A customer- and business-driven healthcare access model

Received: 19th October, 2020

Mark T. Fleischer

Principal Health Systems Engineer at Mayo Clinic, Management Engineering & Consulting, USA

Mark Fleischer is a Principal Health Systems Engineer in the Department of Management Engineering & Consulting (ME&C) at Mayo Clinic. He has been at Mayo Clinic since 2011 in several process improvement roles and joined ME&C in 2016. Prior to joining ME&C, Mark served as the Southwest Minnesota Mayo Clinic Health System Director of Process Improvement for three years. While at Mayo Clinic and in ME&C, he has led multiple administrative projects in scheduling operations. Prior to Mayo Clinic, he worked at a major printing organisation, in storage area network operations, and multiple information technology solutions companies. Mark has a Master of Business Administration degree from Liberty University, Lynchburg, Virginia, and a Bachelor of Arts in Business Administration from University of Jamestown, Jamestown, North Dakota. He is a Mayo Quality Gold Fellow, which recognises competence in Lean and Six Sigma methodology. Mark is a Six Sigma Black Belt and a certified manager of Quality/Organisational Excellence (ASQ).

Mayo Clinic, Management Engineering & Consulting, SWMN Region, 1025 Marsh St, Mankato, MN, 56001, USA
Tel: +1-507-594-7118; E-mail: fleischer.mark@mayo.edu

Chris Schneider

Unit Head at Mayo Clinic, Management Engineering & Internal Consulting, USA

Chris Schneider is Unit Head, Mayo Clinic, Management Engineering & Internal Consulting, USA, leading the Mayo Health Clinic System, Minnesota Unit and has a 29-year history with Mayo Clinic, including more than 15 years of progressive leadership experience. In his current role, Chris manages client and leadership relationships within the two Minnesota regions of the Mayo Clinic Health System. Committee appointments include the SEMN CPC, SWMN CPC and SWMN Space and Equipment Subcommittee. Previously Chris worked in ME&C as Senior Health Systems Engineer in the Research and Education and Mayo Clinic Health System units. Prior to ME&IC, he was a Unit Head in Mayo Clinic Supply Chain Management (SCM), managing logistics operations for the Rochester campus. Numerous other Mayo Clinic roles include supervisor, Linen and Central Services, support service coordinator, Department of Nursing, and several roles within the Mayo Clinic Department of Finance. Chris has a Master of Arts degree in Health and Human Service Administration, from St. Mary's University, Winona, Minnesota, and a Bachelor of Arts degree in Mass Communications from Minnesota State University, Winona, Minnesota. Chris is a Mayo Gold Quality Fellow, Certified Change Management Practitioner (Prosci) and an internal ME&IC course developer/instructor in the area of organisation transformation.

Mayo Clinic, Management Engineering & Internal Consulting, 200 First Street SW, Centerplace 6, Rochester, MN 55905, USA
Tel: +1-507-293-9753; E-mail: Schneider.Christopher@mayo.edu

Terry Brandt

Regional Chair of Administration of Southwest Minnesota Region, Mayo Clinic, USA

Terry L. Brandt has, since October 2016, been Regional Chair of Administration for the Southwest Minnesota Region of the Mayo Clinic Health System. He has been at Mayo Clinic for 40 years, with prior assignments in Rochester, Minnesota, which include serving as Associate Administrator for Medical Specialties, Clinic Operations, as Secretary to the Mayo Outpatient Care Delivery Platform, Operations Administrator for Anesthesiology, Orthopedic Surgery, Sports Medicine, Gastroenterology and Hepatology, and Internal Medicine Outreach. He served as Secretary to the Operations Coordinating Group from 2009 to 2014, working with physician and administrative leaders to oversee allocations of clinical physician and allied health FTE resources and approvals, as well as alignment of clinical

department operations with Mayo's strategic plan. Earlier in his career, Terry held leadership positions within finance at Mayo Clinic. He is a Fellow in the American College of Medical Practice Executives, is Silver Certified in the Mayo Quality Fellows Program, is an Instructor in Health Care Administration in the Mayo Clinic College of Medicine and has twice been the recipient of the Mayo Excellence through Teamwork Award.

