Medical Center Strategic Directions

In 2016, people from across the Medical Center collaborated to develop a new strategy framework to sharpen our strategic focus and unify our work across patient care, research, and education. We focused on a strategy framework instead of a strategic plan to promote agility, a multidirectional approach, and experimenting toward success.

The Medical Center (collectively Vanderbilt University Medical Center, Vanderbilt School of Medicine, and Vanderbilt School of Nursing) uses the compass as a metaphor for the strategy framework. The compass is one of our oldest devices to help us find our way. Even when conditions change, a compass lets us orient ourselves. It helps guide us home or to new destinations.

The strategy framework lets us chart paths toward our aspirations as a Medical Center:

Vision
The world leader in advancing personalized health

Mission
Personalizing the patient experience through our caring spirit and distinctive capabilities

The Medical Center Community comes together annually to update the strategy framework. Our team reflects on where we have been and prior year progress. We consider our unique strengths, both historical and emerging. We take into account all the changes – and opportunities – facing us at the moment.

Our strategy framework capitalizes on "distinctive capabilities" - capabilities we have because we are an academic medical center comprised of a team of over 25,000 people, bi-directionally engaged with the community, and leveraging Vanderbilt's assets. The capabilities we will leverage and grow are:

- A collaborative culture
- Leadership in clinical care
- Basic and translational research
- Learning as a core competency
- Personalized medicine
- Population health

Our strategy framework identifies three "strategic directions" or themes. It allows us to adapt as we learn or as things change. It allows us to measure – and speed – our progress. The three strategic directions are:

- Design for Patients and Families
- Make Diversity and Inclusion Intentional
- Discover, Learn and Share

For each strategic direction, the framework includes a brief description of the intent and importance, "capabilities we are enhancing" and "capabilities we are developing." The capabilities we are enhancing highlight opportunities to build out aspects of the Medical Center's distinctive capabilities. The capabilities we are developing call out areas where building has been required from the ground up.
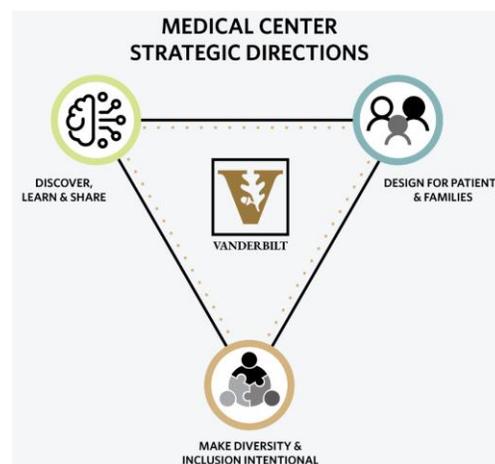
Design for Patients and Families

We will care for people in a compassionate and personalized way, wherever they are, whenever they need us.

Statement of Importance:

Historically, the processes of health care have been designed around the health care enterprise. When the processes of health care are designed around the needs of patients and their lifestyles, engagement and outcomes improve. **We will iteratively redesign health care to touch our patients and their families continuously, whenever or wherever they need us, to address their needs within the flow of their daily lives.** Furthermore, defining personalized care offers us a clear competitive advantage—it builds a reservoir of positive memories that can generate loyalty over time.
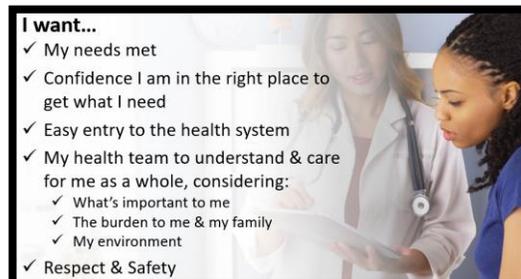
Capabilities we are enhancing:

- Our collaborative culture to be inclusive and to express empathy and compassion in all interactions
  - Incorporating empathy mapping into Medical Center lean events.
  - Training the Medical Center community in unconscious bias (UCB) and added UCB-sensitive metrics to patient satisfaction surveys.
  - Developing Medical Center-wide climate policies and processes on uncivil behavior and how to respond. Rolled out the program for addressing sexual harassment and developed the Patients' Rights and Responsibilities. Developing a plan for medical center wide bystander training.
- Coordination of clinical teams and systems to close gaps in care and set a higher bar for safety, reliability, and effectiveness
  - Developing and scaling a system-wide approach to closing gaps in care with the right intervention by the right team member during the right patient interaction. Examples include population health's Bridge initiative and the CMS funded Mid-South Practice Transformation Network (PTN).
  - Continually reducing patient care clinical variation through standard care pathways. Examples from FY20 include Enhanced Recovery After Surgery for colorectal, urology, OB and GYN.
  - Developing and expanding the Hi-Rise Clinic to optimize the preoperative clinical status of high-risk surgical patients.
  - Developing a process to leverage pragmatic effectiveness trials to design, test, and deploy interventions in real-world operational settings with feedback and update loops.
  - Developing processes to identify the patient's health team members, their role in the team and relationship to one another, and their status (on/off). Piloting by medicine primary care in eStar during FY20.
  - Developing processes to create shared care plans collaboratively by clinical teams with the patient. Plans may include the patient's goals, needs and preferences, and track past challenges and future goals for treatment and well-being. Piloting with Vanderbilt Familiar

[Faces](#), care coordination plans created by case management and social work, and transitional care plans (inpatient to post-acute) in FY20.

