Developments in Brief

2019

AUGUST 16
GenomeWeb reports concerns that FDA’s recently enhanced scrutiny of genetic testing results referencing drug-gene interactions not mentioned in the labels of FDA-approved products may slow the pace at which physicians adopt evidence-based personalized medicine strategies.

AUGUST 2
Medicare officials finalize an increase to payment rates for chimeric antigen receptor T-cell therapies. Alongside their decision in April to reconsider their approach to coverage of next-generation sequencing for cancer patients, the decision incrementally improves the outlook for patient access to personalized medicine. But both decisions still fall short of the comprehensive reimbursement changes that the field’s champions are calling for.

JULY 5
The Trump administration announces plans to tie U.S. drug prices to international payment rates that industry representatives say are not enough to recoup the costs of developing treatments. The announcement raises concerns especially about the future development of personalized treatments that depend on higher list prices to recover R & D costs from smaller patient populations.

JUNE 27
The first cost-effectiveness study of multi-gene panel sequencing in advanced non-small cell lung cancer bolsters the case for personalized medicine and underlines the need to align clinical practices with the field’s principles.

APRIL 22
A PMC-organized committee of leaders in personalized medicine releases A Consumer’s Guide to Genetic Health Testing to answer key questions about the personalized medicine tests with the highest public profile.
On May 10, 2019, former U.S. Food and Drug Administration commissioner Dr. Scott Gottlieb stood before an eager audience at the National Press Club to reflect on a historic tenure at FDA during which he oversaw the approval of record numbers of groundbreaking personalized treatments and spearheaded a series of regulatory precedents that are designed to help speed the commercialization of the diagnostic tools necessary to guide those therapies to the right patients. He began by describing “a remarkable period” of scientific opportunity in personalized medicine.

“With gene therapies, cell-based regenerative medicine, more targeted therapies, and the introduction of better tools for delivering therapies from digital health apps to artificial intelligence to next-generation sequencing, we’re living in an age of momentous progress and rapid cycles of innovation,” he said. “We have more ability to use technology to achieve sizable and secular advances in medicine than ever before.”

The rest of his remarks focused on his preferred solutions for addressing formidable systemic challenges, underlining the need to “finance these opportunities in a fashion that optimizes access to patients who most need them and doesn’t discourage future investment and innovation.”

Dr. Gottlieb’s attention to these downstream issues reminds us of our goals for personalized medicine, through which we seek to facilitate a permanent shift away from treatment protocols based on what has been proven to work for the highest percentage of all patients with a given disease in favor of an approach that seeks to understand everything that can be learned about each patient before prescribing the therapy that can deliver the longest-lasting effect in accordance with each patient’s biology and desires. To accomplish personalized medicine’s ambitious purpose, we need to align on forward-thinking policies and processes in the public and private sectors that encourage continued innovation, facilitate sustainable access to the products and services that underpin this new era of personalized health care, and prompt providers to practice medicine differently.

This is the raison d’être of the Personalized Medicine Coalition.

As the following pages demonstrate, PMC is advancing key priorities in education, advocacy, and evidence development in pursuit of a new medical paradigm that improves on one-size-fits-all medicine. Guided by its members, the Coalition has begun to lay the foundation for an enhanced impact by:

- Working with lawmakers from both sides of the aisle to establish a Congressional Personalized Medicine Caucus that will protect the future of the field;
“To accomplish personalized medicine’s ambitious purpose, we need to align on forward-thinking policies and processes in the public and private sectors that encourage continued innovation, facilitate sustainable access to the products and services that underpin this new era of personalized health care, and prompt providers to practice medicine differently.”

- Establishing a new PMC Education Council that will focus on developing and disseminating key messages about personalized medicine and its benefits; and
- Commissioning a series of studies that will help us better understand and affect the pace at which personalized medicine products and services are integrated into clinical work streams.

With these initiatives underway, we will reconvene in November to consider the science, business, and policy issues facing personalized medicine during the Annual Personalized Medicine Conference at Harvard Medical School, which will feature a keynote address by Dr. Gottlieb as well as fireside chats with Dr. Carl June, Richard W. Vague Professor in Immunotherapy, University of Pennsylvania/Dr. Stephen L. Eck, Chief Medical Officer, Immatics US, and Dr. Paul Stoffels, Vice Chairman, Executive Committee, Chief Scientific Officer, Johnson & Johnson/CNBC Reporter Meg Tirrell. Tackling increasingly sophisticated diagnostics on the first day and more targeted and impactful treatments on the second, The 15th Annual Personalized Medicine Conference: The Paradigm Evolves will systematically preview the potential of these emerging solutions before considering how each of them challenges us to think differently about the constructs of our health systems.