Mayo Clinic, 1025 Marsh St, Mankato, MN, 56001, USA
Tel: +1-507-594-6562; E-mail: tbrandt@mayo.edu

Jill M. Robinson

Operations Manager for Scheduling Operations, Mayo Clinic, USA

Jill M. Robinson has 22 years of service with Mayo Clinic Health System and has held many positions, including Waseca Registration Manager, Regional Access Manager, Senior Access Operations Analyst, and, since 2016, Operations Manager for Scheduling Operations in SWMN. She is currently Operations Manager for Scheduling Operations, Mayo Clinic. Jill has a Bachelor of Arts degree in Management from American Public University in West Virginia. She has served as subject matter expert for multiple EHR conversions, working with regional sites to develop processes to increase efficiencies; worked on the Mayo Model of Community Care, population health and PCP attribution projects; set up the regional call centre and later the embedded scheduling model; and been an active participant on quality measure teams and demand and capacity work groups and overseen AIDET, kiosk, tablet and enterprise self-scheduling initiatives.

Mayo Clinic, SWMN Scheduling Operations, SWMN Region, 1025 Marsh St., Mankato, MN, 56001, USA
Tel: +1-507-594-7014; E-mail: robinson.jill@mayo.edu

Janine (Coelho) Kamath

Chair at Mayo Clinic, Management Engineering & Internal Consulting, USA

Janine (Coelho) Kamath is the Chair, Department of ME&C, at Mayo Clinic. The strategic consulting and management engineering resources in ME&C are responsible for systems analysis, design and execution, re-engineering of core processes, assisting with business strategy and integration, programme and project management and enabling business transformation. ME&C provides business consulting and management engineering services to the Clinical Practice, Research, Education, Administration and Business Development at Mayo Clinic. Prior to joining Mayo Clinic, Janine worked as a manager at two large pharmaceutical companies. While at Mayo, she has advanced and led multiple institutional initiatives related to Mayo's Electronic Environment, Facilities Reintegration, Operations Analysis and Research, Systems Engineering, Care Model Redesign, Business Development and Mayo's Quality, Safety and Service programme. Janine is the Board Chair and President Emeritus of the Association for Internal Management Consultants (AIMC) and a member of the INFORMS Roundtable. Janine has presented at national and international conferences and educational programmes. She has published in peer-reviewed journals, authored book chapters and a book on the legacy of management engineering and consulting at Mayo Clinic. Janine actively participates in a number of external professional organisations and academic institutions and has received multiple awards and professional commendations.

Mayo Clinic, Management Engineering & Internal Consulting, 200 First Street SW, Centerplace 6, Rochester, MN 55905, USA
Tel: +1-507-284-5039; E-mail: jkamath@mayo.edu

Abstract Whether centralised or decentralised, healthcare access models provide varying degrees of benefit to customers and to the organisations they serve. Mayo Clinic Health System in Southwest Minnesota, United States, is a community-based practice of 23 clinics and 6 hospitals that has undergone an evolution of its access model. In 2010, a centralised access model was adopted, including the physical location of schedulers, which was expected to offer greater efficiency, flexibility and staff savings. However, in 2016, the region noted concerning trends of low patient and provider satisfaction with scheduling, decreasing patient access and less-than-optimal patient throughput, all

subsequently contributing to declining financial performance. Early concerning trends led to further investigation of practice areas and geographical sites that had notable appointment capacity yet low patient access and throughput. Provider productivity rates, calendar management and patient access varied substantially. Performance in scheduling operations was below par because of limited connection with the practice. The combination of practice variation and a centralised access model was causing an increase in scheduling errors, consistent rework/rescheduling, less-than-optimal patient access, low provider calendar fill rates and high levels of dissatisfaction for patients and providers. Our group was tasked with analysing the problems and developing a new scheduling model. This paper describes the resulting model: a hybrid of centralised and decentralised models, which promised the benefits of both and involved transformation in clinical practice operations and access management. Standardisation for provider scheduling and template management was enhanced. Pods of scheduling personnel were embedded in practice areas. The proximity of the pods to physician, nursing and other clinical staff allowed for increased collaboration and communication. The hybrid model improved access metrics for average speed to answer, abandoned call rates, patient access and throughput, financial performance, and patient and provider satisfaction.

