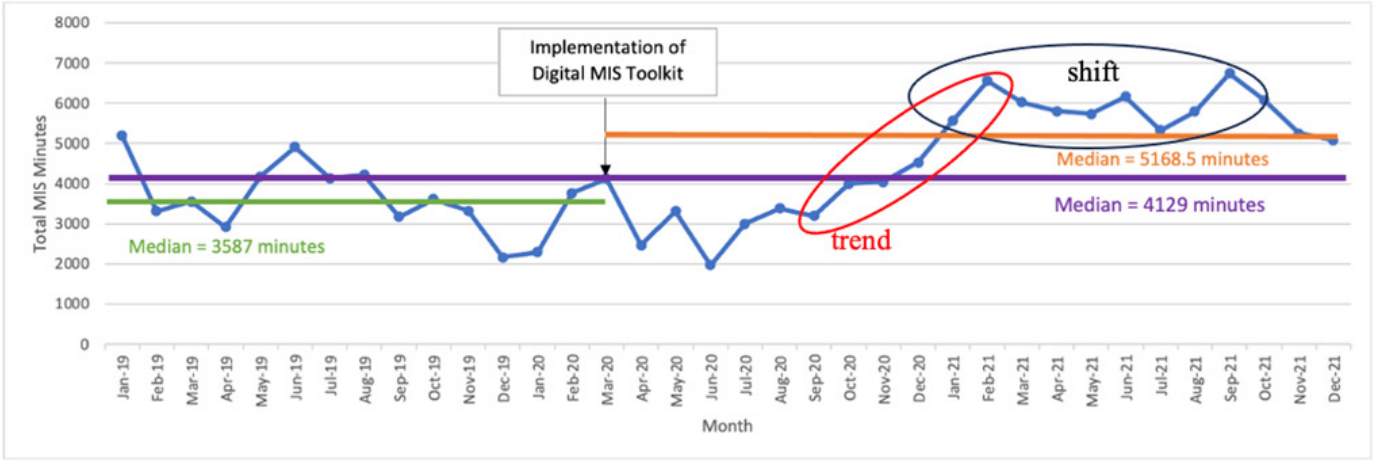


Figure 3 Minutes of total medical interpretation services (MIS) use per month (in-person, phone, video) for the entire hospital.

MIS during the pre-intervention period. Implementation of the MMII led to a median of 860 min per month of video MIS use across the hospital (figure 5). Figures 3–5 all demonstrate shifts to increased MIS use following implementation of the MMII, each with eight datapoints above the median post-implementation. Figure 3 also demonstrates an upward trend in total MIS use from September 2020 to February 2021, during which PDSA cycles 2a and 2b were taking place (implementation of speed dial feature for phone MIS, and education sessions and huddles). The median for in-person MIS use across the hospital during the pre-intervention period was 1990 min per month, and this fell to 175.5 min per month after March 2020 due to COVID-19 restrictions, reflecting a 91% decrease in monthly in-person MIS use.

We collected unit-specific data for the emergency department and GIM units following implementation of our intervention; the median digital MIS use was 870 min per month for the emergency department and 189 min per month for the GIM units post-implementation of the MMII (online supplemental file 4). There are no monthly digital MIS minutes (phone and video) for pre-implementation of the intervention for the emergency department and GIM units (online supplemental file 4) because hospital usage data were the collection norm as opposed to unit-specific data.

According to our staff survey conducted in October 2020, the MMII was well-received by staff. A total of 105 surveys were collected from the emergency department with most respondents being nurses (71.2%) and day shift workers (63.8%). From all the respondents, 22% (23/105) selected more than one shift, suggesting that their perception and experiential knowledge of MIS included various work shifts (day, evening and night). The majority (76%) of respondents agreed that MIS resulted in better patient care and allowed staff to quickly gather accurate information. When asked how often they encountered situations that required interpretation support, 29.5% of participants chose occasionally, 19% chose every couple of months and 27.6% chose monthly.

Key recommendations from our staff survey (n=105 for the closed questions and n=30 for the open-ended questions) highlighted the need to: (1) improve equipment training and increase the awareness of when to use the different MIS platforms (50%, indicated 'lack of training' as a key barrier to MIS use); (2) provide MIS education (20%, mentioned the need for more training, four staff members cited 'in-services', one staff member stated 'additional training' and one staff member stated 'training module to increase familiarity with equipment'); (3) increase the number of video MIS equipment available (38%, indicated lack of access to video equipment