We hope to see you there.

THE 15TH ANNUAL
PERSONALIZED MEDICINE CONFERENCE
The Paradigm Evolves

REGISTER TODAY
November 13–14, 2019
Harvard Medical School
www.PersonalizedMedicineConference.org
Advocates Seek Congressional Caucus to Shape Policies That Will Sustain Progress in Personalized Medicine

by Cynthia A. Bens, PMC Senior Vice President, Public Policy

Prompted by signals from officials at multiple levels of the U.S. federal government who have recently embraced public policy positions that threaten to nudge the health system away from personalized health care, the field’s champions have coalesced on the need for a Congressional Personalized Medicine Caucus that can serve as a vehicle for ensuring that the health care system can support the continued advancement of the field.

Federal proposals to reduce health care costs by lowering the list prices of drugs, without considering that many personalized medicines are explicitly designed to translate higher up-front treatment costs into improved patient outcomes, would have unforeseen consequences. If these proposals are implemented, they could cause the pharmaceutical industry to move resources away from personalized therapies that would rely on higher list prices to recoup research and development costs from smaller patient populations in favor of one-size-fits-all daily maintenance medications that can be prescribed to larger patient populations at a lower price. As PMC President Edward Abrahams explains in a recent op-ed published in The Boston Globe’s health care-focused affiliate publication, STAT News, the Trump administration’s recent proposal to tie U.S. government payment rates for drugs to the lowest rate paid by any country in the world, for example, would have “disastrous” implications for patients who are counting on cell-based therapies, gene therapies, and targeted medicines to address the root causes of diseases whose genetic underpinnings are increasingly understood and may therefore be targeted by a future personalized therapy.

Of course, these patients are also resting their hopes for new treatments on continued progress in biomedical research. And on this front, too, the future is still uncertain.

Democratic leaders, the Trump administration, and other members of Congress remain deeply entrenched in their respective parties’ positions about how the nation should allocate its finite governmental resources, frustrating efforts to increase the budget for biomedical research spending in 2020 to keep pace with emerging opportunities in personalized medicine. As PMC emphasized in testimonies submitted to the relevant House and Senate committees to request an increase of 6.4 percent in the National Institutes of Health’s 2020 budget, the increase would provide a foundation for continued medical progress at a moment when new developments are “bringing us closer to a future in which every patient benefits from an individualized approach to health care.”

For their part, officials at the Centers for Medicare and Medicaid Services have made a good faith effort in recent months to respond to feedback about the agency’s approach to coverage and payment for key personalized medicine products and services.

But challenges persist.

After advocates expressed concern that CMS’ approach to implementing a coverage policy for next-generation sequencing (NGS)-based tests for Medicare beneficiaries with advanced cancer may prevent patients from accessing tests to guide earlier treatment and prevention strategies for hereditary cancers, the agency agreed to reconsider the scope of its coverage policy.

And in response to concerns about the additional costs associated with managing the side effects of chimeric antigen receptor (CAR) T-cell therapies, a key group of personalized treatments that re-engineer a patient’s own immune cells to treat cancer, CMS has finalized an incremental increase to its payment rates for CAR T-cell therapies to help ensure that hospitals can continue to administer them.

But even the revised CAR T-cell payment rate established by the agency, which is under increasing pressure to contain costs, is unlikely to completely offset the losses many
“Prompted by signals from officials at multiple levels of the U.S. federal government who have recently embraced public policy positions that threaten to nudge the health system away from personalized health care, the field’s champions have coalesced on the need for a Congressional Personalized Medicine Caucus that can serve as a vehicle for ensuring that the health care system can support the continued advancement of the field.”