KEYWORDS: centralised, decentralised, healthcare access, hybrid, provider calendar management, scheduling

BACKGROUND

Mayo Clinic is a large, multispeciality, integrated medical group practice providing complex, highly specialised care in three destination practices in the United States. Established in 1864, Mayo Clinic in Rochester, Minnesota, comprises two large hospitals and many facilities for clinical care, research and education. Mayo Clinic's campus in Jacksonville, Florida, opened in 1986 and was the first major expansion outside of Minnesota; Mayo Clinic Hospital in Florida opened in 2008. In 1987, Mayo Clinic opened a campus in Scottsdale, Arizona, which integrated outpatient care with programmes in medical research and education. Subsequently, a campus in Phoenix, Arizona, incorporated the Mayo Clinic Hospital and an integrated surgical and cancer care facility. Mayo Clinic also includes a group of community-based care facilities, collectively named the Mayo Clinic Health System (MCHS). The MCHS, established in the early 1990s, is a network of more than 70 clinics and hospitals in communities across southern Minnesota, western Wisconsin and Iowa.[1]

A rich history of systems engineering has been embedded in the Mayo Clinic culture since its early days. Dr Henry Plummer, who joined the medical staff in 1901, was a physician with a passion for engineering and is often thought of as Mayo Clinic's first engineer. He created a single, patient-centric, unified medical record, nearly 100 years ahead of its time. He also designed a system of conveyors and pneumatic tubes to efficiently deliver medical records, a color-coded light system to communicate examination room use, patient-centric and innovative designs for clinic buildings and much more. Historically, Mayo Clinic leaders have understood the value of leveraging integrated, patient-centric systems and processes to deliver trusted care. They blended the engineering discipline with healthcare delivery when the Mayo Clinic Board of Governors established a formal management engineering function in Rochester, Minnesota, in 1947. Initially

called Procedures and Records, the section employed three staff members who focused on 'developing a registration process for hospital patients, managing forms to support clinical workflows, developing procedure guides for physicians, and conducting studies to [determine] storage needs for medical [records] and [radiographs. This group] was also integral to the planning, design, and occupancy of the 10-story Mayo Building'[2] in the 1950s.[3] As Mayo Clinic expanded to Florida, Arizona and the MCHS, nearly identical engineering functions were created at the new locations.

As the needs of healthcare and the strategic services provided by Procedures and Records evolved, the section name was changed to 'Systems & Procedures' and later again to its current name, 'Management Engineering & Consulting' (ME&C). With the continuous growth and diversification of Mayo Clinic, ME&C likewise experienced considerable growth; today, ME&C employs nearly 200 professional and administrative staff, including management engineers and project managers with expertise in business consulting, management engineering, operations research, advanced analytics and modelling, digital systems enablement and project management. ME&C partners with Mayo Clinic staff and external colleagues to enable the strategic and operating priorities of Mayo Clinic.[4]

INTRODUCTION

The Southwest Minnesota Region of MCHS (SWMN) was established in the 1990s through multiple mergers, acquisitions and integration of smaller clinics, the most recent hospital and clinic addition being in 2012. Integration of the multiple primary care and speciality practices that previously existed in the various entities was not a priority, and this affected several operational areas, especially patient appointment access and scheduling. Multiple efforts were initiated to redesign and improve access and scheduling in SWMN.

In 2010, a centralised scheduling operation that controlled and minimised personnel costs in a call centre model was implemented. Patients called their local clinic and would be routed via technology to a central office to handle all calls for SWMN. A toll-free number was also available, although most patients continued to call their local clinic. Operational metrics included average speed to answer (ASA) and patient call abandon rate (AR), which were monitored on a daily basis.

The original application of the centralised model allowed for any call from any patient in the region to be answered by the next available scheduling agent. Agents in the centralised call centre were expected to know the nuances of the 23 clinics and the schedules of more than 340 providers (200 physicians and 140 nurse practitioners and physician assistants). As the scheduling complexity increased, agents were unable to provide high-quality and timely service, which resulted in patient satisfaction survey scores dropping below the 50th percentile. Physicians and nurses received many complaints from patients who preferred to go in person to their local clinic to make appointments rather than use the centralised call centre located in a different city. Clinical staff with productivity expectations could not make real-time changes to optimise their calendars and schedulable time. Concurrent with this situation, care teams were experiencing constrained appointment availability in primary care and in clinical specialities. Call centre staff did not have timely information on changes to provider calendars, which led to valuable appointment slots being unused. Also, a review of financial performance identified the unused capacity as a significant opportunity to increase provider utilisation and potentially improve financial impact. Many systems changes were made in attempts to enhance communication and visibility of these open slots for the call centre teams, yet the flexibility needed for patients and clinical staff was missing, and

the frustration of all stakeholders increased further.

This initiated the decision for the MCHS and SWMN senior leadership to transform and optimise access and scheduling operations to be patient- and staff centred. Management engineers from ME&C were engaged to partner with leaders and stakeholders in SWMN to accelerate the transformation.

