



Annual Report 2021

*A collaborative consortium of
health care providers dedicated
to improving quality of care and
outcomes for cardiovascular
patients across the State of
Michigan*



A NOTE FROM HITINDER GURM

We are excited to share all of the great work the consortium is doing with you in our inaugural public annual report. You'll find a snapshot of the quality improvement achievements across [BMC2](#) PCI, Vascular Surgery, and the newly minted Michigan Structural Heart Consortium ([MISHC](#)), formerly Michigan TAVR. This all translates to improved quality of care and outcomes for patients across the State of Michigan. We are excited to share some stories: the remarkable ongoing improvement in safety and quality, the impact of increasing same-day discharges on PCI care, how vascular surgery teams are working to decrease unused opioids in our communities, and how MISHC is reducing kidney injury in aortic valve replacement patients. Finally, we are thrilled to engage patients in BMC2's work in 2021 and look forward to continued learning from our most important stakeholders. We are proud of the achievements we accomplished through a difficult year and look forward to new opportunities in 2022!



INSIDE THE REPORT

- 01 Introduction/Table of Contents
- 02 PCI
- 04 Vascular Surgery
- 06 Michigan TAVR/Michigan Structural Heart Consortium
- 08 Cardiac Rehab
- 09 Publications and Presentations
- 10 Best Practice Protocols
- 11 Peer Review
- 12 Success of Meetings Across the Consortium/ Looking to the Future

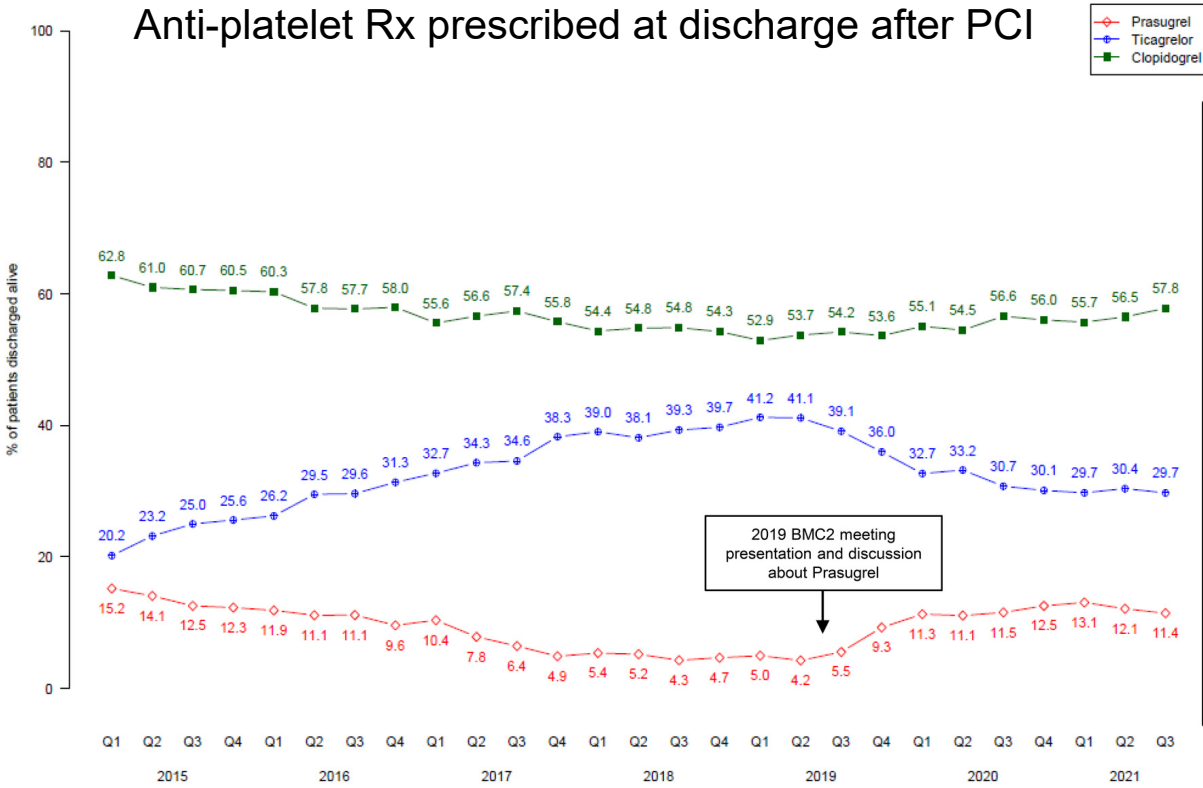
Quality Initiatives led to decreased rates of kidney injury and radiation exposure and an increase of referrals to cardiac rehab.