Under the leadership of Administrator Seema Verma, the U.S. Centers for Medicare and Medicaid Services has been quick to adjust its approach to coverage and payment of specific personalized medicine products and services in response to community feedback. Still, advocates say that the agency’s best efforts to advance favorable coverage policies are falling short of the comprehensive changes necessary to facilitate payment that reflects the value of personalized medicine — and Congressional cost-containment proposals and budgetary priorities threaten to chill progress in the field.

hospitals are facing. This obstacle exemplifies the practical challenges and bureaucratic mandates that are slowing the agency’s progress toward adopting the reimbursement models that incentivize health care providers to make up-front investments in fully understanding each patient’s biology and values before prescribing therapies. As PMC noted in its most recent letter to CMS Administrator Seema Verma, the landscape for reimbursement begs for “the creation of a long-term solution for adequate payment of these and other highly specialized medicines.”

Fortunately, PMC is making progress toward a Congressional Caucus to help solve these systemic issues, largely thanks to warm welcomes from the offices of Democratic and Republican members in the House and Senate who are eager to advance the dialogue on how personalized medicine can solve some of health care’s greatest challenges.

And FDA, bolstered by the 21st Century Cures Act and the FDA Reauthorization Act of 2017, continues to lead the way toward patient-centered care informed by real-world evidence.

FDA has developed a list of priorities that will help it align regulatory decisions with patient preferences, and has recently signed agreements with Cota Healthcare and Flatiron Health that will enhance its ability to learn from data collected outside the context of clinical trials, to include information from electronic health records, insurance claims, and mobile devices. During a meeting with the members of PMC’s public and science policy committees in June, Dr. Leonard Sacks, Associate Director for Clinical Methodology in FDA’s Center for Drug Evaluation and Research, reiterated the agency’s intent to advance policies pertaining to the use of real-world evidence, which may help the developers of personalized medicine products and services more efficiently demonstrate the safety and efficacy of their solutions.

Recent and ongoing FDA approvals of one-time treatments remind us that personalized medicine has the potential to transform care for patients with a wide variety of serious diseases. These persistent public policy obstacles underline that scientific and technological developments are only the first step on the journey toward realizing the promise of personalized medicine.
Amid public discussions about how to reform the U.S. health care system that are still too often rooted in the assumption that medical decisions will forever ignore new tools that allow us to treat patients based on the unique molecular characteristics expressed by their healthy and diseased cells, proponents of personalized medicine have begun to organize a council of leaders dedicated to advancing key messages about the approach’s benefits for patients and health systems.

Members of the PMC Education Council, which the Coalition will formally launch next year with participation open to anyone employed by an active PMC member institution, will seek to counter a series of emerging educational challenges that could otherwise slow the pace at which scientific and technological developments underpinning personalized medicine reach patients in clinical settings.

These challenges include a sweeping lack of awareness on the part of patients who may otherwise demand access to personalized medicine products and services. According to PMC’s most recent survey on public awareness of personalized medicine, two-thirds of Americans have never even heard the terms “personalized medicine” or “precision medicine.” And only 13 percent of patients say they are “very informed” about it.

In a recent editorial on drug pricing, for example, The New York Times contends that the U.S. government should adopt an approach to establishing payment rates for various therapies that is similar to the model used in Britain (see “Sound, Fury, and Prescription Drugs,” July 6). The newspaper fails to recognize, however, that because the United Kingdom’s National Institute for Health and Care Excellence employs a value assessment methodology that has not been structured to account for the benefits of personalized medicine, its efforts to contain costs have led to a decision to refuse coverage of Vertex Pharmaceuticals’ Orkambi (lumacaftor/ivacaftor), a personalized medicine that addresses root causes of cystic fibrosis. The decision has left cystic fibrosis patients in the U.K. without access to the important drug.

The rising popularity of proposals to replicate the British system in the U.S. are lending a sense of urgency to the educational efforts of personalized medicine’s champions, who favor a modernized approach that would protect patients’ access to highly personalized therapies that can facilitate downstream savings by curing diseases with fewer prescriptions and ensuring that treatments are targeted to only those patients who are most likely to benefit from them.