METHODS AND PILOT STUDY FINDINGS

Literature review

With the goal of studying and understanding multiple access and scheduling models and best practices, various approaches were leveraged. The literature review provided a comparative foundation, with the intent of identifying best practices in a healthcare model. Of the dozen articles reviewed, six were found relevant to our aim of transforming and optimising access and scheduling operations. In its simplest form, the primary measure of a successful healthcare access model is the optimal matching of supply with demand. To accomplish this, organisations have employed a combination of tactics to iteratively create consumer-centric access models. The literature review yielded a handful of overarching strategies, most of which focus on the prediction of demand, no-shows and cancellations via historical patterns or predictive analysis,[5] utilisation of open-access tactics to minimise unpredictability, and deployment of centralised, decentralised and combination access models. Generally, three primary stakeholders compose the framework of healthcare access models and associated challenges: patients, system owners and staff.[6]

In 2015, an industry-standard measure for access was suggested by the Institute for Health Improvement: the *third next available appointment* (TNA).[7] The standard suggests that the TNA should be 0 days for a primary care appointment and two days for a speciality care appointment. TNA, at the time, represented a nationally comparable benchmark of an organisation's appointment availability. Furthermore, patient satisfaction scores continue to become more integrated with financial reimbursement rates, especially for government payers. Access is often the first point of contact for a patient seeking care, and more emphasis is being placed on timely healthcare accessibility and an individualised positive experience. An additional tactic employed to improve access in a speciality practice is the utilisation of an intake provider, usually a generalist, to triage patient needs to speciality (and subspeciality) providers.

Before an increased use of predictive analytics, historic volumes were leveraged via basic descriptive statistics as a means of planning for seasonal demand fluctuation and associated capacity. Access managers and practice leaders identified patterns and time factors that influence demand. Recent literature has identified several analytical models for predicting demand and planning for associated capacity. One such example comes from Garg et al.,[8] who demonstrated how a discrete time-nonhomogeneous model could be effectively used for scheduling and resource requirement forecasting and allocation. Both fixed (scheduled) and variable (unscheduled) access needs seemed to satisfy the demand.

Compensating for and managing variability within a healthcare access model has also been a key success factor noted in the literature. Managing no-shows, short-term cancellations and walk-ins are primary examples within this space. In a 2019 study, Vidal et al.[9] validated that an open-access model holding 65–90 per cent of appointments open for unscheduled visits outperformed other models with less open access (<50 per cent open slots). Prescheduled appointments were the result of patients who desired a future appointment. Urgent care centres are a popular model,

with all or most appointment slots being open. In many instances, these centres have reduced the burden of managing variability within associated primary care or speciality clinics in an organisation. Limitations of an open-access model can be twofold: as identified by the Agency for Healthcare Research and Quality,[10] open access can seem unintuitive for staff because urgent and routine patients are treated the same and patient backlogs can seem insurmountable.

In 2016, a different tactic yielding similar overall access efficiencies was documented by Almorsy and Khalifa.[11] This strategy focused on maintaining a patient waiting list and managing no-shows and short cancellations. Given a predictable no-show rate, provider calendars were intentionally overlapped/overbooked. In the event of no-shows, waiting list patients could be quickly plugged into provider calendars, which were highly utilised with the active management philosophy. Almorsy and Khalifa[12] also indicated that no-show rates increase with longer times between scheduling and occurrence of an appointment. Similarly, longer waiting times almost always translate into decreased patient satisfaction.

For many organisations, scheduling is a complex task requiring the integration of clinical knowledge, patient need and organisational resources and structure.[13] Many factors influence patient access, including the ability of access personnel to nimbly collaborate with the practice to effectively mitigate variability. Brandenburg et al.[14] suggest that the science of optimising access continues to evolve.

Internal benchmarking

SWMN is 1 of 4 MCHS regions in various areas in Minnesota, Wisconsin and Iowa. Fourteen hospitals and 70 clinics in 54 MCHS communities provided a sound benchmarking opportunity. Access and scheduling models could be described in three categories: centralised, decentralised and hybrid (Figure 1).

We identified distinct advantages and disadvantages of centralised and decentralised models. From an overall workload efficiency perspective, the centralised model is usually most efficient. The centralised group of staff performed overall scheduling functions for any department or speciality (largely inclusive of primary care and speciality care clinics for MCHS). The decentralised model, which involves staff performing scheduling services for a defined department, could be less efficient from a workload perspective but is more connected with the assigned clinical department. This usually equates to enhanced flexibility, more individualised service, lower error/rework rates and better visibility and partnership with the business unit.