Measure	Goal	Baseline	2021Q3YTD	% change
Decrease contrast volume/eGFR ratio to <3	<=20%	32.4%	12.9%	-60.2%
Decrease rate of contrast induced nephropathy	<=3%	3.8%	2.8%	-26.3%
Increase pre PCI hydration on patients with eGFR < 60	>=50%	45.3%	52.3%	+15.4%
Increase peak intra-procedure ACT recorded	>=80%	77.9%	93.1%	+19.5%
Increase referral to Cardiac Rehabilitation	>=90%	63.8%	90.6%	+42.0%
Decrease cases with Air Kerma dose >5 Gray	<=2%	2.10%	1.1%	-47.6%



CONSORTIUM DISCUSSION LEADS TO COST SAVINGS FOR PCI

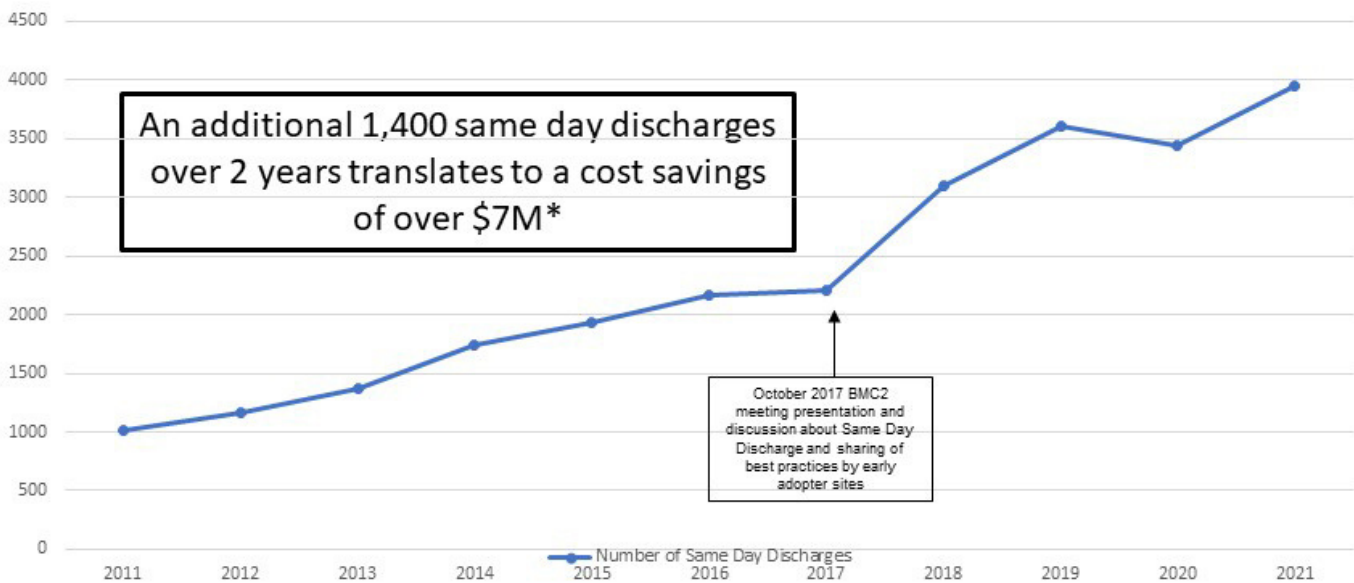
An increasing prescription of prasugrel and decreasing prescription of ticagrelor starting in 2019 provides an estimated annual cost savings of \$7.9M.