- o Developing [processes](#) to embed predictive analytics and artificial intelligence into Medical Center workflows to improve safety, efficiency, and alter the course of disease or preserve health. Implemented [HeartFlow](#) in coronary CT to identify patients requiring diagnostic angiography or CABG in FY20.
- o Developing a patient-centered scheduling model that aligns the patient with the right provider at the right location, the first time. Developed decision trees for 21 areas in FY20.
- o Operationalizing a care control center spanning inpatient services to provide a clear chain of command, aggregate and visualize data, and converge clinical and administrative monitoring. Initial priorities include patient throughput, capacity management, transfer center, and transport.

- Patient Care Centers (PCCs) to coordinate multidisciplinary care for conditions managed by the Medical Center
  - o Refining the PCC structure, decision rights, and management processes.
  - o Aligning goals and expectations related to pillar performance for each PCC
  - o Establishing a Primary Care PCC to oversee care management and culture change for team-based adult primary care.
  - o Developing a Medical Center standard for integrated practice units, patient-centered structures to care for a cluster of conditions that require a multi-specialty team to improve outcomes and reduce cost. Examples include Medicine PCC - [Eskind Diabetes Center](#); Women's Health PCC - Fetal Center, Maternal Cardiac Clinic, Coagulopathy Clinic, Polycystic Ovary Syndrome, DNA Diagnostic Center.

- Opportunities for community stakeholders and patients to participate in research and learn how to improve their health and engage as partners in their care
  - o Developing the [Person-centeredness of Research Scale](#) to assess the degree to which research reflects the needs, values, and priorities of patients, families, and communities.
  - o Developing the [Community Engagement Studio Toolkit](#).
  - o Launching the NIH's All of Us Research Program [Engagement Core](#) to include participants as partners in the oversight, governance design and implementation to ensure it is inclusive, relevant and culturally sensitive to diverse communities and everyday people.

- Personalized medicine to integrate social, behavioral and environmental factors with the full range of molecular characteristics
  - o Framing the concepts of The Vanderbilt Inventory, a repository of all data sets needed to support whole-person precision medicine, and visual risk displays to help clinicians and patients assess options.
  - o Convening the Precision Medicine [Strategy Session](#) to identify the path toward a vision where all clinicians at the Medical Center can counsel and, as needed, refer their patients regarding germ-line risk and drug selection.

Precision Medicine
- The right care, the first time
- Care that considers the whole person, their preferences, their individual characteristics

  - o Developing a coordinated clinical genomics consultation and testing pipeline and data management strategy encompassing Predict (pharmacogenomics), Whole Exome Sequencing (WES for rare diseases and germline panels), Cancer Genomics (somatic & germline), and Genetics Consult Service. Added [six new Predict drug-genome interactions](#), implemented [WES in house](#), implemented Tempus next generation sequencing-based cancer genome profiling and piloting one-stop genetic consults in FY20.

- Population health by engaging in cross-sector community partnerships to improve community health and well-being
  - Convening the Community Health Worker Collaborative, a group of organizations focused on advancing the Community Health Worker (CHW) profession in Tennessee facilitated by the Meharry-Vanderbilt Alliance (MVA).
  - Engaging with health departments and other non-profit hospitals, federally qualified health centers, and community organizations for collaborative Community Health Needs Assessment.
  - Coordinating with the State of Tennessee to create QuizTime educational modules on opioid management for all physicians in the state.
  - Engaging with State and Metro to coordinate COVID-19 assessment centers, testing, preparation to convert Music City Center into inpatient beds, and reopening phases.

Capabilities we are developing:

