Report of Research Accomplishments

2021

Beaumont HEALTH
For more than 55 years, researchers at Beaumont have helped to bring new technologies, new treatments, and new medications into the practice of medicine, and have helped to move the standard of care forward to improve the safety and quality of medical care for patients locally, nationally, and internationally. The greatest reward from these achievements is the realization that patients’ lives are improved and enriched because of the outstanding research carried out by Beaumont physicians, scientists and staff.

Outstanding biomedical research is a major component of the excellent reputation of Beaumont Health as an academic health system. The Board of Directors at Beaumont made a commitment several decades ago to strengthen Beaumont as an academic institution through growth and support of graduate medical education, the hiring of physicians and scientists with a history of excellence in research and committed support of ongoing research activities of key programs. This commitment has helped to forge the reputation of Beaumont Health as a leading academic health system, with recognition by U.S. News and World Report, a distinction which places Beaumont in the forefront of medicine in the U.S.

With Beaumont Health’s role as the health care affiliate of the Oakland University William Beaumont School of Medicine, our research activities, graduate medical education, and scholarly endeavors are even more important. Our Board of Directors and senior leadership have reaffirmed their commitment to this ongoing academic mission. Strong undergraduate medical education requires faculty committed to research and a broad, excellent program of graduate medical education. The ACGME (Accreditation Council on Graduate Medical Education) is steadily increasing the requirements for excellence in both faculty research achievement and resident/fellow research training in order to maintain full accreditation for residency and fellowship programs. The Board for Accrediting Level 1 Trauma Center status, presently achieved by Beaumont Royal Oak, now requires productivity of peer-reviewed publications in recognized journals by participating faculty. The LCME (Liaison Committee on Medical Education), the accrediting organization for medical schools in the U.S. and Canada, requires the presence of biomedical research activities that can provide basic, translational and population research opportunities for medical students. The OUWB medical school provides further impetus to enhance biomedical research at both Beaumont and Oakland University, to integrate research activities between the two institutions, and to initiate new programs, centers, and collaborative projects shared by both institutions. Beaumont and Oakland University already have several areas of long-standing ongoing research collaboration.

Beaumont research is heavily oriented towards translational research, investigating new treatments, pharmaceuticals, medical devices, and scientific approaches aimed at enhancing the excellence and safety of patient care. Beaumont has a robust program of clinical research, with over 1,200 trials. Beaumont’s clinical services are superb, providing the standard upon which new and innovative research is built. The volume of patients served at Beaumont, combined with the excellence of clinical care, provides a striking opportunity to develop new treatments. Moving forward, Beaumont Health and OUWB will build upon existing research strengths in nationally recognized clinical and translational programs, including Cardiovascular Medicine, Oncology, Radiation Oncology, Urology, Orthopaedics, OB/GYN, Ophthalmology, Emergency Medicine and many others, to establish a new emphasis in population/community health and learning health system initiatives that will focus on improving health and healthcare delivery for our patients and communities.

We are proud to present this Report of Research Accomplishments. It highlights the depth and breadth of Beaumont’s academic excellence, including our affiliation with OUWB. We extend our congratulations and appreciation to the many investigators who have contributed these extraordinary achievements.
Beaumont Health, serving southern Michigan and beyond, recognizes the inherent value of research as a major contributing factor to future improvements in health care delivery and the health of our local and global communities. The Beaumont Research Institute (BRI), established by the Board of Trustees in 1966, strengthens Beaumont’s ability to conduct medical research and to provide research training for allied health and medical staff and students in undergraduate and graduate medical education programs. Beaumont Health is a major teaching facility, with 78 accredited residency and fellowship programs involving 798 residents and 110 fellows, and 137 research staff.