An increasing prescription of prasugrel and decreasing prescription of ticagrelor starting in 2019 provides an estimated annual cost savings of \$7.9M

SAME DAY DISCHARGE AFTER PCI

Fewer days in the hospital leads to improved patient outcomes and experience, and cost savings for hospitals and payers.



*\$5128 cost savings for same day discharge, per procedure Amin AP, Pinto D, House JA, et al. Association of Same-Day Discharge After Elective Percutaneous Coronary Intervention in the United States With Costs and Outcomes. JAMA Cardiol. 2018;3(11):1041-1049. doi:10.1001/jamacardio.2018.3029

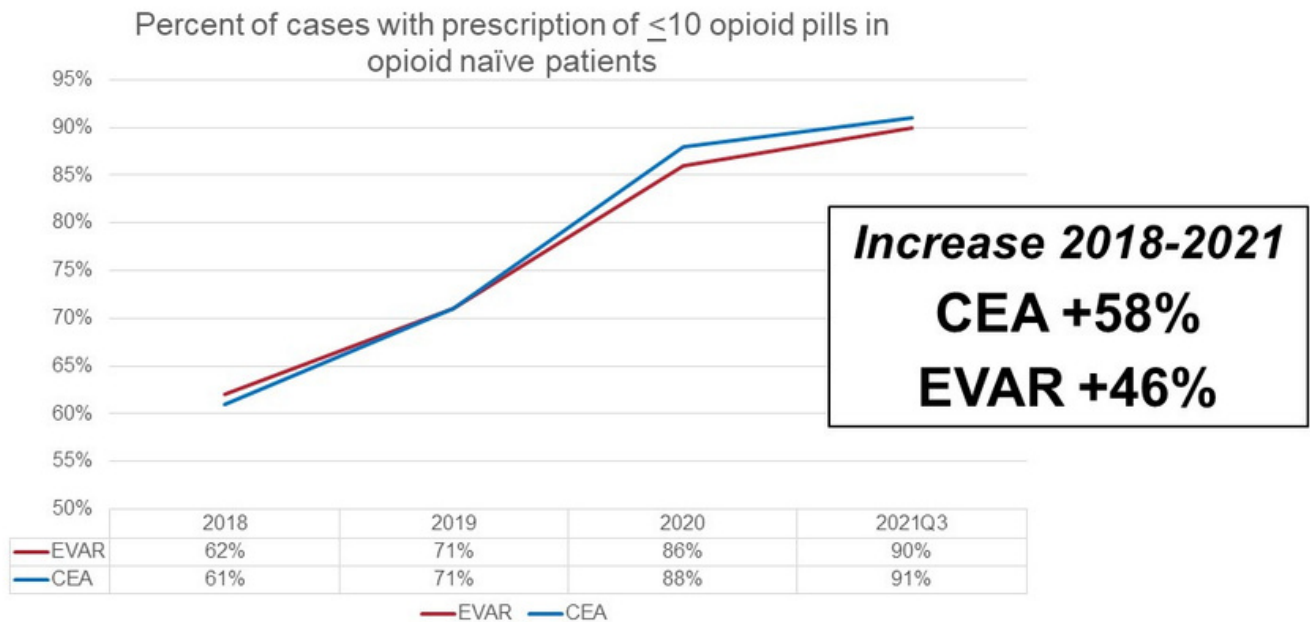
REDUCING POST-CEA HOSPITAL STAYS SAVES BIG

The BMC2 Vascular Surgery goal, "Less than 8% of asymptomatic carotid endarterectomy patients NOT discharged by post-operative day 2", results in big costs savings for the healthcare system. In 2017, the collaborative average was 9.8%, and by 2021Q3 was 4.8%, a 51% decline. Based on 1400 discharges, we estimate an annual reduction of 209 inpatient days per year. This translates to an annual cost savings of \$480,000.