- Self-service tools for health improvement, access to care, and engagement in care
  - Integrating MH@V into the Vanderbilt Health experience. Making the portal the primary way our clinicians and staff communicate with patients between face-face visits and the first-place patients turn for their health needs. Enrollments jumped from 9,000 per month to 25,000 per month with COVID-19.
  - Implementing online scheduling for return appointments and appropriate new patient visits. Scheduled 95% of return visits and 5% of new patient visits on-line in FY20.
  - Launching Vanderbilt Health On Call, a Medical Center innovation that uses a smartphone app allowing patients in Davidson County and the cities of Brentwood, Franklin, Hendersonville, or Nolensville to order a $149 home visit from a Vanderbilt nurse practitioner.
  - Integrating mobile apps and web tools with MH@V to help people manage their health goals and care plans in collaboration with their health team (e.g., Carium); connect with a clinician in the app to evaluate symptoms & receive prescriptions; connect to nurse-on-call; or direct schedule to a walk-in or a care team (e.g., AmazonCare).
- Accessible regionally integrated patient-centered health care systems to bring Vanderbilt to people where they are
  - Providing access to care and consultation remotely through technology unless a face-to-face (F-F) visit is required (more). Standardize telehealth templates, elements of a telehealth visit that surround the clinician interaction, payment policy and pre-visit clearance (clinical and financial).   Jumped from <10 ambulatory televisits per day to >2,500 during COVID-19.
  - Optimizing the mix of ambulatory capacity (21st Ave & OHO, big box, small box, walk-in/retail, telehealth) to increase convenience and tune acuity to cost structure. Currently operating and providing clinical services at 14 retail Vanderbilt Health clinics within Walgreens stores located across Middle Tennessee (more), and managing over 120 walk-in and urgent care centers in central Tennessee.
  - Develop the appropriate mix of inpatient facilities (quaternary, acute community, post-acute, home) to tune acuity to cost structure and increase convenience and market share. Acquired Vanderbilt Wilson County Hospital in 2019.
  - Expanding the Vanderbilt Health Affiliate Network (VHAN) to more than 6100 clinicians and 60+ hospitals in 5 states, caring for over 300,000 people through partnerships with insurers.

- Models of team-based care with the right set of professionals collaborating with the patient at the center
  - Developing a model of team-based, coordinated adult primary care including collaborative behavioral health. Flex role mix (MDs, APPs, RNs, LPNs, Mas, LCSW) and panel size to match population risk, regional density.

  - Engaging in strategic planning for behavioral health (more). Gained agreement to embed behavioral health in 1° care and to build institutional competency for accurate identification, safe care and efficient disposition of high-risk patients with mental illness and matching integrated care support to patient need across all care centers.

  - Gaining agreement to develop infrastructure to provide continuum of Population Health ⇔ Primary Care ⇔ Specialty Care, leveraging precision medicine and predictive services for automated risk assessment of early intervention.
- Clinical integration across VHAN, including quality improvement, information technology connectivity and contracting
  - Facilitating clinical integration across the VHAN and providing service to support other networks.
  - Developing four Medicare Accountable Care Organizations (ACOs). The Vanderbilt Medical Group is a participant in the Middle Tennessee ACO.
  - Gaining agreement of the VHAN Board on the aspirational goal of VHAN becoming the region's preferred value-based clinically integrated network delivering innovative solutions, learning opportunities, and strategic advantages to our partners, who are patients, providers, employers, and payors.
- Systems to measure and respond to social, behavioral and environmental factors; individual values and goals; and outcomes that matter to patients and families
  - Broadening the initiative to ensure dignified, personalized end-of-life care includes improving communication about goals of care, including goals for end of life.

  - Incorporating Patient Reported Outcome Measures (PROMs) into the Medical Center systems of measurement to include patients' perspectives of their health, enhance real-time shared decision-making, and improve the quality, outcomes, and value of care. Medicine PCC piloted adult inflammatory bowel disease, Surgery PCC piloted advanced prostate cancer, and Children's PCC piloted asthma. Each PCC will implement PROMs as part of the measurement system for at least one condition by December 2021.
  - Incorporating health equity into the quality improvement strategies of the clinical enterprise by addressing systematic, avoidable and unjust distribution of social, economic, and environmental conditions needed for health.

- Care systems engineered to provide a consistent high-value experience based upon understanding patient and family
  - Working with the U.S. Centers for Medicare and Medicaid Services to implement an Oncology Care Model that incorporates extended hours to care for patients, patient navigators to help guide patients through the health system, palliative care, psychosocial support, and hospice counseling.
  - Designing and standardizing the ambulatory visit, so each visit flows smoothly from access through the clinic visit, delivering the right personalized experience for the patient's preferences reliably and efficiently.
  - Capturing administrative and patient-reported data digitally in the right workflow, from the right person, at the right time, and make them accessible with the right context in eStar and My Health at Vanderbilt (MHAV). Piloted in Women's Health at One Hundred Oaks in FY20.
  - Designing and delivering value-driven, comprehensive & specialty-based health care experiences directly to employers. Maternity bundle launched for Nashville Public Schools and VUMC health plan in FY20.
- Ways to engage all stakeholders to improve patient and family experience
  - Engaging the Patient and Family Advisory Councils in the early stages of planning.
  - Launching "Defining Personalized Care-Elevating Our Culture of Service" to provide the coaching, knowledge and skills we need across the Medical Center workforce to deliver exceptional service with every interaction. A new learning segment is rolling out each quarter.
  - Incorporating medical students in the healthcare team to optimize telehealth for patients during the COVID epidemic
  - Incorporating Patient and Family Advisory Council members into the Undergraduate Medical Education Committee

Make Diversity and Inclusion Intentional

We will reflect the diversity of the populations and staff we serve in our teams, programs and communications; and be inclusive in our processes and decisions.

MAKE DIVERSITY & INCLUSION INTENTIONAL

Statement of Importance:

The populations we serve are increasingly diverse with growing health inequities, and the people working at Vanderbilt represent this growing diversity. **Diversity and inclusion are fundamental to our success in reducing health disparities in the populations we serve.** Moreover, a workforce that is diverse and inclusive in nature is more effective at crafting innovative solutions to the major challenges of health care and executing those solutions as a team.