**Funding**
Research Institute actual operations $28.1

**External Sources of Research Funding**
- Non-Federal sponsors 35 %
- Federal sponsors 35 %
- Philanthropic sponsors 15 %
- Intellectual Property 15 %

**Types of Research at Beaumont Health**

Percentage of expenses
- Clinical Research 67 %
- Pre-Clinical Research 33 %

**External Research Funding by Service Line**
- Radiation Oncology 16 %
- Urology 16 %
- Orthopaedics 13 %
- Infectious Diseases 12 %
- Cardiology 7 %
- Emergency 7 %
- Hematology/Oncology 6 %
- Other Service Line 14 %
- Intellectual Property 9 %

**Clinical Research**
- 1,469 clinical studies
- 379 interventional studies
- 1,090 non-interventional studies
- 410 active principal investigators
- 3,056 registered research participants

**Educational Opportunities for Research Staff**
- 2-day orientation for new clinical research staff
- Animal use training
- Online CITI human subject’s protection training
- Online guidance/modules on initiating research
- Seminar series and workshops

**Support Staff Available**
- Accounting / Contracting / Administrative
- Biostatistics / Informatics
- Commercialization Center
- Compliance Office
- Grant Development
- Human Resources
- Institutional Animal Care and Use Committee
- Institutional Biosafety Committee
- Institutional Review Board
- Outcomes Research Group
- Research Data Management and Computing
- Research Education and Process Improvement

**Support for the Research Institute**
- AAALAC accredited animal facility
- AHRPP accredited human research protection program
- Beaumont Research Coordinating Center
- BioBank / Erb Family Core Molecular Lab
- Flash CT scanner
- Fully equipped bench laboratories
- National Cancer Institute Cooperative Group Trials Site
- Partnership with OUWB School of Medicine
- Proton Beam
- PET-CT and Biotracer
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ANESTHESIOLOGY AND PERIOPERATIVE MEDICINE

Peer Reviewed Articles:


Invited Research Presentations:


Bittinger AC. Emotional intelligence and nurse anesthesia. The Nebraska Association of Nurse Anesthetists Fall Conference, 2021 Oct 29-31, Omaha, NE.


Bittinger A. Impairment in anesthesia. The Nebraska Association of Nurse Anesthetists Fall Conference, 2021 Oct 29-31, Omaha, NE.


Clemans R. Prescribing controlled substances for primary care providers. Beaumont Health Symposium for Primary Care Medicine, Nov 5-6, 2021. Virtual.


Markatos S, Cruz AJ, Haddad M, Vahabzadeh CM. When NMDA receptors are under attack, which anesthetic choice is best? The American Society of Anesthesiology Annual Meeting, 2021 Oct 8-12, San Diego, CA. https://www.abstractsonline.com/pp8/#!/9323/presentation/4861


Rodgers L. Virtual reality ... The new normal? The 7th Annual Lourdes University Nurse Anesthesia Conference, 2021 Mar 24, Perrysburg, OH.


Multimedia:

**Peer Reviewed Articles:**


**Abstracts with Associated Research Publications:**

CARDIOVASCULAR MEDICINE

Peer Reviewed Articles:


Mustafa SF, Zafar MR, Vira A, Halalau A, Rabah M, Dixon S, et al. [Hanson I]. In-hospital outcomes of patients with chronic kidney disease undergoing percutaneous coronary intervention for chronic


Abstracts with Associated Research Publications:


Madanat L, Shah K, Haines D, Mehta N. High burden of sensing changes in periprocedural TAVR patients with pre-existing CIEDs presents a unique challenge. Circulation 2021 Nov 16;144 (S1):A13691.


Verma A Boersma LVA, Haines DE, Marchlinski FE, Calkins H, Sanders P et al. Pulsed field ablation and heat generation: Electrode-tissue temperature analysis from the pulsed AF trial. Heart Rhythm 2021 Aug 18;(8S);S70.


Invited Research Presentations:


Dixon S. REDEFINE: A prospective, randomized evaluation of the ControlRad system to reduce radiation exposure during cardiac catheterization procedures. TCT 2021, Nov 4-6, 2021, Orlando, FL.

Gallagher MJ. "CT Firs" in the evaluation of chest pain: What you need to know about cardiac CT/FFRCT. Medical Grand Rounds Lecture Presentation. Beaumont Hospital, Royal Oak, MI. Sep 22, 2021.