REDUCING UNNECESSARY PRESCRIPTION OF OPIOIDS

BMC2's goal is effective pain management without excess dispensation of opioid pills in opioid naïve endovascular aneurysm repair and asymptomatic carotid endarterectomy patients. Achievement of this goal results in fewer opioids in the community and a lower risk of patients developing dependency.

THE OUTCOME



In 2022 BMC2 goals challenge sites to decrease opioid prescription to ≤ 4 pills

MICHIGAN TAVR

CHANGES AT MICHIGAN TAVR

To meet the needs of hospitals expanding their scope of transcatheter structural heart procedures and the associated quality improvement opportunities, Michigan TAVR became the Michigan Structural Heart Consortium (MISHC), effective March 1, 2022.

MISHC now comprises all 30 hospitals in the State conducting TAVR procedures and will continue to focus on TAVR data collection and reporting to support quality improvement. The registry will begin reporting on transcatheter mitral valve procedures later this year and opens the door to future inclusion of other structural heart procedures.

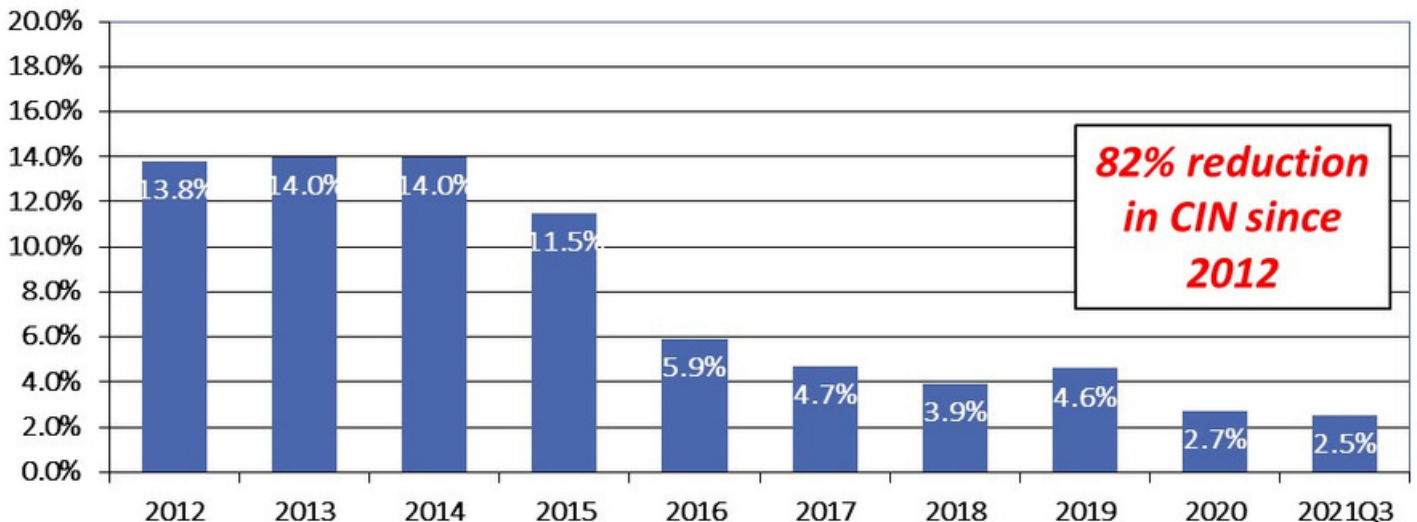
MISHC is a collaboration between BMC2 and the Michigan Society of Thoracic and Cardiovascular Surgeons Quality Collaborative (MSTCVS), reflecting the critical engagement of the complete heart care team in the management of structural heart patients.



MISHC COLLABORATES TO REDUCE KIDNEY INJURY

Contrast-induced nephropathy (CIN) increases morbidity and mortality, particularly in elderly and high-risk patients. A reduction in CIN means better outcomes for patients.