Capabilities we are enhancing:

- Our collaborative culture to be inclusive, and to reflect the diversity of the populations we serve
  - Developing the Diversity and Inclusion (D&I) website.
  - Creating the Community Circle. A VUSM student-led organization that every quarter brings all elements of the medical center together to discuss, in an open forum, societal issues that touch or are germane to medicine.
  - Establishing employee resource groups (ERGs) to support, enhance career development, and contribute to personal development among employees who share similar characteristics or life experiences. ERGs are active for LGBTQ, African American, Hispanic, and veteran communities.
  - Establishing LGBTQ Health Community Advisory Board to intentionally include community voices in care, services, and research.
  - Creating the United Voices of Vanderbilt Choir.
  - Developing protocols to help transgender employees seamlessly transition in the workplace.
  - Developing culturally appropriate ways to engage African Americans and other minorities in research.
- Diversity of our teams, faculty and leadership
  - Establishing the Chief Diversity Officer position (Andre Churchwell) to provide leadership across mission areas and the VUSM Office of Diversity Affairs to support programs of the School of Medicine.
  - Appointing a Senior Associate Dean and an Associate Dean for Diversity Affairs for the School of Medicine.
  - Continuing URM second look weekends for residency programs and establishing second look weekends for fellowship programs.
  - Recruiting the highest percentage ever of URM residents for the cohort entering in July 2020.
  - Developing D&I people pillar goals, beginning with inclusion of underrepresented minorities (URM) in the applicant pool and retention of URM faculty.

United Voices of Vanderbilt

Section of Surgical Sciences new leaders

- o Increasing diversity of Clinical Department Chairs, 16% are women and URM compared to AAMC average of 7%.
- Strategies to achieve health equity and reduce health disparities in all programs, internally and in the communities VUMC serve
  - o Establishing the vice president for health equity and associate dean for health equity (Consuelo Wilkins) and the Office of Health Equity to connect and coordinate existing community health and health equity initiatives from across the organization while scaling system-wide efforts to identify and address disparities in health (more).
  - o Over 200 ongoing Health Equity initiatives across the research, education and clinical/population health mission areas of VUMC housed in the OHE's Health Equity Inventory.
  - o Inclusion of a developmental goal focused on Health Equity in the VUMC Pillar Goals; the developmental goal will focus on collecting high-quality race, ethnicity and language data on VUMC patients. In concert with Health IT, the Vanderbilt Program for LGBTQ Health made recommendations for collecting sexual orientation and gender identity (SOGI) data in eStar that reflect the unique identities of all our patients more accurately. The plan is to roll out new data collection tools in late 2020.
  - o Establishing a MyHealth@Vanderbilt workgroup to address barriers to accessing care through the portal and to develop tactics to improve access to care.
  - o Establishing clinical programs to support LGBTQ patients. Examples include: Trans Buddy program with trained volunteers to support transgender patients during any kind of healthcare visit; patient phone line and webpage to direct LGBTQ patients to find culturally competent care; opening two clinics – one pediatric and one adult – focused on transgender health; performing a full array of gender affirmation surgeries for transgender patients; adding wrap-around services like case management, behavioral health, social work, OB/GYN, and surgical consults in a more patient-centered approach.

    Trans Buddy Volunteers
  - o Engaging with the community to address health equity. Created the first LGBTQ Health Supplement of the Community Health Needs Assessment and are providing leadership to a community-wide LGBTQ Health Task Force and participating in a health equity task force for the Mayor's Ending the HIV Epidemic Plan.
  - o Launched the Certificate in Health Equity at VUSM for students who wish to deepen their knowledge and expertise to become future health equity leaders.
  - o Established the student-led Social Mission Committee within the School of Medicine.
  - o Temporarily transitioned the student-run Shade Tree Clinic into a telehealth clinic during the COVID-19 pandemic to ensure that the underserved population that accesses that clinic continued to receive care.
  - o Student-led volunteer efforts to address food inadequacy issues in the community during the COVID-19 pandemic.
  - o Expanding LGBTQ health education programs including the LGBTQ Health internship (since 2015 engaged 21 students in the only LGBTQ health pipeline program in the country for students committed to serving LGBTQ people and championing best practices of treating

sexual and gender minority patients at their respective institutions; the premier annual educational symposium on LGBTQ health in the Southeast; on-demand education for clinical teams.

- Representation of our diversity in recognition and awards
  - o Creating faculty and staff awards named after women and URMs.
  - o VUMC Awarded 2018 and 2019 TOP HOSPITALS FOR DIVERSITY: BlackDoctor.org.
 - o VUMC Awarded "Human Rights Campaign Healthcare Equality Index Leadership Award" (2012 – 2019)".

Capabilities we are developing:

- A welcoming and inclusive environment where diverse cultures see themselves within the fabric of the organization
  - o Adding portraits that reflect and celebrate the diverse nature of our community, faculty, students and staff.