Non-Peer Reviewed Research Publications:

Peer Reviewed Articles:


Brummett AL, James EJ. Non-Roman Catholic physicians should be permitted to write prescriptions for birth control in Roman Catholic institutions. J Clin Ethics. 2021 Fall;32(3):265-270. PMID:34548435.


Invited Research Presentation:

Peer Reviewed Articles:

Abstracts with Associated Research Presentations:


Invited Research Presentations:
Dreyer Z, Bergeron S, Hilli R, Wasvary H. Multidisciplinary management of rectal cancer affecting access to comprehensive care and overall cancer-free survival. The Oakland University Graduate Student Research Conference, 2021 May, Rochester Hills, MI.


Non-Peer Reviewed Research Publications:
Ekkel E, Hain J. Supralevator abscess presenting with pneumoarthrosis and retroperitoneal. Research Square. 2022 https://doi.org/10.21203/rs.3.rs-438018/v1
Peer Reviewed Articles:


Abstracts with Associated Research Presentations:


Invited Research Presentations:


Saenz R. Emergent CT cases: Don't let the sun go down on these! American Osteopathic College of Radiology, 2021 May 3-7. Virtual.


Non Peer Reviewed Research Publications:

EMERGENCY MEDICINE

Peer Reviewed Articles:


**Abstracts with Associated Research Publications:**


Invited Research Presentations:


Multimedia:


Non-Peer Reviewed Research Publications:


**FAMILY MEDICINE**

**Peer Reviewed Articles:**


Book Chapter or Full Book Publications:


Invited Research Presentations:


Kowalkowski JD. Mental health impact on heart health. Presented as part of the Stellantis Virtual Heart Health Series – Mental Health Panel, 2021 Apr. Virtual.


Warnick SJ, Kowalkowski J. Help! My patient has anxiety and I only have 20 minutes: Brief interventions and medication options. The Beaumont Symposium for Primary Care Medicine, 2021 Nov 5-6. Virtual.


Multimedia:


Non Peer Reviewed Research Publications:


Invited Research Presentation:

Anderson M. The role of the gut microbiome in overall health. Beaumont Health Symposium for Primary Care Medicine, 2021 Nov 5-6. Virtual.
SUBSPECIALTY DIVISION OF INTERNAL MEDICINE

Allergy and Immunology
Dermatology
Endocrinology
Gastroenterology and Hepatology
General Internal Medicine
Geriatrics
Hematology/Oncology
Infectious Diseases
Nephrology
Neurology
Nutrition and Preventive Medicine
Pulmonary and Critical Care Medicine
ALLERGY AND IMMUNOLOGY

Peer Reviewed Articles:


Invited Research Presentation:

DERMATOLOGY

Peer Reviewed Articles:


Invited Research Presentations:


Peer Reviewed Articles:

Invited Research Presentations:


Peer Reviewed Articles:


**Cappell MS.** Hospitals and all stakeholders, including ERCP personnel, should equitably share profits from cost savings from decreased hospital LOS by performing non-emergent ERCPs on weekends. Dig Dis Sci. 2021 May;66(5):1761-1762. doi:10.1007/s10620-020-06785-3. PMID:33742292.


**Cappell MS.** Problems for gastrointestinal patients with diarrheal disorders: Limited access to public bathrooms because previously open public bathrooms have closed due to COVID-19 pandemic and inadequate number of bathrooms in some endoscopy suites. Am J Gastroenterol. 2021 Jun 1;116(6):1355-1356. doi:10.14309/ajg.00000000000001082. PMID:33337661.


Abstracts with Associated Research Publications:


Peer Reviewed Articles:


Abstracts with Associated Research Presentations:


Invited Research Presentations:


Barnes M. Hot topics in ambulatory medicine. Beaumont Practical and Progressive Updates in Primary Care Medicine, 2021 Apr 15-May 23. Virtual.