But despite their best efforts, personalized medicine’s advocates have not yet succeeded in altering the perspectives of those who are in favor of aggressive drug pricing reforms, as evidenced by the fact that the Times again undercut the industry’s pursuit of personalized therapies on August 14, with an editorial titled “This Drug Will Save Lives, for $2 Million.” Like most mainstream dailies, the Times continues to assert the need for price controls without explaining how they would fit into a complex set of incentives that are encouraging the pharmaceutical industry to pursue personalized medicine.
In the meantime, ongoing critiques of various approaches to at-home genetic health testing that are exemplified by an editorial describing them as “more parlor trick than medicine” (see “Why You Should Be Careful About 23andMe’s Health Test,” The New York Times, Feb. 1), threaten to undermine and confuse the public’s understanding of how genetic biomarkers may be used to guide medical decision-making, which is a hallmark of personalized medicine.

Recognizing the negative impact these messages could have especially on consumers who are not educated enough to understand the differences between genetic and genomic tests that guide the use of evidence-based, genetically targeted treatments for life-threatening diseases and the many types of tests that can help keep patients apprised about our evolving understanding of the relationship between genetics and disease, a committee of PMC members convened earlier this year to develop and publish A Consumer’s Guide to Genetic Health Testing, which answers key questions about the field.

Summarizing the scope of the educational challenges in personalized medicine, PMC Board Member Bonnie J. Addario, Co-Founder, Chair, GO2 Foundation for Lung Cancer, notes that due in part to a global lack of awareness of personalized medicine’s benefits, “some patients around the world cannot access life-saving tests and treatments.”

“We simply cannot allow this to happen,” she said.

With most Americans still unaware that many emerging treatment strategies are designed to translate higher up-front investments in personalized therapies into downstream savings by curing patients through fewer prescriptions and targeting treatments to only those patients who will benefit from them, prevailing media messages are galvanizing public support for aggressive efforts to curb drug prices. These policies, if they are implemented, may unintentionally prevent patients from accessing important personalized treatments.
In an interview about the results of the first study of the cost-effectiveness of next-generation sequencing (NGS)-based genetic tests in comparison to single-marker genetic testing (SMGT) for patients with advanced non-small cell lung cancer (aNSCLC), lead author Dr. Lotte Steuten, who recently became the Vice President and Head of Consulting for London’s Office of Health Economics, carefully parsed results showing that although this key group of personalized medicine tests is moderately cost-effective, the tests could be more valuable if physicians were using actionable results more consistently to guide treatment strategies.

“Only a small fraction [of patients with actionable mutations] actually receive that targeted treatment,” Dr. Steuten said, reflecting on the PMC-commissioned study that was released in June. “That reduces the value of testing, because if you don’t act on the results, then the patients don’t get the benefit” (see GenomeWeb, “Multi-Gene Panel Testing Moderately Cost Effective for Lung Cancer Patients,” July 10).

“This should be investigated,” she concluded.

Dr. Steuten’s remarks summarize the evolving landscape for clinical adoption of personalized medicine, where new insights and ongoing challenges are informing a robust research agenda.

As Dr. Steuten implied, PMC’s “Cost-Effectiveness of Multi-Gene Panel Sequencing for Patients With Advanced Non-Small Cell Lung Cancer” study underlines the importance of aligning clinical practices with personalized medicine strategies in which physicians use diagnostic tests to identify specific biological markers that inform targeted prevention and treatment plans.

The study exposed a critical “practice gap” related to the use of NGS-based test results and treatment with more effective targeted therapies (only 65–75 percent of patients with an actionable mutation as determined by NGS-based profiling are estimated to have actually received targeted treatments). The reason for this practice gap is not clear, but we do know that the efficient use of NGS-based profiling faces implementation challenges related to education and awareness of new biomarkers and technologies; evolving practices, policies, and processes; and recognition by payers and providers of the clinical value of testing. A firm understanding among all health care stakeholders of all the ways in which genomic profiling has clinical utility can be instrumental to overcoming many of these implementation challenges.

To this end, PMC plans to gather leading experts in the field for a roundtable discussion, Defining the Clinical Utility of Genomic Profiling in Cancer Care, to examine current perspectives on the use of NGS in oncology and identify all of the factors that can help determine its clinical utility. Based on these findings, PMC will develop recommendations for key personalized medicine stakeholders, including health care providers, payers, clinical guideline developers, clinical laboratories, and patients, to help inform their policies and processes and support their personalized medicine implementation efforts.