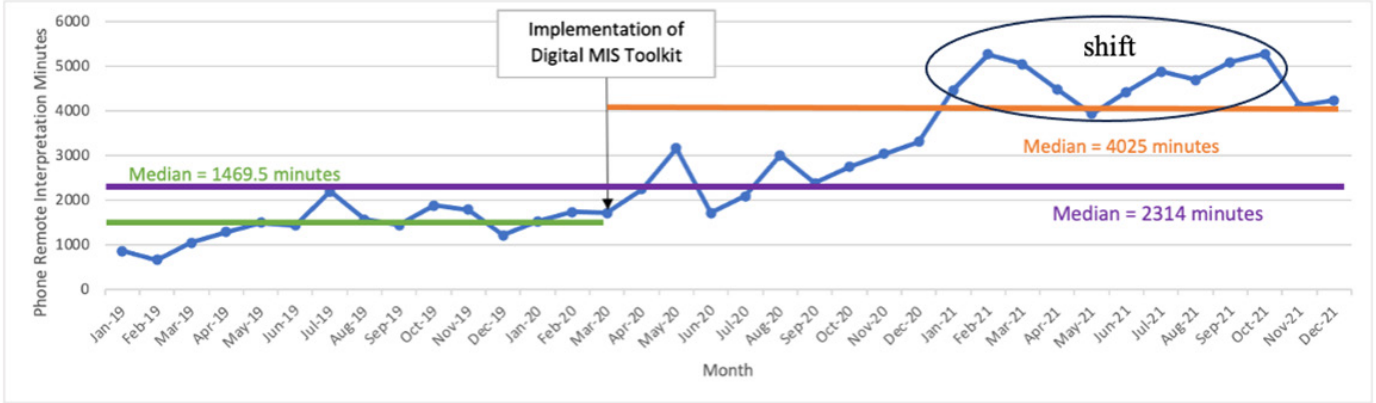


Figure 4 Minutes of phone medical interpretation services (MIS) use per month for the entire hospital.

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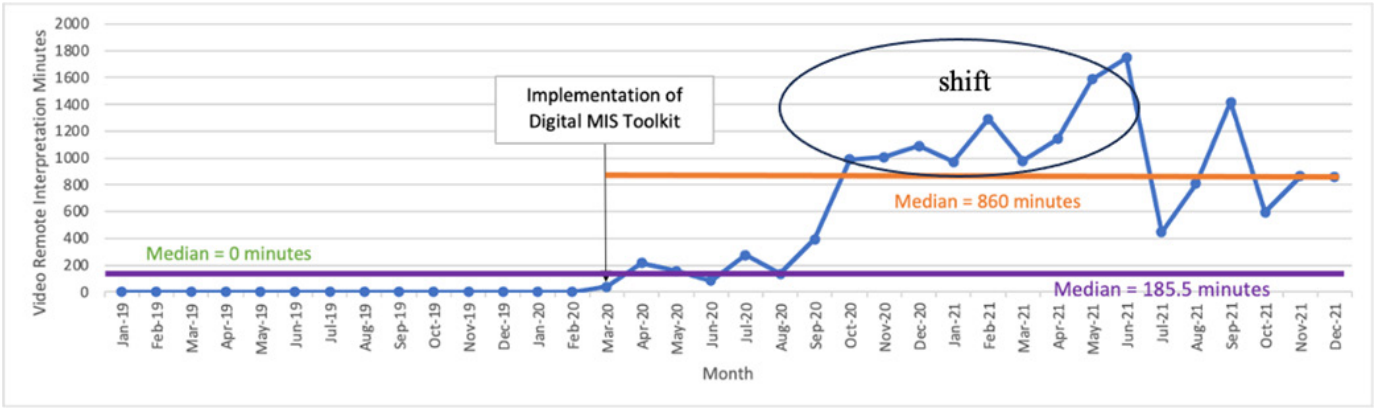


Figure 5 Minutes of video medical interpretation services (MIS) use per month for the entire hospital.

as a barrier for using video MIS) and (4) preprogramme MIS onto unit telephones (33%, mentioned the need for faster MIS telephone access and one staff member stated that 'phone is one of the fastest means of obtaining an interpreter'). A speed dial feature for MIS on units was well-supported, as phone MIS was used frequently for simple goals of care discussions.

DISCUSSION

Summary

We used QI methodology to implement digital MIS to advance language concordant care. Following the implementation of the MMII, the use of digital MIS (phone and video) increased by 44% and was sustained in our hospital, as digital tools and information on MIS became more accessible for staff. On initial implementation of the IOW in the emergency department, staff members found that digital MIS helped to facilitate transparent and accurate communication with patients. Respondents suggested that providing further training on how to use the IOW, increasing the number of devices and having concise visual reminders would increase awareness and accessibility. Digital options for MIS allowed for portability, convenience, on-demand access and accessibility of services in a diversity of languages. Targeted education sessions for staff ensured that users understood the importance of MIS and encouraged use of the various digital MIS modalities.