Fawaz L, Afonso N. A look into medical students' knowledge on adverse childhood experiences. The 10th Annual Oakland University William Beaumont School of Medicine Davidson Medical Education Week, 2021 May 17-21. Virtual.


Rodd C, Leong R, Gomes K. The effectiveness of the nephrocheck biomarker in the early diagnosis of post-transplant acute kidney injury (delayed graft function), and long-term kidney function post-transplant. Southeast Michigan Center for Medical Education. 43rd Annual Research Forum. May 26, 2026. Virtual.


Non-Peer Reviewed Research Publications

Peer Reviewed Articles:


Invited Research Presentations:

**HEMATOLOGY/ONCOLOGY**

**Peer Reviewed Articles:**


Abstracts with Associated Research Publications:


Invited Research Presentations:


Shetty Z, Amin M, Balaraman S, Shetty S. A unique case of renal pelvic urothelial carcinoma with extensive small round cell sarcoma differentiation showing EWSR1 gene rearrangement. The 95th Annual Meeting of the North Central Section of the AUA, 2021 Oct 6-9, Chicago, IL.

Non-Peer Reviewed Research Publications:


Peer Reviewed Articles:


Abstracts with Associated Research Publications:


Invited Research Presentations:


Sims MD. Kinks and quirks of research during a pandemic. Lessons Learned from the Pandemic Conference, Department of Emergency Medicine, Beaumont Hospital Royal Oak, 2021 Mar 11. Virtual.


Multimedia:


Peer Reviewed Articles:


Invited Research Presentation:

Swami A. Nephrology case studies. Beaumont Health Symposium for Primary Care Medicine, 2021 Nov 5-6. Virtual.
**Peer Reviewed Articles:**


**Book Chapter or Full Book Publications:**


**Invited Research Presentations:**


Zillgitt A. Temporal lobe epilepsy: Surgical treatment options for the most common, but heterogeneous, and at times hidden, focal epilepsy. American Osteopathic Board of Neurology and Psychiatry/American Clinical Neuropsychiatrists. 2021 Jul. Virtual.

Peer Reviewed Articles:


Peer Reviewed Articles:


Abstracts with Associated Research Publications:


Invited Research Presentations:

Dalal B. Sleep well, live well. Beaumont Practical and Progressive Updates in Primary Care Medicine, 2021 Apr 15-May 23. Virtual.


NURSING

Peer Reviewed Articles:


Abstracts with Associated Research Presentations:

Invited Research Presentations:

Bittinger AC. Impairment in anesthesia. The Nebraska Association of Nurse Anesthetists Fall Conference, 2021 Oct 29-31, Omaha, NE.


Dreyer Z, Bergeron S, Hilli R, Wasyv H. Multidisciplinary management of rectal cancer affecting access to comprehensive care and overall cancer-free survival. The Oakland University Graduate Student Research Conference, 2021 May, Rochester Hills, MI.


Rodgers L. Virtual reality ... The new normal? The 7th Annual Lourdes University Nurse Anesthesia Conference, 2021 Mar 24, Perrysburg, OH.


Peer Reviewed Articles:


**Abstracts with Associated Research Presentations:**


**Invited Research Presentations:**


Graham SF. Biomarkers of neurodegenerative disease. William Davidson Medical Education Week. Oakland University William Beaumont School of Medicine, 2021 May 20. Virtual.


Shah AA. Controlling blood loss in the OR. Ob/Gyn Grand Rounds Lecture Presentation. Beaumont Hospital, Royal Oak, MI. 2021 Apr 1.


Wong S, Alpay Savasan Z. Effectiveness of prenatal screening tests on predicting cardiac anomalies. American College of Physicians 2021 Michigan Chapter Residents/Medical Student Day Meeting 2021 May 7. Virtual.