A hybrid model combines the positive attributes of both centralised and decentralised models and has the flexibility to be structured differently to accommodate practice variation. With a hybrid model, a central intake or call centre is used to handle registration and basic scheduling tasks, whereas calls with in-depth or more complex scheduling needs are forwarded quickly to the embedded and departmental schedulers with contextual knowledge. The benchmarking effort also yielded valuable feedback from internal stakeholders and leaders. Three key factors for success were identified by stakeholders: (1) partnership with the practice is critical; (2) flexibility to address short-term or unanticipated utilisation variance is needed; and (3) patient- and provider-centric access and scheduling should be the goal.

Designing the future healthcare access and scheduling model

With the directive from SWMN leadership and the valuable knowledge gained through literature review and benchmarking, a multidisciplinary transformation team

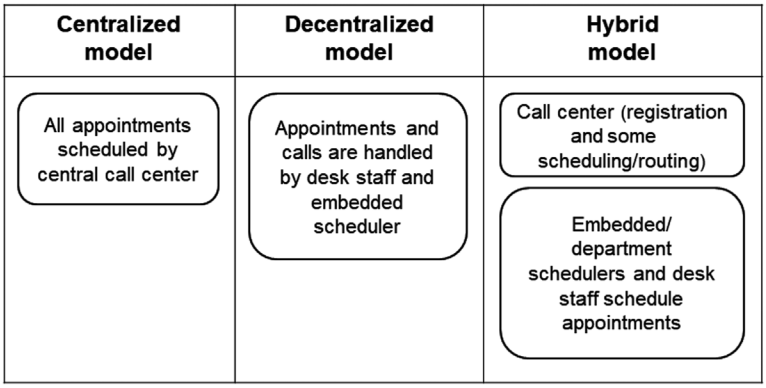

Figure 1: Access and scheduling models

performed a detailed current state assessment in SWMN. Processes from the patient-initiated or physician-referred contact, through appointment scheduling, were studied and documented. Interviews were conducted with staff and leaders at various levels in the organisation and across multidisciplinary teams, including care providers, access and scheduling staff, nursing, desk operations staff and administrative leadership. In addition, data from various sources were analysed to understand the extent of the problem and the causal variables.

The data collected included ASA, AR, provider fill rates/calendar white space, capacity and yield, overall patient volumes, financial performance (target versus actual) and patient and staff satisfaction. Understanding the current state was important, along with observational studies on the ground to validate the feedback. The team leveraged internal and external information and began designing a transformational future strategy and model that would be patient and staff centred.

After several agile iterations and reviews, it became evident that the centralised and decentralised models needed to be integrated and optimised. Thus, a hybrid access and scheduling model seemed to be the best fit and achieved most of the desired access and scheduling attributes. The experience of the patients and staff seemed to be better when the scheduler was more aligned and embedded with the care team. For example, in general surgery, the scheduler was placed with the nursing team. The team believed that this change facilitated greater flexibility and scheduling accuracy — the right patient with the right provider at the right time.

To validate the hybrid model, the team used Plan, Do, Study, Act cycles, which were performed in two pilot clinical departments that wanted to be early adopters. Schedulers were selected and cross-trained on call centre telephone skills and contextual clinical knowledge. Iterative stakeholder meetings were conducted to evaluate the performance of the new hybrid model (Figure 2).

The pilot sessions were invaluable, and points learned from both pilots led to several adjustments that were applied to design the optimal future state. During the pilot studies, the white space on the providers' schedules was decreased, and communication with physicians was substantially improved. The ASA and AR were monitored daily. Initially, these metrics increased, but within two weeks they started to decrease and ultimately met the defined expectations. The schedulers worked directly with surgical nurses to ensure that patients arriving for consults or surgery were fully prepared

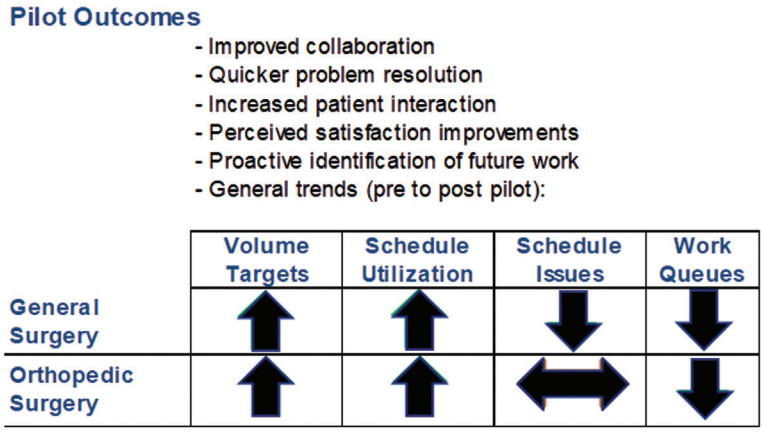

Figure 2: Surgical pilot outcomes

for the general surgeon. Schedulers also connected with patients to fill appointment slots on the provider's template that may not have been available the previous day, which made access flexible and customer centric. In addition to enhancing the access to care and improving customer and staff satisfaction, the new model led to much better financial performance because of increased appointment fill rates.