Personalized medicine perspectives, and its implementation, can vary amongst health care systems in the U.S., as
viewpoints related to personalized medicine and its utilization. This, in turn, can help inform efforts to address the most critical outstanding integration challenges. If the clinical and economic value of personalized medicine strategies is consistently made clear to all health care stakeholders, the field will progress more rapidly. A firm understanding of the practice gaps and implementation challenges associated with personalized medicine technologies will allow us to better recognize how these gaps affect the value proposition and develop solutions that can help the health care system realize personalized medicine’s full potential. This, in turn, will lead to better access to personalized medicine technologies and the associated improvements in health outcomes.

some providers are regularly integrating personalized medicine into their clinical work streams while others may not be accustomed to ordering diagnostics to guide prevention strategies or therapeutic decisions at all.

To gain a better understanding of the integration landscape, PMC is working with a research team from Health Advances, LLC, on a project titled *The Integration of Personalized Medicine into U.S. Health Systems: A Landscape Analysis*. The study aims to capture a holistic picture of the clinical adoption of personalized medicine strategies and technologies within the U.S. health care system by querying provider institutions about baseline community, institutional, and service delivery details as well as practice patterns and viewpoints related to personalized medicine and its utilization. This, in turn, can help inform efforts to address the most critical outstanding integration challenges.

If the clinical and economic value of personalized medicine strategies is consistently made clear to all health care stakeholders, the field will progress more rapidly. A firm understanding of the practice gaps and implementation challenges associated with personalized medicine technologies will allow us to better recognize how these gaps affect the value proposition and develop solutions that can help the health care system realize personalized medicine's full potential. This, in turn, will lead to better access to personalized medicine technologies and the associated improvements in health outcomes.

“The Forum is a gathering of 200 decision makers across the healthcare industry – innovators, payers, providers, scientists and investors. It is the centerpiece of JAX’s efforts to create a new paradigm for biomedical innovation.

*Attendance is limited so register today!*
In a development that enhances PMC’s capacity to promote the understanding and adoption of the technologies and treatments underpinning personalized medicine for the benefit of patients and health systems in the U.S. and around the world, the Coalition has added Dr. Antonio L. Andreu, Scientific Director of the European Infrastructure for Translation Medicine (EATRIS), Dr. Lori Frank, a Senior Behavioral Scientist with the RAND Corporation who sits on the Medical, Scientific, and Memory Screening Advisory Board of the Alzheimer’s Association (AFA), and Mr. Mark P. Stevenson, Executive Vice President and Chief Operating Officer of Thermo Fisher Scientific, to its multi-stakeholder board of directors.

Dr. Andreu, who began his career as a researcher specializing in the genetics and genomics of rare diseases, went on to create Spain’s national personalized medicine program during his tenure as Director of the Spanish national institute of health, called the Instituto de Salud Carlos III.

Dr. Frank brings a deep background in the patient advocacy community. As a member of AFA’s Medical, Scientific, and Memory Screening Advisory Board, Dr. Frank offers expert insight on scientific issues surrounding Alzheimer’s disease and related dementias.

Mr. Stevenson, Executive Vice President and Chief Operating Officer at Thermo Fisher, helps lead the company’s global efforts to advance personalized medicine by supporting commercialization, evidence development, and advocacy to help enable delivery of molecular diagnostics and targeted therapeutics from translational research into the clinic.

“As impactful champions for personalized medicine who each represent an important part of the international health care landscape, Dr. Andreu, Dr. Frank, and Mr. Stevenson are well-positioned to help guide PMC’s global education and advocacy programs,” said PMC Board Chairman Dr. Stephen L. Eck, Chief Medical Officer, Immatics US.
JOIN FORCES WITH LEADERS DEDICATED TO FIGHTING DISEASE

Precision medicine holds great promise for treating genetic diseases—such as certain types of cancers—but bottlenecks in the system are slowing its progress. To break down these barriers, Harvard Business School Executive Education in partnership with the Kraft Precision Medicine Accelerator has created Accelerating Innovation in Precision Medicine, a new program focused on developing business solutions for this emerging area. As a participant, you will join top leaders from business, science, medicine, and technology to explore strategies for bringing new therapies to patients faster.