MISHC TAVR CIN rates per year



CREATING A FORUM FOR STRUCTURAL HEART CARE PROVIDERS

In 2021, MISHC convened a working group, Michigan Transcatheter Valve Therapies Team, or MI TVT2, for advanced practice providers in order to provide a forum for discussion and learning. Activities include educational meetings, development of best practice protocols, and a networking and information sharing forum. MI TVT2 fills an important gap noted by participants and allows for cross-site collaboration and support in Michigan.

Quality Initiatives led to improved follow-up and decreased bleeding complications for patients.

Measure	Goal	Baseline	2021Q3YTD	% change
Increase echocardiogram post-procedure (TAVR)	>=95%	87.1%	99.3%	+14.0%
Increase follow up information at 30 days (TAVR)	>99%	85.4%	95.0%	+11.3%
Decrease CV/Cr Cl >=3 (TAVR)	<=9%	30.6%	3.9%	-87.3%
Decrease bleeding/vascular complications (TAVR)	<=2%	4.5%	2.6%	-42.2%
Decrease transfusions (TAVR)	<=8%	17.2%	5.6%	-67.4%

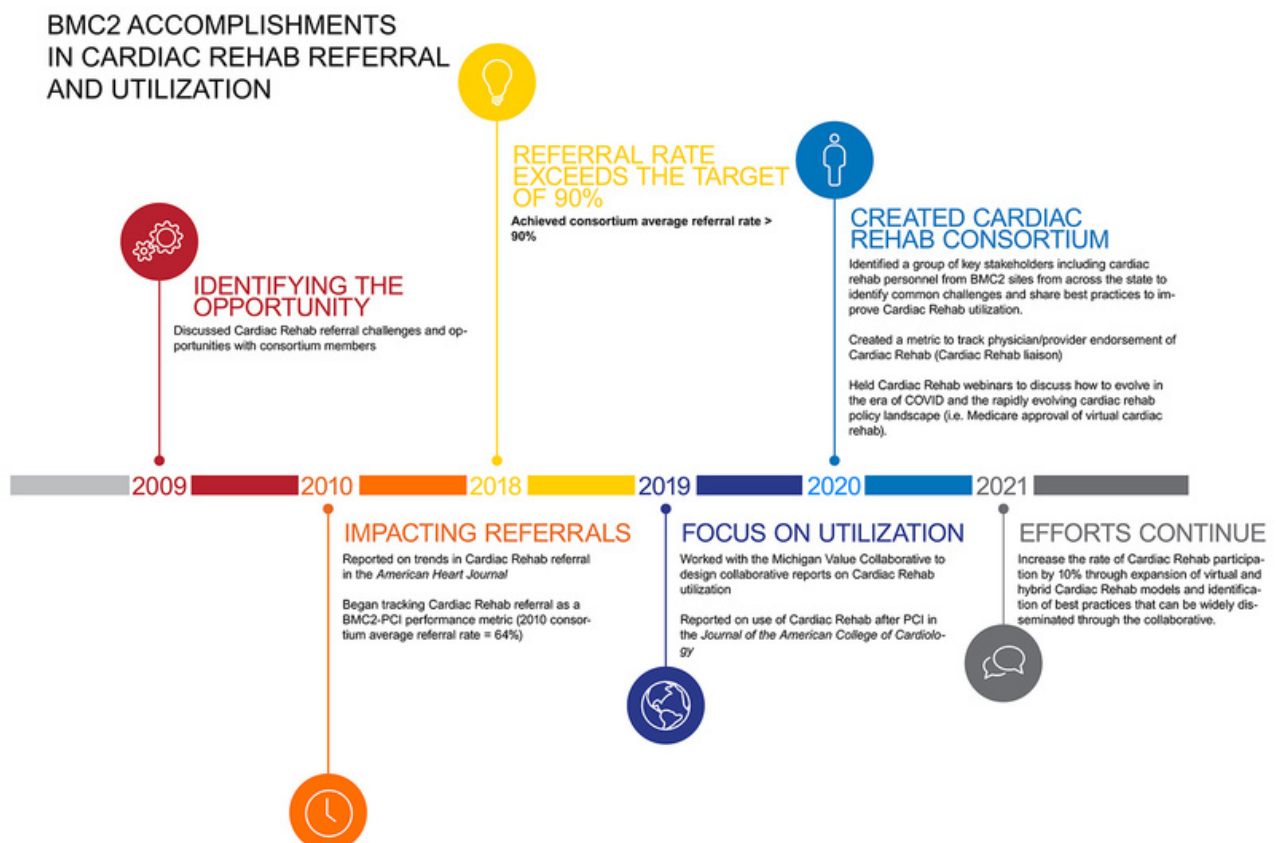


CARDIAC REHAB

The short- and long-term benefits of cardiac rehab (CR) are well-documented, from increasing post-PCI confidence and mental health to reducing the overall risk of death and future cardiac events. BMC2 has long had a quality improvement focus on CR referral, and BMC2 initiatives over the last 5 years have yielded a 25% increase in that referral, translating to over 18,000 patients referred in 2021.

More recently, the BMC2 CR initiative has increased focus on improving CR utilization with the goal of increasing participation by 10% and helping sites create and expand virtual and hybrid cardiac rehab programs. Partnering with the Michigan Value Collaborative ([MVC](#)) to increase reach and impact, the CR work group, made up of CR physicians and professionals from across Michigan, held educational and networking webinars in 2021 covering topics