With the success of the pilots in the surgical speciality departments, senior regional leadership, with support from the clinical practice, began disseminating the changes. Transforming the centralised model to a hybrid model for access and scheduling required a pragmatic and tactical approach. Each department had scheduling nuances, yet each department was more similar than not with regard to scheduling. It was decided that the new process would be implemented in the surgical speciality departments first, followed by medical specialities and then the various primary care locations. Every implementation required deep data analysis, frequent team meetings and a systematic review of patient and staff feedback. These steps were crucial to ensure that the contextualised hybrid access and scheduling model was achieving the consumer-centric goal, along with performance goals, neutral staffing and financial targets.

RESULTS

After the pilot programmes, the changes were implemented in all departments, and the various metrics were measured and compared by department and by year. The positive pilot results were replicated with subsequent implementations. The collaboration and proximity between clinical and scheduling teams significantly improved the access and scheduling process. The appointment fill rate, which is an important metric, showed improvement in all three departments (Table 1). The daily provider template reviews completed by the provider and nurse with immediate access to an embedded scheduler allowed for dynamic adaptation of required schedule revisions. Patient calls for appointments were completed more quickly with the scheduler having access to nurses and providers for questions and emergent patient situations. Post-implementation, as the embedded schedulers became more proficient, both the ASA and the AR, two key performance and patient satisfaction measures, also improved with time in all departments (Table 1).

In an internal staff satisfaction survey, 86 per cent of the care team staff believed the new hybrid model with embedded decentralised scheduling was more effective and worked much better than the previous centralised model, whereas 13 per cent

believed the hybrid model was the same. Only 1 per cent believed that the hybrid model was worse than the previous model.

Embedded schedulers also had the opportunity to meet with patients immediately after a current appointment to schedule the next appointment; this provided a personalised touch that pleased patients. In the speciality departments, patients found immediate answers to their specific concerns and questions regarding the scheduled appointment, procedure or surgery. Patients also felt much closer to their care team. Top box scores from patient satisfaction surveys for ease of scheduling showed appreciable improvement over time (Table 2).

To ensure optimal use of scheduling resources, the team modelled staffing needs, keeping in mind multiple variables such as patient demand, clinical staffing, appointment volumes and geographic dispersion. The modelling resulted in having one embedded scheduler to potentially support multiple clinical departments. Cross-coverage was designed into the scheduler modelling to cover for time off and other staffing contingencies. Top box scores for ease of accessing the clinic by telephone also showed appreciable improvement over time (Table 2).

The centralised component of the hybrid model was retained for calls that were not related to appointment scheduling, such as prescription refills, billing and general operations-related questions. Overall, the change to the hybrid model has been successful on multiple fronts, as highlighted by several testimonials (Box 1).

Table 1: Measures by department

Measure	Surgical specialities	Medical specialities	Primary care
Fill rate, %			
2017	68	57	84
2018	59	77.6	82
2019	71	78.2	87
Average speed to answer, s			
2018	36	36	46
2019	28	27	31
Abandon rate, %			
2018	10.5	8.9	7.3
2019	5.1	5.0	4.1

Table 2: Top box scores for patients' ease of appointment scheduling and accessing the clinic

Measure	Surgical specialities	Medical specialities	Primary care
Ease of appointment scheduling, %			
Pre-implementation (centralised) model (2017)	44.7	52.2	48.5
Hybrid, post-implementation (July–Dec. 2018)	60.4	60.7	58.9
Hybrid (Dec. 2019)	62	59.7	58.9
Ease of accessing the clinic by telephone, %			
Pre-implementation (centralised) model (2017)	33.1	42.9	34.9
Hybrid, post-implementation (July–Dec. 2018)	49.1	50.7	51.0
Hybrid (Dec. 2019)	52.1	52.4	50.7