Learn more www.exed.hbs.edu/precisionmedicine

Accelerating Innovation in Precision Medicine
23–25 OCT 2019
Learn more www.exed.hbs.edu/precisionmedicine
First Cost-Effectiveness Study of Multi-Gene Panel Sequencing in Advanced Non-Small Cell Lung Cancer Bolsters Clinical & Economic Case for Personalized Medicine, Exposes Critical Practice Gap

In a development that has bolstered the clinical and economic case for personalized medicine strategies informed by genetic and genomic testing, a team of researchers led by London Office of Health Economics Vice President and Head of Consulting Dr. Lotte Steuten published a study in June demonstrating that multi-gene panel sequencing (MGPS) is moderately cost-effective for patients with advanced non-small cell lung cancer as compared to single-gene testing. The PMC-commissioned study, which was the first to assess the cost-effectiveness of MGPS for this cohort of patients, also underlined the importance of aligning clinical practices with the principles of personalized medicine.

“Only a small fraction [of patients with actionable mutations] actually receive that targeted treatment,” Dr. Steuten explained to GenomeWeb. “That reduces the value of testing, because if you don’t act on the results, then the patients don’t get the benefit.”

See Precision Medicine Institute: “Do Multigene Panels Offer Cancer Patients, Payers More Value?”

See GenomeWeb (subscription content): “Multi-Gene Panel Testing Moderately Cost-Effective for Lung Cancer Patients” (July 2019)

FDA Expands Frontiers of Field With Approval of $2 Million Gene Therapy, Underlining Importance of Reimbursement Models Suitable for New Era

In a development that has expanded the frontiers of personalized medicine and reminded decision-makers of the need to develop new reimbursement models that are suitable for an era of personalized health care, FDA announced the approval in May of a “transformational” $2.125 million gene therapy from Novartis, called Zolgensma (onasemnogene abeparvovec-xioi), for the treatment of a rare genetic condition called spinal muscular atrophy.

Emphasizing its commitment to value-based payment arrangements to facilitate access to Zolgensma, Novartis said it hopes the approval will bolster the outlook for personalized medicine by nudging the health care system toward payment models that allow insurance companies to recoup payments for treatments when they do not work as expected, thereby incentivizing drug developers to target treatments to only those patients who will benefit from them.

“Our goal is to ensure broad patient access to this transformational medicine and to share value with the health care system,” CEO Dr. Vasant Narasimhan said in a statement.


Prompted by Advocates’ Access Concerns, US Officials Raise Hopes for Improved Reimbursement Landscape in Personalized Medicine by Reconsidering Key Policies

Prompted by advocates who emphasize the importance of patient access to the products and services underpinning personalized medicine, officials at the U.S. Centers for Medicare and Medicaid Services have improved the reimbursement landscape in the field by adjusting two key policies.

In the first of the developments, the agency agreed to revisit its approach to coverage of next-generation sequencing (NGS) for Medicare beneficiaries with advanced cancer on April 29 by re-opening a previously finalized policy for discussion. The agency announced the decision after a group of 60 institutions, including PMC, wrote a letter to the agency noting that the policy had prompted Medicare Administrative Contractors (MACs) to stop covering genomic tests that rely on NGS technology to determine whether the healthy cells of early-stage cancer patients have genetic characteristics that make them more susceptible to developing breast and ovarian cancer.

And on August 2, CMS announced a revised final coverage policy for chimeric antigen receptor (CAR) T-cell therapies, an important group of personalized treatments that re-engineer patients’ own immune cells to combat cancer.

In the final policy, the agency retreated from an approach that would have facilitated access to the therapies for patients covered by Medicare only when the treatments were being prescribed to generate data for a CMS-approved registry or clinical study.

As PMC Senior Vice President for Public Policy Cynthia A. Bens explained to The New York Times in April for a story that the newspaper describes as “a major test case” for a federal government that seeks to contain costs while facilitating access to personalized therapies, CMS’ “coverage with evidence development” policy would have unnecessarily delayed access to CAR T-cell therapies for patients who desperately need them.