Multimedia:


OPHTHALMOLOGY

Peer Reviewed Articles:


Book Chapter or Full Book Publications:


Abstracts with Associated Research Publications:


**Invited Research Presentations:**


Omari, A. The role of the midperipheral retina in diabetic macular edema. The 53rd Annual Meeting of the Michigan Society of Eye Physicians & Surgeons, 2021 Jul 8-10, Mackinac Island, MI.
Peer Reviewed Articles:


Book Chapter or Full Book Publications:


Abstracts with Associated Research Publications:


Invited Research Presentations:


Multimedia:


Non-Peer Reviewed Research Publications:

Peer Reviewed Articles:


sequential pathologic specimens of untreated patients shows persistent or progressive disease. Mod Pathol. 2021 Dec;34(12):2148-2153. doi:10.1038/s41379-021-00842-6. PMID:34155351.


Radhakrishna U, Vishweswaraih S, Uppala LV, Szymanska M, **Macknis J**, **Kumar S**, et al. Placental DNA methylation profiles in opioid-exposed pregnancies and associations with the neonatal


Book Chapter or Full Book Publications:


Abstracts with Associated Research Publications:


Mahalingam VD, Zhang PL, Qu Z. IgG4-related disease presenting as or with isolated giant cell temporal arteritis. Arch Pathol Lab Med 2021 Sept;145(9):194.


**Invited Research Presentations:**


**Multimedia:**

**Peer-Reviewed Articles:**


Book Chapter or Full Book Publications:


Abstracts with Associated Research Presentations:


**Invited Research Presentations:**


Multimedia:


Non-Peer Reviewed Research Publications:

Peer Reviewed Articles:


Abstracts with Associated Research Publications:


Invited Research Presentations:


LaFreniere K, Jones J, Pipta J. Inpatient sepsis order set use and impact on SEP-1 compliance in severe sepsis and septic shock. Ohio Pharmacy Resident Conference, 2021 May 20, Ada, OH.


Peer Reviewed Articles:


Abstracts with Associated Research Presentations:


Zhang D, Hazim B, Alvi R, Roskos PT, Kline J. Use of the SCAT-5 to predict return to play in high school athletes with history of concussion. PM & R. 2021;13(S1):s111.


**Invited Research Presentations:**


Peer Reviewed Articles:


Invited Research Presentation:

Peer Reviewed Articles:


Invited Research Presentation:

Rosen L. Recent advances in the treatment of mental illness. Beaumont Health Symposium for Primary Care Medicine, Nov 5-6, 2021. Virtual.
Peer Reviewed Articles:


Abstracts with Associated Research Presentations:


Ding X. SP-0144 Spot scanning arc therapy: From concept to first delivery. Radiother Oncol 2021 Aug 1;161:S91-2.


Parzen JS, Quinn TJ, Thompson AB, Chang P, Collins SP, Suy S, et al, [Seymour Z, Hamstra, DA]. Evaluating the correlation between early and late quality-of-life declines using the Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP) after definitive stereotactic body


Invited Research Presentations:


Zhao, L. Structure sparsity of the spot optimization in proton arc therapy. The Great Lakes Section of SIAM (GLSIAM);2021 Apr 24th, Oakland University, Rochester, MI.
RESEARCH ADMINISTRATION

Peer-Reviewed Articles:


Abstracts with Associated Research Presentations:


Invited Research Presentations:


SUBSPECIALTY DIVISIONS OF SURGICAL SERVICES

BREAST CARE CENTER
CARDIOVASCULAR SURGERY
FEMALE PELVIC RECONSTRUCTIVE SURGERY
GENERAL SURGERY
NEUROSURGERY
OTOLARYNGOLOGY
PEDIATRIC SURGERY
PLASTIC SURGERY
THORACIC SURGERY
VASCULAR SURGERY
BREAST CARE CENTER

Peer Reviewed Articles:


Abstracts with Associated Research Presentations:

CARDIOVASCULAR SURGERY

Peer Reviewed Articles:


Abstracts with Associated Research Publications:


**Invited Research Presentations:**

FEMALE PELVIC RECONSTRUCTIVE SURGERY

Peer Reviewed Articles:


Abstracts with Associated Research Presentations:


Invited Research Presentations:


Peer Reviewed Articles:


**Book Chapter or Full Book Publications:**


**Abstracts with Associated Research Publications:**


Kumar M, Long GW, Studzinski DM, Callahan RE, Brown OW. Endovascular aortic aneurysm repair is associated with late decline of renal function as compared to patients with peripheral arterial disease. Midwestern Vascular Surgical Society 45th Annual Meeting, 2021 Sep 9-11, Chicago IL.