Box 1: Hybrid model testimonials

'Moving from a central scheduling model to an embedded scheduler has led to significant improvements in my practice. The embedded scheduler that works with me has gotten to know our practice needs as well as the needs of some particular patients. This allows her to manage the schedule efficiently with less input from the providers. The embedded scheduler has become an invaluable member of our team'.
Albert R. Harris, MD, Consultant, Department of Surgery, Plastic and Reconstructive Surgery

'The embedded department-specific scheduler was a tremendous plus to our practice in both patient and provider satisfaction. Prior to this it was very difficult for central schedulers to understand the diverse capabilities and preferences. The embedded, department-specific scheduler has allowed us to optimize our time and has led to increased staff satisfaction'.
Chad L. Buhs, MD, Consultant, Department of Surgery, General, Vascular and Thoracic Surgery

'Implementation of the decentralized model closed the gap, creating a true "care team" with the addition of the Care Team Scheduler facilitating knowledge-sharing and familiarity, not only between the provider, nurse and care team scheduler, but the patient as well'.
Roxanne K. Timmerman, MS, RHIA, Operations Administrator, Access Management

'The addition of embedded schedulers has been incredibly helpful to our practice. Whereas previously an out-of-the-office call center filled open templates somewhat randomly, the embedded schedulers have a deeper knowledge of the types of patients best scheduled by each individual provider. This has improved both patient and provider satisfaction, as previously it was not unusual to have to create a follow-up appointment as one provider referred the patient to the more appropriate provider. The previous method wasted patients' time and money and filled the providers' schedulers with inappropriate consults'.
Ryan P. Foley, MD, Department Chair, Surgical Specialties, Orthopedics and Sports Medicine

'It was a difficult job for a call center person to know all of the providers and services and nuances for an entire region, but that's changed now', said Amy Long, administrator at Mayo-Fairmont. 'Since October 2018, our appointments schedulers were brought back to the clinic. We have a whole new message or triage line so when you press 1 to schedule an appointment, it will come to the Fairmont clinic'.

Six primary care team schedulers are embedded in the clinic to handle appointments, although overloaded or backed-up calls might be routed through the Mankato call centre.

'We haven't been real public about this before, but it's been going real well', said Dr. Marie Morris, medical director at Mayo-Fairmont. 'It's working so much better, from the provider side and from the patient side. The schedulers are back in Fairmont, and that's a big thing. People did not want to talk to somebody elsewhere.'[15]

DISCUSSION

Patient access and scheduling are ever changing. With advancing consumerism and digital flexibility, the demand for continuously optimising this function continues to increase. At one time, schedulers were located throughout the clinic, each scheduler had different 'rules' for each individual clinical provider and all scheduling was done manually. The call wait times were high, and patients would often disconnect and drive to the clinic to schedule appointments in person. The schedulers built close relationships and trust with patients, often being the first voice on the telephone and the first person a patient interacted with when walking into the clinic. However, this model became increasingly difficult to sustain.

The new hybrid model was designed with multidisciplinary staff and customer input, which significantly helped with acceptance of the change, commitment to working through the challenges of transformation and commitment to its sustainability. The implementation team ensured open communication and thoughtful consideration, especially during times of high stress and change. One such consideration involved keeping staffing resources neutral. Conversations with the call centre agents were necessary as the agent roles were changing. They would have to try a new role based in a clinic and

directly working with nursing and other care providers. There was fear and anxiety and many questions that could not be answered as the pilot phase began, making it necessary to have role flexibility. The agents had many questions about the impact on work hours, pay, uniforms and personal feelings in regard to the change. Scheduling leadership did not immediately have all the answers, creating a sense of uncertainty and frustration for all involved. It was important for nursing and scheduling leaders to play an active role in fostering a collaborative approach to build teamwork between department nurses and the embedded schedulers. Ensuring that the scheduler was a valued part of the clinical team required collaborative problem-solving and communication skills. New team cultures and norms started to evolve.

A new way of thinking was also needed at the leadership level because the make-up of the team was very different with the new hybrid model. Cross-training of schedulers was crucial for meeting daily clinical practice needs such as volume fluctuations, staff time off, scheduling template changes and patient expectations. The training provided schedulers with an understanding of the new process, which included the front desk flow in a clinical setting. This was a considerable change for the scheduling management team as they had to answer questions from staff and learn the processes and expectations of telephone call management — something entirely different from the centralised model. The patient access structure was initially not well balanced because of the many scheduling staff that were shifted from the centralised call centre to an embedded role. The decentralised onsite supervisor suddenly had additional staff to manage, creating the need to re-evaluate organisation and reporting structures.