See GenomeWeb (subscription content): “CMS Reopens National Coverage Determination for NGS Testing in Advanced Cancer” (April 2019)

INTRODUCING
A NEW WEBSITE BY GENOMEWEB

PRECISION
ONCOLOGY
NEWS

THE LATEST
HEADLINES ON THE
APPLICATION OF GENOMIC
SEQUENCING AND OTHER
BIOMARKER-DRIVEN
APPROACHES TO GUIDE CANCER
TREATMENT

5 PREMIUM ARTICLES FROM THE PRECISION ONCOLOGY NEWSROOM

- Liquid biopsy monitoring, surveillance efforts accelerate across cancer types and technologies
- Consortium sets out to bring precision medicine approaches to very rare cancers in NY
- Next-generation sequencing of pediatric cancer patients could transform treatment paradigms
- Wake Forest researchers learn from patient data in offering precision oncology broadly
- ASCO data pushes boundaries for genomic testing in localized breast cancer

REGISTER TODAY
FOR OUR FREE DAILY NEWS BULLETIN
precisiononcologynews.com
INDIVIDUALIZING MEDICINE 2019
CONFERENCE

Precision Cancer Care through Immunotherapy and Genomics

WESTIN KIERLAND RESORT & SPA
SCOTTSDALE, ARIZONA
SEPTEMBER 20–21, 2019

PRE-CONFERENCE SESSIONS AVAILABLE

INDIVIDUALIZINGMEDICINECONFERENCE.MAYO.EDU

REGISTER TODAY!
## PMC Membership

### Clinical Laboratory Testing Services
- Laboratory Corporation of America (LabCorp)
- Natera
- Quest Diagnostics

### Diagnostic Companies
- Adaptive Biotechnologies
- Agenda NV
- Alacris Theranostics GmbH
- Almac Diagnostics
- Cambridge Cancer Genomics
- Caprion Proteomics
- CareDX, Inc.
- Caris Life Sciences
- Clarient Health
- Circulogene
- Cofactor Genomics
- Diaceutics
- Foundation Medicine, Inc.
- GeneCentric Diagnostics
- Genomic Health, Inc.
- Guardant Health
- Inviva
- IonXper
- MDC
- NanoString Technologies
- Qiagen, Inc.
- Roche Diagnostics Corporation
- Siemens Healthcare Diagnostics, Inc.
- Somalogic, Inc.
- Zionea

### Emerging Biotech/Pharmaceutical Companies
- Aperionics
- Freenome
- Immatics US
- Invitae
- Loo Oncology
- PARXEL
- Regeneron Genetics Center
- Relay Therapeutics
- Tango Therapeutics
- Unum Therapeutics
- WuXi NextCode

### Health Insurance Companies
- Harvard Pilgrim Health Care

### Industry/Trade Associations
- American Clinical Laboratory Association (ACLA)
- BIO (Biotechnology Innovation Organization)
- Biocentury
- PhRMA

### IT/Informatics Companies
- 2bPrecise
- Change Healthcare
- Concert Genetics
- Cota Healthcare
- DNAexus
- Flatiron Health
- GNS Healthcare
- M2Gen
- Medidata
- Progknowse, Inc.
- Seven Bridges
- Syapse
- XIFIN, Inc.

### Large Biotech/Pharmaceutical Companies
- AbbVie
- Amgen, Inc.
- Astellas Pharma Global Development
- AstraZeneca Pharmaceuticals
- Bausch Health Companies
- Bayer
- Boehringer-Ingelheim
- Bristol-Myers Squibb
- Celgene
- Eli Lilly and Company
- Genentech, Inc.
- GlaxoSmithKline
- Johnson & Johnson
- Merck & Co.
- Novartis
- Pfizer, Inc.
- Takeda Pharmaceuticals, Inc.

### Nutrition, Health & Wellness Companies
- International Vitamin Corporation

### Patient Advocacy Groups
- Accelerated Cure Project for Multiple Sclerosis
- Alliance for Aging Research
- Alzheimer’s Foundation of America
- Asian & Pacific Islander American Health Forum
- Bradford Power
- Bulgarian Association for Personalized Medicine
- Clarity Foundation
- Color Relief Cancer Alliance
- Cure Duchenne
- Emily’s Entourage
- EveryLife Foundation for Rare Diseases
- Fight Colorectal Cancer
- Food Allergy Research & Education
- Friends of Cancer Research
- GO2 Foundation for Lung Cancer
- Global Liver Institute
- HealthyWomen
- International Cancer Advocacy Network ("ICAN")
- LUNGevity Foundation
- Multiple Myeloma Research Foundation
- National Alliance Against Disparities in Patient Health
- National Alliance for Hispanic Health
- National Health Council
- National Patient Advocate Foundation
- Preventive Partners
- Team Trevor
- THRIVORS