  Light Hall Faculty Portraits

  Stephanie Spottswood, MD   Arnold W. Malcolm, MD

  - o Creating an annual celebration of Hidden Figures an Honor Wall that is updated each year that has a picture and a description of each Hidden Figure's contribution to the Medical Center's culture and history.
  - o Creating an organic Vanderbilt Diversity Timeline that in a linear fashion notes when key positions and events occurred that add to our D&I experiences richness.
  - o Exploring opportunities for employees to put the personal pronouns they use on their badges. As transgender and non-binary identities become more visible, this will be helpful to employees and demonstrate our commitment to serving people of all gender identities.
  - o Acting upon the recommendations of the Learning Environment Task Force.
  - o Monitoring the environment through the annual Learning Environment Assessment and Feedback report card.
- A consciousness to elements of diversity, equity and inclusion
  - o Increasing self-awareness of unconscious bias to prepare the Medical Center workforce to exercise "constructive uncertainty" in the decisions they make around hiring, promoting, program development, and interpersonal interactions. Trained the entire Medical Center on how to identify and respond to UCB, and developed patient satisfaction metrics sensitive to UCB training.
  - o Developing D&I service pillar goals. Added patient satisfaction metrics sensitive to UCB training.
  - o Incorporating empathy mapping into VUMC strategy design events.
  - o Developing a plan to confront racial inequities and establishing a Racial Equity Task Force.
  - o Committing to develop a comprehensive personalized compensation philosophy for our workforce.
- Processes that ensure diverse voices and perspectives in decision making and communication at all levels
  - o Creating the Executive Diversity Council that includes Medical Center leadership with the intent to educate all on our ongoing D&I activities and catalyze all senior leaders to own D&I as part of their official function.
  - o Developing the Diversity & Inclusion Intentionality Planning Tool for use in formation of Medical Center committees and ensuring multiple perspectives in decision making. For

example, Medical Center Marketing uses the Intentionality Tool to ensure the patient portal message and use promulgates to all races, ethnicities, people of color, LGBT couples, etc.

- Resources and coaching to help academic and clinical units promote and improve diversity and inclusion in all of their activities
  - Developing Medical Center-wide workforce climate policies and processes on Uncivil Behavior and how to respond. Programs rolled out, and in process, include those on Sexual Harassment and Patients' Rights and Responsibilities.
  - Creating Diversity Liaison teams that connect to the ODA that embed the best practices of diversity and inclusion into the clinical and non-clinical departments' culture.

ODA-D&I CONTACTS & PARTNERSHIPS
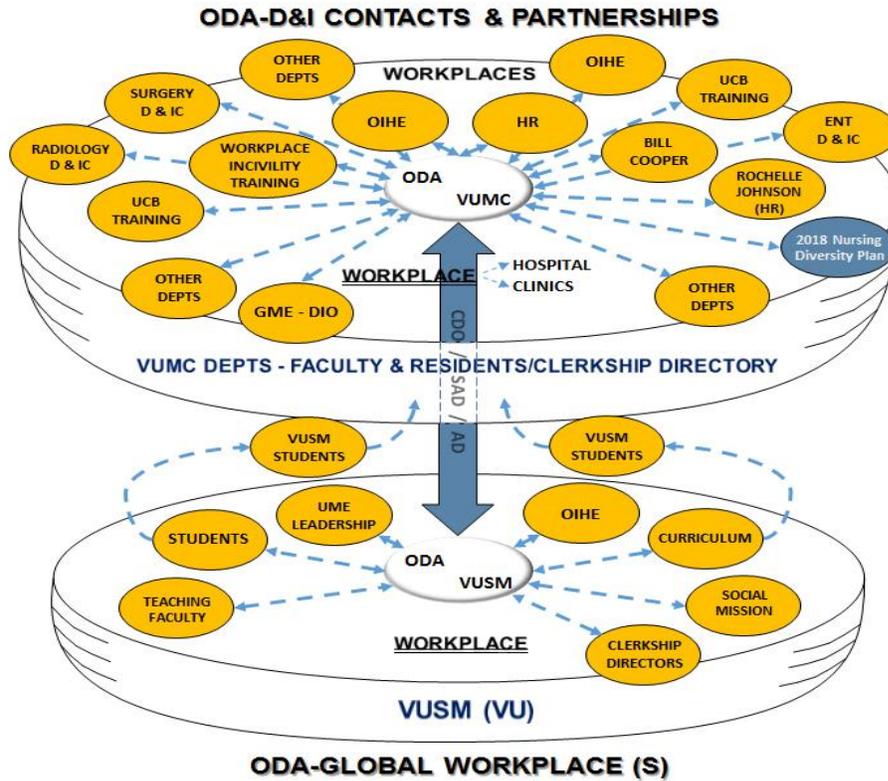
Discover, Learn and Share