from reimbursement for virtual CR to behavior nudges for encouraging utilization. Virtual site visits helped leaders gain an in-depth understanding of CR processes and challenges at diverse sites. Updated MVC-generated CR utilization reports were also distributed to sites, through which BMC2 continues to facilitate engagement between PCI and CR teams. BMC2 also convened a work group to develop a best practices toolkit that is scheduled to release a one-of-a-kind professional resource in early 2022. While MVC and BMC2 have been combining efforts since 2019, shared goals have now been formalized with the creation of the Michigan Cardiac Rehab Network ([MiCR](#)). The network, codirected by Dr. Devraj Sukul, from BMC2, and Dr. Michael Thompson, from MVC, aims to equitably increase participation in cardiac rehab for all eligible individuals in Michigan.



PUBLICATIONS AND PRESENTATIONS

BMC2 Vascular Surgery published two papers in 2021, while BMC2 PCI published six papers. A searchable database of BMC2 publications can be found on our [website](#). MISHC published a surgical explanation of transcatheter aortic valve bioprosthesis. Learn more about this publication on the [BMC2 blog](#). Findings from BMC2 data were presented nationally this year by both the PCI and Vascular Surgery registries. Presentations were given at AHA 2021, TCT 2021, the Midwestern Vascular Meeting 2021, and the Vascular Annual Meeting 2021. A complete list of presentations with authors can be found at [bmc2.org](#).

BMC2 FEATURED IN

Journal of Vascular Surgery, Circulation: Cardiovascular Quality and Outcomes, The American Journal of Cardiology, JACC: Cardiovascular Interventions, PLOS ONE, Catheterization and Cardiovascular Interventions, Circulation: Cardiovascular Interventions



BEST PRACTICE PROTOCOLS

[Best practice protocols](#) are developed by BMC2 physicians and use current research as well as guidance based on the clinical experience of the consortium members. These easily digestible documents are designed to promote consistent application of best practices among Michigan physicians and serve as a supplement to national guidelines. BMC2 best practice protocols are based on the consensus of the consortium, should not be considered formal guidance, and do not replace the professional opinion of the treating physician.

BMC2 REGISTRIES CELEBRATED THE RELEASE OF 10 BEST PRACTICE PROTOCOLS IN 2021!