### Personalized Medicine Service Providers
- 23andMe
- Genome Medical
- Intervention Insights
- Michael J. Bauer, M.D., & Associates, Inc.
- MolecularHealth
- N-of-One, Inc.
- Sema4
- Tempus

### Research, Education & Clinical Care Institutions
- American Association for Cancer Research
- American Medical Association (AMA)
- Arizona State University
- Association for Molecular Pathology (AMP)
- Baylor Health Care System Precision Medicine Institute
- Brigham and Women’s Hospital, Genomes2People Research Program
- Brown University
- Business Finland
- Cancer Treatment Centers of America
- The Christ Hospital
- College of American Pathologists
- Colorado Center for Personalized Medicine
- Cerner<br>OpenSprint Health
- Corell Institute for Medical Research
- CREATE Health Translational Cancer Centre
- Duke University
- Duke Center for Research on Personalized Health Care
- Essentia Institute of Rural Health
- European Infrastructure for Translational Medicine
- Geisinger
- Genome British Columbia
- Genome Canada
- Harvard Business School
- HealthiSense
- Helmholtz Zentrum Munchen
- Hospital Albert Einstein
- Inova Health System
- Instituto de Salud Carlos III
- Intermountain Healthcare
- The Jackson Laboratory
- Johns Hopkins Individualized Health
- King Faisal Specialist Hospital and Research Centre
- Manchester University School of Pharmacy
- Marshfield Clinic
- Mayo Clinic
- MD Anderson – Institute for Personalized Cancer Therapy
- Mission Health, Fullerton Genetics Center
- MIT Center for Precision Medicine
- Moffitt Cancer Center
- National Pharmaceutical Council
- Nicklaus Children’s Hospital
- North Carolina Biotechnology Center
- NorthShore University HealthSystem
- Partners HealthCare Personalized Medicine
- Precision Health Initiative at Cedars-Sinai
- Qatar Biobank
- Quebec Network for Personalized Health Care
- Rutgers Cancer Institute of New Jersey
- Sanford Imagenetics, Sanford Health
- Stanford University School of Medicine
- Swedish Cancer Institute
- Thomas Jefferson University

### Strategic Partners
- Alva10
- Arnold & Porter Kaye Scholer, LLP
- Artisan Healthcare Consulting
- Bioscience Valuation BSV GmbH
- Blue Latitude Health
- Boston Healthcare Associates
- Bruce Quinn Associates
- Cambridge Healthtech Institute
- Cello Health BioConsulting
- Center for Individual Opportunity
- ConText
- ConvergeHEALTH by Deloitte
- Dr. Nai Chi Chan
- Edgetech Law, LLP
- EY
- Feinstein Kean Healthcare
- Foley & Lardner, LLP
- Foley Hoag, LLP
- Genome Creative, LLC
- Goldbug Strategies, LLC
- Innovation Horizons
- Innovation Policy Solutions
- Jane Binger, Ed.D.
- Jared Schwartz, M.D., Ph.D., LLC
- L.E.K. Consulting
- McDermott Will & Emery
- MITRE
- Neil A. Belson, LLC
- Ogivy
- Opus Three, LLC
- Personalized Medicine Partners
- Powering Precision Health Summit
- Rubix Health
- S.D. Averbuch Consulting
- Slone Partners
- The Journal of Precision Medicine
- Truc Nguyen, M.D., Ph.D.
- United States Pharmacopeial Convention (USP)
- William P. Stanford, M.D., Ph.D.

### Venture Capital
- GreyBird Ventures, LLC
- Health Catalyst Capital Management, LLC
- Kleiner Perkins Caufield & Byers
- Section 32
- Third Rock Ventures, LLC

### August 2019
- UC Davis Mouse Biology Program
- University of Alabama, Birmingham
- University of California, San Francisco (UCSF)
- University of Pennsylvania Health System
- University of Rochester
- University of South Florida Morsani College of Medicine
- Vanderbilt University Medical Center
- Wake Forest Baptist Medical Center
- West Cancer Center

### Research Tool Companies
- Illumina, Inc.
- Thermo Fisher Scientific
MISSION: The Personalized Medicine Coalition (PMC), representing innovators, scientists, patients, providers and payers, promotes the understanding and adoption of personalized medicine concepts, services and products to benefit patients and the health system.