Our collaborative learning environment ensures that we remain nimble and distinctive as a national leader in biomedical discovery, health care, and education. As we create new research capabilities and innovate systems of learning we will make discoveries of value and develop the people to lead transformation of health care. We will connect our academic medical center seamlessly to the world to benefit our patients, the communities we serve and the health ecosystem.
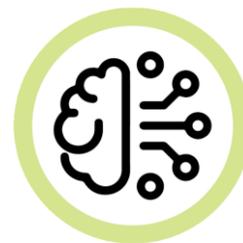
Statement of Importance:

Vanderbilt is leading the charge in ushering in a new era of health and prevention, detection, and treatment of disease. Progress we could not have imagined a decade ago is now being realized with our research and made a reality for patients both within and beyond our catchment area. **We are transforming interventions away from a model in which we see people for the first time when they begin experiencing symptoms to one that detects, manages and perhaps eradicates disease before individuals even know they have them.** The pace of innovation and the volume of data and information necessitate shifts in professional norms and learning approaches. **Vanderbilt is leading in developing innovative and effective education and training programs for learners across the continuum of educational phases and across health professions to catalyze servant leadership and lifelong learning.** Building better connectivity from all our programs to government and industry can create effective vehicles for societal change and allow our people, discoveries and innovations to have far more significant impact. **We will look at everything we do well and identify the best ways to make them generalizable and useful outside our walls.**

Capabilities we are enhancing:

- Our collaborative, inclusive and trans-disciplinary culture to convert ideas, discoveries and services into meaningful innovation
  - Advancing trans-disciplinary partnerships and collaborations to catalyze new directions and accelerate our ability to deliver our mission, including partnerships with GE Healthcare, Incyte Corp, Bayer, IBM Watson and Burroughs Wellcome Fund.
  - Launching drug discovery company, Ancora Innovation, in partnership with Deerfield Management (more).
  - Investing capital in nPhase and IDBiologics .
  - Collaborating with Ology Bioservices to develop and manufacture the monoclonal antibody to treat & prevent COVID-19 infection for Department of Defense (more).
- Programs and tools to advance learning opportunities and workforce engagement
  - Entered the second year of the Catalyst Leadership Program and Defining Personalize Care Program with promotion of new "catalyst" leaders in several areas.
  - Continuing investment in Vanderbilt Program in Research Administration Development, Programs in Frontline and Mid-level Leadership Development.

- Efficiency of the overall research enterprise through improved and nimble capture and exchange of expertise, reagents, and technologies as well as expansion of institutionally-supported research cores, facilities, and tools; as exemplified by our rapid pivot of basic/translational, clinical/interventional and population health research programs and core facilities to research focused on the causes, treatment and prevention of COVID-19
  - Development of web-based resources to keep the research community up to date on the continuum of COVID-19 research activities across the enterprise (more) .
  - Creation of a REDCap survey for faculty to rapidly share new COVID-19 and related research projects and initiatives with the community.
  - Development of COVID-19 research committees to review and propel interventional and non-interventional human participant investigations.
  - Providing practical guidance for researchers to support safe conduct of activities on VUMC campus (more).
  - Further development of core educational programming within Office of Student Research and enhancement of the Immersion Research Experience for medical students.
- Transparency of datasets and methods; reproducible research
  - Developed guidelines and recommendations for Vanderbilt research rigor, reproducibility and transparency toolkit.
  - Developed SPI-Hub™ to provide indicators of journal scholarship expressed through metadata in 25 fields (e.g., indexing status in biomedical databases, stated adherence to publishing policies/best practices, reporting of open access policies such as fees and licensing options), which can be viewed throughout SPI-Hub™ by simply selecting a journal title.
- Footprint and functionality of research space
  - Developed the "Research Enterprise Space Dashboard" to track research space and associated extramural support.
- Continued growth of neuroscience and behavioral health research and translation
  - Leveraging new commitments and leadership in Vanderbilt Kennedy Center, Vanderbilt Brain Institute, Departments of Neurology, Psychiatry & Behavioral Sciences, Pediatrics, and Pharmacology, and Vanderbilt University Institute of Imaging Science.
  - Transition of the current Vanderbilt Memory & Alzheimer's Center to an institutional, NIA-funded Alzheimer's Disease Research Center conducting innovative research on memory loss and cognitive aging, and training and education of the next generation of investigators and clinicians.
  - Successful first year of the Addiction Medicine Fellowship.
- Personalized/precision medicine
  - Broadening the Medical Center's precision medicine strategy with a goal of implementing a system-wide approach to identifying and appropriately managing subsets of patients with distinct genetic causes for common disease and/or adverse drug reactions; and offering Genomic Medicine Training Program in pharmacogenomics, precision phenotyping, medical informatics, and disease-based genomics.
  - Opened a Clinical Genomics Laboratory providing whole-exome sequencing enabling germline genetic testing for inherited mutations in genes associated with cardiomyopathy, arrhythmia, epilepsy and intellectual disability.
  - Expanded the PREDICT program and opened the Genomics and Therapeutics Clinic.
  - Launched a Master of Genetics Counseling Degree Program with five matriculates in the first year.
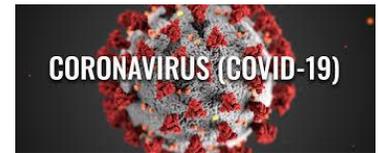
- Integrated and deployed unified genomics services (gene panel, RNA-seq & germline) as the platform for oncology; and, launched the Vanderbilt-Ingram Cancer Center's Hereditary and Oncologic Personalized Evaluation Molecular Tumor Board (VICC-HOPE MTB).
- Continuing discovery and translation enabled by BioVU, Center for Precision Medicine and Vanderbilt Genetics Institute.
- Focus on health equity, outcomes and implementation research
  - Creation of new programs through the Office of Health Equity spanning research, education and community and population health.
  - Launched the Health Equity Graduate Certificate for medical students.
- Our influence on health policy locally, nationally and globally
  - Launched a Ph.D. in Health Policy program.
  - Civic service to Nashville and Tennessee – Alex Jahangir, MD, MMHC, Chair of Metropolitan Board of Health and Metro Coronavirus Task Force (more); COVID-19 Advisory Memos and Vanderbilt Health Policy COVID-19 Modeling for Tennessee (more).
  - Medical Center faculty and staff assuming prominent government roles - Alex Jahangir, MD, MMHC, Chair of the Metropolitan Board of Health of Nashville and Davidson County (more) and Josh Denny, MD, MS, CEO of Federal *All of Us* program (more).
  - Media communication skills to provide a vital voice that engenders public trust - Exemplars include William Schaffner, MD, C. Buddy Creech, MD, MPH and David Aronoff, MD (more).