PCI

- Vascular Access
- Post-PCI Medical Management
- Use of IVUS/OCT
- Radiation Safety
- FFR/iwFR Measurements
- Groin Bleed

Vascular Surgery

- Transfusion
- Surgical Site Infection

MISHC

- TAVR Nephropathy
- Vascular Access Management in Percutaneous TAVR
- TAVR Peri-Procedural Care Pathway

PHYSICIANS SHARE AND LEARN THROUGH PEER REVIEW

BMC2's unique peer review process continued in 2021, with physicians from across BMC2 registries participating. Nearly 2,000 cases have been reviewed since the peer review effort began in 2017.

"Physicians across the state review each other's cases as a quality assurance check to improve the appropriateness and quality of the procedure. Operators receive scores and comments back from those who reviewed their cases," said Hitinder Gurm, M.D., director of BMC2. "It's a great opportunity for all of us to share, learn, and improve." Participating physicians say the feedback has been valuable, particularly because it comes from their peers – others who understand the complexities and clinical presentation of the reviewed procedures. "Reviewers consider not just the quality of the procedure, but also the appropriateness and best treatment for the patient. For example, they evaluate whether medical management or a surgical intervention would have been a more appropriate option for each case [in PCI]," said Gurm.

"It's a great opportunity for all of us to share, learn, and improve."

Hitinder
Gurm

In 2021 PCI physicians reviewed non-Acute Coronary Syndrome cases, while Vascular Surgeons reviewed lower extremity open bypass procedures performed for claudication. PCI physicians met consortium goals to 1) increase the appropriateness of PCI therapy: $\geq 90\%$ concordance on the decision to proceed to PCI on the reviewed cases; and 2) improve the overall intervention quality: $< 10\%$ of reviewed cases rated as sub-optimal. Vascular Surgery reviews were not tied to 2021 incentive goals but provoked learning within our Vascular Surgery hospitals and great discussion among consortium members at a 2021 collaborative meeting. We look forward to continuing this tradition of collaboration and learning in 2022!



SUCCESS OF MEETINGS ACROSS THE CONSORTIUM

Our meetings continue to be a rich source of education and an opportunity for networking. This year, we heard from members across the consortium on topics such as aortic graft infections, EVAR, distance referrals, and running a quality-focused OBL. We welcomed national speakers as well.

Dr. Muthiah Vaduganathan, of Brigham and Women's Hospital joined us to present on a practical guide to implementation of SGLT2i in clinical practice. Dr. Peter F. Lawrence, of the David Geffen School of Medicine at UCLA shared a presentation on appropriateness in PAD procedures. During the MISHC Collaborative Meeting, we heard from Dr. Thomas G. Gleason from University of Maryland School of Medicine, who spoke about treatment of bicuspid aortic valve stenosis: SAVR vs.TAVI. These presentations, and many others, can be found on the [BMC2](#) and [MISHC](#) YouTube channels.

LOOKING TO THE FUTURE

PATIENT ADVISORY COUNCIL

2021 was the year that BMC2 assembled a Patient Advisory Council ([PAC](#)). This invaluable addition to the consortium will allow for participating patient volunteers to have a direct impact on improving the effectiveness and relevance of PCI quality improvement interventions.

The goal is to engage patients early, before decisions are made, working toward patient-partnered care and mutual learning. By engaging patients in BMC2 quality improvement initiatives, we can improve the quality of PCI care in the State of Michigan. We [welcome recommendations](#) for additional members of this group. We are excited for the PAC to shape the future of our work at BMC2 and to continue increasing patient engagement in the years to come.



BMC2 is moving!
Beginning June 1st,
2022, our new address is:

Arbor Lakes, Building 3, Floor 3
4251 Plymouth Rd.
Ann Arbor, MI 48105
Phone: (734) 998-6400
Fax: (734) 998-6422
Email: bmc2.info@umich.edu
www.bmc2.org



Although Blue Cross Blue Shield of Michigan and BMC2 work collaboratively, the opinions, beliefs and viewpoints expressed by the author do not necessarily reflect the opinions, beliefs, and viewpoints of BCBSM or any of its employees.