Lessons and limitations

Access to multiple interpretation options is often necessary to provide appropriate and culturally competent care for patients.[25] It is also important that both clinicians and patients are aware of the various MIS modalities available, and which may be best suited for a particular clinical encounter. Similar to previous institutions who have implemented IOWs,[15 25] we found that the MIS modality used is dependent on what would be most effective and easily accessible for the specific interaction. Phone MIS was used for most cases, especially for routine clinical assessments and providing instructions or next steps to patients. Phone MIS was also used to facilitate simple goals of care discussion. The advantage of phone is that it was available on demand and had 240 languages. Video MIS was recommended for both routine and complex clinical assessments and instructions, especially if hearing impairment was also a consideration to allow for non-verbal cues and use of American Sign Language. Although there were periods of halt in in-person interpretation due to COVID-19 restrictions, this modality for MIS is still a valuable resource. In-person interpretation may be useful for longer family conversations and providing complex clinical instructions.[26] In the face of inaccessible in-person MIS options due to COVID-19 or logistical reasons, digital tools afford convenience and on-demand access to this essential service. Leveraging different options for different types of clinical encounters allows for positive care experiences.

The MMII was used consistently even following peak COVID-19 periods. To ensure the sustainability of the MMII, we collaborated with our provincial health authority to create a virtual educational module, which was included as part of all new employee hires, highlighting the importance of language concordant care. MIS education among patients also ensures continued use of these services; patient-facing posters aid in increasing awareness of the various MIS options available. The development of the MMII was informed by our multidisciplinary leadership team, including MIS and QI experts, who co-designed, implemented and evaluated this multifaceted intervention. While our intervention to improve delivery of language concordant care is specific and unique to our hospital, our methodology and multidisciplinary approach are scalable to other contexts and will serve as a useful proof of concept for other QI and MIS teams.

As demonstrated in our PDSA cycles, the MMII began in the emergency department and was later expanded to the GIM units. We could only conduct a survey with emergency department staff, due to heavy workload in the hospital units during the early waves of the COVID-19 pandemic and restrictions around paper-based surveys. We also recognise that the number of digital MIS minutes post-implementation of the MMII for GIM was lower

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compared with the emergency department (189 min vs 870 min). This could be due to GIM units sharing only one IOW across six units during the early half of the COVID-19 pandemic, as opposed to the emergency department, which had multiple IOWs—this posed a unique challenge for GIM units to access digital MIS, in addition to other challenges such as limited space for storing/using the IOW and the need to don and doff repeatedly when retrieving the IOW during the early months of the pandemic. Furthermore, the GIM units had fewer cycles of change compared with the emergency department, given that the MMII was piloted first in the emergency department—this allowed for greater opportunity for emergency department staff to embrace the intervention and partake in co-designing the MMII via provision of feedback.

We note that the COVID-19 pandemic led to the intermittent halt of in-person interpretation services, which may have inflated the usage of digital MIS in our hospital. Moreover, we recognise that increased used of digital MIS modalities could also be due to sharing among staff by word-of-mouth rather than solely through the components of the MMII. Furthermore, we did not collect data regarding the effects of implementing the MMII on patient outcomes such as adverse events, hospital re-admission rates, missed diagnoses and complications. Future investigations aim to evaluate the impact of the MMII on patient experience, as well as specific clinical outcomes and patient safety. Lastly, we recognise that the MMII was only implemented at a single centre, and it is important that our intervention is piloted at other sites where workflows and context will likely vary. Future work may evaluate the impact of the MMII or similar interventions on MIS use at other centres.

CONCLUSIONS

We established a sustainable and streamlined approach to using digital MIS, thus advancing language concordant care in our hospital. The COVID-19 pandemic has highlighted the critical role of accurate communication in delivering timely and accessible care alongside improving reach of public health and safety information. Effective communication between patients and physicians is essential for ensuring positive healthcare interactions. Using MIS via remote digital platforms provides significant potential to improve language concordant and patient-centred care, thus bridging disparities in health delivery and outcomes.

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Contributors Each of the authors confirms that this manuscript has not been previously published and is not currently under consideration by any other journal. Additionally, all the authors have approved the contents of this paper and have agreed to *BMJ Open Quality* submission policies. NFS and PM were responsible for conception and design of study, led acquisition of data, analysis and drafting the manuscript. EL and AM co-led drafting and editing the manuscript. NFS, EL, AM, MT and EK contributed to literature review. NFS and AM conducted the statistical data analysis and interpretation. PM, YS and NK were responsible for revising the manuscript critically for important intellectual content. All authors provided approval of the version of the manuscript to be published. NS is the guarantor for this work. Additionally, to the best of our knowledge, the named authors have no conflict of interest, financial or otherwise.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

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