Kumar M, Long GW, Studzinski DM, Callahan RE, Brown OW. Endovascular aortic aneurysm repair is associated with late decline of renal function as compared to patients with peripheral arterial disease. The 67th Annual Meeting of the Michigan Chapter of the American College of Surgeons, 2021 May 12-14. Virtual.


Invited Research Presentations:


**Howard KK, Masters SE**. From the middle of nowhere to the knife: A history of transportation for rural surgery from the industrial revolution to today. The American College of Surgeons Clinical Congress, 2021 Oct 23-27. Virtual.


Peer Reviewed Articles:


Sweeney JF, Chumbalkar V, **Staudt MD**, Entezami P, Qian J, Sukul VV. Anaplastic pilocytic astrocytoma of the cerebellum presenting with Conus Medullaris Drop metastasis. Case Rep Clin Pathol. 2021;8(1):10-16. [https://doi.org/10.5430/crcp.v8n1p10](https://doi.org/10.5430/crcp.v8n1p10)

Abstracts with Associated Research Presentations:


Invited Research Presentations:


Staudt, MD. Review of a common nomenclature. Congress of Neurological Surgeons Annual Meeting. 2021 Oct 18, Austin, TX.

Peer Reviewed Articles:


Abstracts with Associated Research Publications:
Peer Reviewed Articles:


Abstracts with Associated Research Presentations:


Jeong YS, Shah S, Akula S, Novotny NM, Menoch M. Shock index pediatric adjusted score vs pediatric trauma score in the emergency department: So many scores, so little time. Acad Emerg Med. 2021 May;28(S1):S338-339.

Invited Research Presentations:


**PLASTIC SURGERY**

**Peer Reviewed Articles:**

Boudiab EM, Zaikos TD, Issa C, **Chaiyasate K, Lu SM.** Trends in craniofacial injuries associated with the introduction of electric scooter sharing services. FACE. 2021;2(1):89-93.


Invited Research Presentations:


Peer Reviewed Articles:


Invited Research Presentation:

Peer Reviewed Articles:


Book Chapters or Full Book Publications:


Abstracts with Associated Research Publications:


Invited Research Presentations:


Peer-Reviewed Articles:


Chancellor MB. Editorial comment from Dr. Chancellor to decreased urothelial cytoskeleton and cell proliferation protein expression suggest interstitial cystitis/bladder pain syndrome patients with Hunner's lesion and grade 3 glomerulation might be different from other types of patients. Int J Urol. 2021 Aug;28(8):832-833. doi:10.1111/iju.14629. PMID:34169577.


Abstracts with Associated Research Presentations:


**Invited Research Presentations:**


Chancellor MB. Improving patient outcomes through research in benign urology: Pivot research during the pandemic to COVID associated cystitis (CAC). University of Michigan, Feb 2021. Virtual.

Chancellor MB. Neurogenic and myogenic etiology of bladder dysfunction. The Geriatric Urological Society Meeting at the Annual American Urological Society Meeting, 2021 Sep 12. Virtual. [https://www.eventscribe.net/2021/AUA2021/fsPopup.asp?efp=VU9RREhBU00xMTA3Mw&PresentatonID=903309&rnd=0.4759323&mode=presinfo](https://www.eventscribe.net/2021/AUA2021/fsPopup.asp?efp=VU9RREhBU00xMTA3Mw&PresentatonID=903309&rnd=0.4759323&mode=presinfo)


Shetty Z, Amin M, Balaraman S, Shetty S. A unique case of renal pelvic urothelial carcinoma with extensive small round cell sarcoma differentiation showing EWSR1 gene rearrangement. The 95th