Capabilities we are developing:

- Dynamic process to develop, share and recognize the contributions of individuals and teams to discovery and learning
  - New metrics that align and connect people to our mission including changes in practice, policy and paradigms.
  - Recognizing high impact publications and national awards monthly through "Celebrate" presentations at VUSM Executive Faculty meetings.
  - Recognizing Strategic Direction advances monthly through Strategy Spotlight Share presentation at VUSM Executive Faculty meetings and Reporter articles.
  - Increased deployment of the Office of Research social media via twitter @VUMCResearch.
  - Continued enhancement of StrategyShare features and events.
  - 40th Annual GME Research Forum highlighting the research activities of our house staff and medical students.
- Mentoring and training programs that enable on-going career progression & transitions
  - Developing approach to competency-based progression from UME to GME using multi-source assessment data.
  - Obtaining AMA Re-imagining Residency grant (1 of 8 nationally).
  - Developing the Medical Innovators Development Program (MIDP). The 1st class of medical students graduate in 2020 (more) and MIDP students participated in Johns Hopkins University's COVID-19 Design Challenge after developing proposal that would extend life of N95 respirators five-fold through use of readily available hospital resources (more).
  - Launching Discovery Scholars Program in Fall 2020.
  - Developing integrated interdisciplinary experiences for post-graduate trainees.
  - Expanding our MSTP training program.