The challenge of transforming a core process like access and scheduling was compounded by the implementation of a new electronic health record at the same time. The transformation team decided to leverage the new health record to advance redesign and standardisation. The focus on consumer centricity and sharing feedback from patients about their struggles and experiences was a powerful motivator for all involved to standardise and optimise the complex access and scheduling function.

CONCLUSION

We believe that our experience and lessons learned throughout the process will be valuable for healthcare and other industries. A crucial aspect of the access and scheduling transformation was balancing consumer centricity with organisation and business priorities. Transparency and partnerships at all levels, along with clear and regular communication, were important to enabling sustainable change and easing fear of the unknown. Many operational leaders were vital to the transition through their open-door approach to help staff who needed someone they could trust to listen to concerns and to calm their fears. Transformation and change is never easy, but our teams are now collaborating more, trusting the hybrid model, and, most importantly, serving the needs of our patients and each other faster and better than before.

ACKNOWLEDGMENTS

We appreciate the contributions of the SWMN leadership, as well as ME&C and Mayo Clinic staff involved in designing, developing and implementing the new access model. We also thank those who have contributed to and supported this publication, particularly James R. Hebl, MD; Sarah R. Dhanorker, MS, MHA; Christi L. Traczyk, MS; Kezhuo Li, MPH; Mary J. Klimp; and Nicole Hanf, MA.

References

1. Kamath, J. R., Peavler, O. P., Steffens, F. L., Dankbar, G. C., Donahoe-Anshus, A. L. (2017) 'Seventy years of management engineering and consulting: Integrating health care delivery for an enduring mission', *Mayo Clinic Proceedings,* Vol. 92, No. 10, pp. e139–e145.

2. *Ibid*.
3. Kamath, J. R., Donahoe-Anshus, A. (2017) 'Management Engineering & Consulting at Mayo Clinic : Blending Science and Engineering for an Enduring Mission', Mayo Clinic, Rochester, MN.
4. Grimm, J. L., Kamath, J. R., Jasperson, J. C., Larsen, D. A. (2020) 'Enabling a high-performing and sustainable shared service: The journey of a management engineering and consulting group', *Manage Healthcare*, Vol. 4, No. 3, pp. 231–247.
5. Ahmadi-Javid, A., Jalali, Z., Klassen, K. J. (2017) 'Outpatient appointment systems in healthcare: A review of optimization studies', *European Journal of Operational Research*, Vol. 258, No. 1, pp. 3–34.
6. *Ibid*.
7. Institute for Healthcare Improvement. (2020) 'Measures: Third next available appointment', available at: http://www.ihi.org/resources/Pages/Measures/ThirdNextAvailableAppointment.aspx#:~:text=Average%20length%20of%20time%20in,exam%2C%20or%20return%20visit%20exam (accessed 25th September, 2020).
8. Garg, L., McClean, S., Meenan, B., Millard, P. (2010) 'A non-homogeneous discrete time Markov model for admission scheduling and resource planning in a cost or capacity constrained healthcare system', *Health Care Management Science*, Vol. 13, No. 2, pp. 155–169.
9. Vidal, T. B., Rocha, S. A., Harzheim, E., Hauser, L., Tesser, C. D. (2019) 'Scheduling models and primary health care quality: A multilevel and cross-sectional study', *Revista de Saúde Pública*, Vol. 53, p. 38.
10. Agency for Healthcare Research and Quality. (2017) 'Section 6: Strategies for improving patient experience with ambulatory care', in: 'The CAHPS Ambulatory Care Improvement Guide: Practical Strategies for Improving Patient Experience', Agency for Healthcare Research and Quality, Rockville, MD, pp. 3–6.
11. Almorsy, L., Khalifa, M. (2016) 'Improving health care accessibility: Strategies and recommendations', *Studies in Health Technology and Informatics*, Vol. 226, pp. 187–189.
12. *Ibid*.
13. Brandenburg, L., Gabow, P., Steele, G., Toussaint, J., Tyson, B. (2015) 'Innovation and best practices in health care scheduling: Discussion paper', available at: https://nam.edu/wp-content/uploads/2015/06/SchedulingBestPractices.pdf (accessed 12th July, 2019).
14. *Ibid*.
15. Bryan, J. (21 February 2019) 'Mayo touts array of changes', *Fairmont Sentinel*. Local News, available at: http://www.fairmontsentinel.com/news/local-news/2019/02/21/mayo-touts-array-of-changes/ (accessed 16th June, 2019).