- Support for transdisciplinary teams to innovate learning, research and health care
  - Opening The Vanderbilt Institute for Surgery and Engineering (VISE), a dedicated lab space in Medical Center North, equipped with mock operating rooms, surgical robots, imaging devices, and tracking and surgical guidance systems, to foster trans-institutional interactions designed to result in new ideas and technologies to advance health care (more).
  - Launching IdeaShare to crowdsource ideas. Campaigns have included: ways to address common challenges at the Medical Center (more); use of artificial intelligence and predictive analytics to transform health care (more); a test of patient-driven steering of the vision and roadmap for patient-facing HealthIT.
  - Launching Health Equity Innovation Awards that support innovative ideas and solutions among faculty, staff, students and others at VUMC to advance health equity, ultimately improving health outcomes.
  - Establishing the COVID-19 Research and Innovation Fund to promote cross-disciplinary collaboration to address medical, societal and interpersonal effects of COVID-19 (more) and collaborating with Vanderbilt University engineers to design a fabricated, open-source ventilator to address the shortage of ventilators during COVID-19 (more)
- Platforms for innovation incubators and accelerators
  - Launching RadX (more), the Department of Radiology's health care innovation and entrepreneurship incubator. The inaugural RadX Innovation Challenge pitch event awarded three teams $10,000 each to design and implementation of their ideas (more). One of the presenting teams subsequently started up a new global health non-profit, Rayos Contra Cancer.
  - Launching the Wond'ry' peer-to-peer Innovation Consulting Program, led by Vanderbilt PhD and MD candidates, for graduate students interested in business strategy and management consulting (more)
- Systems to support learning-working teams
  - Implementation of a novel interprofessional working-learning student team model at Mercury Courts.
  - Integrating QuizTime, a smartphone application developed at the Medical Center, to provide continuing medical education to physicians. QuizTime developers launched a new quiz covering important aspects of prevention, transmission and treatment of COVID-19 (more). The Medical Center partnered with the Tennessee Department of Health to roll out workplace-based education using QuizTime to health care providers across the state for proper utilization of opioid and non-opioid therapies in managing pain (more).
  - Development of a set of tools to assist hospitals and healthcare institutions in projecting frontline workforce needs, redeploying clinical teams and protecting the health and well-being of providers, through a collaborative effort between University of Michigan and Vanderbilt University Medical Center – COVID Staffing Project
- Systems to access and leverage clinical specimens at scale with appropriate database capabilities and specimens representative of a diverse population
  - Increasing scope of biospecimen and image research use in Consent-to-Treat.
- Systems that enable co-registration and bioinformatics mining of all forms of data across the research and clinical enterprise, including VICTR data resources
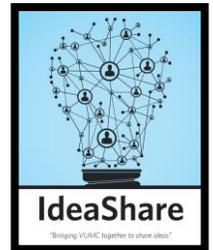
- Plan for computational science, information technology, and data storage to meet the demands and advance basic, clinical, and population research
  - Coordinating the Medical Center's Data Science strategy and programs with the Vanderbilt Data Science Institute.
  - Further developing the HEAlth Data Science (HEADS) Center and clinical data science approaches for health care delivery.
  - Developing a deep-learning algorithm for artificial intelligence-assisted calcium scoring that determines cardiovascular risk across range of computed tomography scans and in racially diverse populations (more).
  - Receiving a $2.7 million grant from the National Institutes of Mental Health to study use of artificial intelligence to predict suicide risk (more).
  - Acquiring the data and coordinating center for All of Us in the Center of Precision Medicine and providing chief executive officer leadership to the federal All of Us Research Program.
- The Institute for Infection, Immunology & Inflammation (VI4), the Vanderbilt Center for Immunobiology, and infrastructure, facilities and expertise to study infectious disease and immunology
  - Ongoing design of new shared resources that address immunophenotyping, biospecimen repositories, and animal models of infection and immunology.
  - Vanderbilt Institute for Infection, Immunology and Inflammation creation of MicroVU, an emerging repository of genomes from microbes isolated from human specimens; and the Vanderbilt Microbiome Initiative (VMI) Boot Camp, an annual workshop to train students and staff in microbiome study design, big data analysis and interpretation.
  - Opening 7,000 square feet of state-of-the-art VI4 research space, including advanced microscopy resources and facilities for microbiome work.
  - Launch of the Vanderbilt Center for Immunobiology to advance discovery in human immunology; and, through basic science and immune genetics to promote understanding and education in immunology.
- The *Learning Healthcare Platform* employing pragmatic trials embedded in clinical operations and leveraging the electronic health record
  - Completing several pragmatic trials leveraging Vanderbilt Institute for Clinical and Translational Research (VICTR) resources and clinical teams, for example Balanced Crystalloids versus Saline in **Noncritically** Ill Adults and Balanced Crystalloids versus Saline in **Critically** Ill Adults.
  - Implementation of learnings into the health system through creation of a Clinical Evidence Management Committee.
- Population and public health discovery platforms enabling research, community engagement and collaborative partnerships
  - Completing the Southern Community Cohort Polypill Study. (more)
  - Deploying Lung Cancer Screening.
  - Advancing smoking cessation.
  - Medical Center robust commitment to the TN State Cancer Plan.
  - Improving public health informatics through formation of new Center for Improving the Public's Health Using Informatics (CIPHI).
  - Modeling projected resource use during pandemics.

- Health forecasting system; knowledge engine
  - Pioneering Phenotype Risk Scores.
  - Developing the concept of 'The Vanderbilt Inventory' to identify all of the data sets to aggregate to inform "whole person" visualization of risk.
- Rapid transformation of medical school curriculum into a virtual, adaptive delivery model
  - Creation of a Pandemic Integrated Science Course for 200 medical students within two weeks that incorporated both didactic and experiential learning during the COVID-19 pandemic.
  - Conversion of all medical school didactics into an alternative delivery model during the COVID-19 pandemic.
- Innovative business models leveraging our leading business services thereby growing our impact and financial flexibility to support education and research
  - Forming Vanderbilt Health Professional Solutions (VHPS) to incubate and scale companies providing commercial business-to-business services to the health care and life sciences industries. The first businesses launched in 2018 and are on track to achieve $100M in revenues in FY25.
  - VHPS creating a family of pharmacy companies (Vanderbilt Health Rx Solutions for medication therapy management and consulting services & Vanderbilt Health Pharmacy Group to provide specialty pharmacy for non-VUMC patients and contract pharmacy services to 340B-eligible institutions) and supply chain companies (Vanderbilt Health Supply Chain Solutions for consulting services, Vanderbilt Health Purchasing Collaborative for group purchasing & Carefluent Connect to provide durable medical equipment for VUMC patients. Anchor clients include Ohio State, Medical University of South Carolina (MUSC), University of Mississippi Medical Center (UMMC), Dartmouth and University of Vermont Medical Center (UVMC).
  - VHPS creating Nashville Biosciences (NashBio) to perform clinical/genomic research using BioVU for life sciences companies (more)

  - Exploring business models to attract life science companies to co-invest with VUMC and NashBio to increase the scope and scale of BioVU substantially.